

**Yongjie Jessica Zhang, Ph.D.**

George Tallman Ladd and Florence Barrett Ladd Professor of Mechanical Engineering  
Courtesy Appointment in Biomedical Engineering  
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**RESEARCH INTERESTS:**

Computational Geometry, Isogeometric Analysis, Finite Element Method, Data-Driven Modeling, Image Processing, Mesh Generation, and their applications in Computational Biomedicine, Materials Science and Engineering

**ACADEMIC APPOINTMENTS:**

- 2019 ~ present: George Tallman Ladd and Florence Barrett Ladd Professor, Department of Mechanical Engineering, Courtesy Appointment in Biomedical Engineering, Carnegie Mellon University
- 2016 ~ 2019: Professor, Department of Mechanical Engineering, Courtesy Appointment in Biomedical Engineering, Carnegie Mellon University
- 2012 ~ 2016: Associate Professor, Department of Mechanical Engineering, Courtesy Appointment in Biomedical Engineering, Carnegie Mellon University
- 2007 ~ 2012: Assistant Professor, Department of Mechanical Engineering, Courtesy Appointment in Biomedical Engineering, Carnegie Mellon University
- 2005 ~ 2007: Postdoctoral Fellow, Institute for Computational Engineering & Sciences (now Oden Institute), The University of Texas at Austin

**EDUCATION:**

- 2002 ~ 2005: Institute for Computational Engineering & Sciences (now Oden Institute), The University of Texas at Austin, Majoring in Computational Engineering & Sciences, Ph.D.
- 1999 ~ 2002: Dept. of Aerospace Engineering & Engineering Mechanics, The University of Texas at Austin  
Majoring in Solid Mechanics, Master of Engineering
- 1996 ~ 1999: Dept. of Engineering Mechanics, Tsinghua University (China)  
Majoring in Solid Mechanics, Master of Engineering
- 1991 ~ 1996: Department of Automotive Engineering, Tsinghua University (China)  
Majoring in Automotive Engineering, Bachelor of Engineering

**CONTRIBUTIONS TO RESEARCH, EDUCATION AND PROFESSIONAL LEADERSHIP**

Professor Zhang's research focuses on computational geometry, mesh generation, image processing, finite element method (FEM) and isogeometric analysis (IGA) with broad applications in computational biomedicine and engineering. She has made fundamental and innovative contributions in three main areas:

- (1) Image-based geometric modeling and mesh generation for complex domains. In scanned images, the domain of focus often possesses complicated geometry, topology, and sometimes heterogeneous materials at various scales. Professor Zhang has created the first systematic computational framework for high-fidelity geometric modeling and mesh generation with unique features different from other existing methods: image-based meshing for heterogeneous domains with topology ambiguity resolved; multiscale geometric modeling for biomolecular complexes; all-hexahedral meshing with sharp feature preservation for CAD assemblies; robust quality improvement for non-manifold meshes; and guaranteed-quality mesh generation with feature preservation.
- (2) Volumetric spline modeling for IGA. Professor Zhang's research on analysis-suitable volumetric spline modeling from boundary representations is contributing to the integration of design and analysis, the root idea of IGA, and leading to great advances in computational mechanics. Her contributions include converting arbitrary unstructured quadrilateral/hexahedral meshes to T-spline surfaces/solids; polycube-based parametric mapping schemes to construct volumetric T-splines for genus-zero and arbitrary genus geometry; feature preservation using Boolean operations, skeleton and eigenfunction-based vector fields; truncated subdivision schemes to handle extraordinary nodes for arbitrary topology; as well as developing new analysis-suitable basis functions such as truncated T-splines, blended B-splines and hybrid non-uniform Catmull-Clark subdivision.

- (3) Novel FEM and IGA applications in biomedicine and engineering. Professor Zhang has made innovative contributions in broad biomedical and engineering applications: material transport and traffic jam simulation in complex neurites; neural growth modeling and circuits design; image-based adolescent idiopathic scoliosis modeling and data-driven deformity prediction; multiscale modeling for  $\text{Ca}^{2+}$  signaling in ventricular myocytes; cardiovascular modeling and simulation; dynamic lung modeling and tumor tracking for image-guided radiation therapy; critical feature determination of polycrystalline materials; and hybrid IGA-FEA of fiber reinforced thermoplastic composites design. She is currently leading a new research effort of combining physics-based simulation with machine learning to explore novel applications in neuron computation and 3D/4D printing.

Professor Zhang's research provides engineers/scientists with novel technologies to construct high-fidelity, multiscale models for complicated domains, which has dramatically advanced our predictive capability of physical/biological phenomena at molecular, cellular, tissue and organ scales. Her image-based geometric modeling and mesh generation methods are widely applied across the biomedicine and engineering community by medical centers and DoD labs. Her unique all-hexahedral mesh generation and spline modeling techniques have been incorporated into commercial software such as Rhino, Abaqus and Ansys LS-Dyna, and have contributed significantly to flexible geometry and meshing software infrastructure development in Navy, NAVAIR, Army and Honda research. She has founded a startup HexSpline3D LLC to commercialize her technologies. Her innovative biomedical and engineering applications have been leading her field to new breakthroughs and discoveries.

As a professor at CMU, Professor Zhang has made significant contributions to education and research. She teaches the required core course "Numerical Methods" at both undergraduate and graduate levels. Professor Zhang made all the efforts to bring her research to the classroom and her life-term educational goal is to train the next generation workforce on computational modeling and interdisciplinary research. She developed a new course "Computational Biomodeling and Visualization", which was later renamed to "Image-Based Computational Modeling and Analysis." She was awarded the Donald L. and Rhonda Struminger Faculty Fellow in Mechanical Engineering at CMU for her dedication to undergraduate education. With her accumulated research and teaching materials, she published a textbook "Geometric Modeling and Mesh Generation from Scanned Images" with CRC Press, Taylor & Francis Group. Professor Zhang leads an active research group "Computational Biomodeling Laboratory" at CMU, and has supervised 6 postdoctoral fellows, 18 Ph.D. students, 28 master students, 30+ undergraduate students and 20 visiting scholars. In addition to the textbook, her efforts have resulted in three edited books, six book chapters, 147 journal papers, 79 referred conference papers, 100+ invited seminars/plenary/semi-plenary/keynotes/short courses and 200+ presentations in conferences. She received the Best Paper Award 1st Place at the SPM Conference in 2018, the Best Paper Award in the CompIMAGE'16 conference, and Autodesk Best Paper Award 1st Place at the SIAM Conference on SPM 2015. She has received many awards including Simons Visiting Professorship from Mathematisches Forschungsinstitut Oberwolfach in Germany, the prestigious PECASE Award, NSF CAREER Award, ONR-Young Investigator Award, and US Association for Computational Mechanics (USACM) Gallagher Young Investigator Award. At CMU, she received David P. Casasent Outstanding Research Award, George Tallman Ladd and Florence Barrett Ladd Professorship, Clarence H. Adamson Career Faculty Fellow in Mechanical Engineering, and George Tallman Ladd Research Award. She is a Fellow of ASME, SIAM, IAMBE, AIMBE, USACM, SMA (Solid Modeling Association) and ELATES at Drexel. She is the Editor-in-Chief of Engineering with Computers.

Professor Zhang has been playing active leadership roles in her research societies. At USACM, she is the current Secretary/Treasurer and will rotate to Vice President in 2024 and President in 2026, was a Member-at-Large of the Executive Council, and chaired the Technical Thrust Areas of IGA and Biological Systems and multiple Awards Subcommittees. She served on the General Council of International Association for Computational Mechanics (IACM), and was recently elected to the Vice Chair of ASME Applied Mechanics Division (AMD) Committee on Computing in Applied Mechanics (CONCAM, rotate to the Chair in 2025). Professor Zhang chaired the Executive Committee of SMA where she launched SMA Young Investigator and Fellow awards to recognize outstanding junior and mid-career researchers in solid modeling. At AIMBE College of Fellows, she was elected to the Chair-Elect and will rotate to the Chair in 2024, as well as serve on its Board of Directors. She is currently the Program Director of SIAM Activity Group on Geometric Design (SIAG/GD) and chaired the SIAG/GD Early Career Prize Committee. In addition to her Editor-in-Chief role, she serves as an Associate Editor of 5 international journals, editor of one contributed volume book, guest editor of 9 conference/workshop proceedings, and on the editorial board of 13 journals. She co-chaired 5 conferences, co-organized 89 symposia/workshops, served on steering committee of IGA conferences and scientific committee of 100+ conferences/workshops, and chaired 66 sessions. She served on Advisory Board of SMA 2021-2024, UCSD NIH P41 National Biomedical Computation Resource in 2016-2017, and

Journal of Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization since 2017. She was invited to serve on Academic Program Review Committee for Department of Aerospace and Mechanical Engineering, University of South California in 2017. She also served on review panels for US NSF, ARO, NASA, CRDF, European Research Council, Medical Research Council of UK, Swiss National Science Foundation, Austrian Science Fund, Czech Science foundation, Israeli Ministry of Science & Technology, and Research Council of Norway. Currently She is serving on Research Impact Fund Committee of Research Grants Council of Hong Kong. As a woman faculty, Professor Zhang has made significant efforts on promoting diversity and young researchers in her research societies. In particular, she is the founding chair of USACM Female Researchers Group and has led many discussions with USACM and IACM Executive Councils to recognize more outstanding female researchers in computational mechanics.

#### HONORS AND AWARDS:

1. Conference Co-Chair of SIAM Conference on Computational Geometric Design (GD25) co-located with the SIAM Annual Meeting (AN25). Montreal, Canada. July 28 - August 1, 2025.
2. ASME Applied Mechanics Division (AMD) Committee on Computing in Applied Mechanics (CONCAM): Vice Chair 2023-2025, Chair 2025-2027
3. International Academy of Medical and Biological Engineers (IAMBE) Fellow, 2023
4. American Institute for Medical and Biological Engineering (AIMBE) College of Fellows: Chair-Elect 2023-2024, Chair 2024-2025, Board of Directors 2023-2025
5. Invited Official Nominator for the "VinFuture Prize," The VinFuture Prize Foundation, 2023-present
6. Society for Industrial and Applied Mathematics (SIAM) Fellow, 2023
7. US Association for Computational Mechanics (USACM): Secretary-Treasurer 2022-2023, Vice President 2024-2025, President 2026-2027
8. Program Director of SIAM Activity Group on Geometric Design, 2023-2024
9. Top Cited Article in International Journal for Numerical Methods in Engineering during 2021-2022
10. Advisory Board of Solid Modeling Association, 2021-2024
11. Solid Modeling Association (SMA) Fellow, 2021
12. Editor-in-Chief of Engineering with Computers, 2021-present
13. Invited Official Nominator for the "Japan Prize," The Japan Prize Foundation, 2020-present
14. Founding Chair of USACM Female Researchers Group, 2020-present
15. USACM Technical Thrust Area on Biological Systems: Vice Chair 2020-2024; Chair 2024-2025
16. David P. Casasent Outstanding Research Award, CMU, 2020
17. American Institute for Medical and Biological Engineering (AIMBE) Fellow, 2020
18. American Society of Mechanical Engineers (ASME) Fellow, 2019
19. George Tallman Ladd and Florence Barrett Ladd Professorship, CMU, 2019
20. US Association for Computational Mechanics (USACM) Fellow, 2019
21. Simons Visiting Professor to Visit University of Rome Tor Vergata, Mathematisches Forschungsinstitut Oberwolfach, Germany, July 2019
22. Steering Committee of Isogeometric Analysis Conference, 2018, 2020 and 2022-2024
23. Best Paper Award – 1<sup>st</sup> Place, Solid and Physical Modeling Conference. Bilbao, Spain. June 11-13, 2018
24. Program Co-chair for Solid and Physical Modeling Symposium (SPM), 2018
25. International Association for Computational Mechanics (IACM) General Council, 2017-2022
26. US Association for Computational Mechanics (USACM) Executive Committee Member-at-Large, 2017-2020.
27. Chair of Solid Modeling Association, 2019-2020
28. Executive Committee of Solid Modeling Association, 2017-2020
29. ELATES (Executive Leadership in Academic Technology, Engineering and Science) Fellow, Drexel University, 2017-2018
30. Program Co-chair for Solid and Physical Modeling Symposium (SPM), 2017
31. Best Paper Award, CompIMAGE'16 Conference, 2016
32. Chair of USACM Technical Thrust Area on Isogeometric Analysis, 2015-2019
33. Autodesk Best Paper Award – 1st Place, SIAM Conference on Solid and Physical Modeling (GDSPM), 2015.
34. One of the 5 Most Highly Cited Papers Published in Computer-Aided Design during 2014-2016
35. Clarence H. Adamson Career Faculty Fellow in Mechanical Engineering, CMU, 2014
36. Chair of CompIMAGE Conference, 2014
37. Co-chair of North America, Geometric Modeling and Processing (GMP), 2014

38. US Association for Computational Mechanics (USACM) Gallagher Young Investigator Award, 2013
39. Presidential Early Career Award for Scientists and Engineers (PECASE), 2012
40. NSF CAREER Award, 2012
41. Donald L. and Rhonda Struminger Faculty Fellow in Mechanical Engineering, CMU, 2011
42. ONR Young Investigator Award, 2010
43. George Tallman Ladd Research Award, College of Engineering, CMU, 2010
44. One of 10 Most Cited Articles Published in Computer Methods in Applied Mechanics and Engineering during 2005-2008
45. NSF Fellowship Award for the NSF Summer Institute on Nano-Mechanics and Materials, Northwestern University. July 9-12, 2007
46. ICES Postdoctoral Fellowship, The University of Texas at Austin. Sept. 1, 2005 – July 31, 2007
47. USNCCM Financial Assistance Award. US National Congress on Computational Mechanics. July 24-28, 2005
48. Best Student Poster Award. Tetrahedral Finite Element Meshing for Biomolecules. Proceedings of 13th International Meshing Roundtable. Williamsburg, VA. Sept. 19-22, 2004
49. Best Student Poster Award. Geometry Modeling and Mesh Generation for hp Finite Elements. NPACI AHM (All-Hands Meeting). UC San Diego. Mar. 18-21, 2003
50. Tsinghua University Graduate Scholarship, 1998
51. Privilege to enter Graduate Program at Tsinghua University, waived of the admission test, 1996
52. Tsinghua University Scholarship, 1995
53. Tsinghua University Electric Technology Practice Scholarship, 1993
54. Tsinghua University Progress Scholarship, 1992
55. District Olympic Chemistry Test Third Prize, 1991
56. National Math Test Excellent Prize, 1991

## EDITORSHIPS

- ❖ Editor-in-Chief of Engineering with Computers, 2021 - present
- ❖ Associate Editor-in-Chief of Visual Computing for Industry, Biomedicine and Art, 2017 - present
- ❖ Associate Editor of
  1. Computer Aided Geometric Design, 2016 - present
  2. Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization, 2013-2017
  3. International Journal of Biometrics and Bioinformatics (IJBB)
  4. The Journal of Biometrics
- ❖ Editorial Board of
  1. Computer Methods in Applied Mechanics and Engineering (CMAME), 2022 – present
  2. Computer-Aided Design, 2015 - present
  3. Engineering with Computers, 2014 – 2021
  4. Scientific Reports, 2023 – present
  5. Computers, Materials & Continua, 2018 - present
  6. Computer Aided Design, Drafting and Manufacturing (CADDM), 2016 – present
  7. International Journal on Mechanical Engineering and Mechatronics (IJMEM), 2012 - 2016
  8. International Journal for Computational Vision and Biomechanics (IJCV&B), 2009 – present
  9. International Journal for Imaging and Robotics, 2011 - present
  10. International Journal for Imaging (IJI), 2008 –2011
  11. International Journal of Computer Interaction & Information Technology, 2009 – present
  12. Journal of Biosensors and Bioelectronics, 2010 - present
  13. Journal of Nanomedicine & Biotherapeutic Discovery, 2010 - present
- ❖ Guest Editor/Co-Editor of
  1. ASME Journal of Biomedical Engineering Special Issue on Data-Driven Methods in Biomechanics, 2022. Guest Editors: Adrian Buganza Tepole, Jessica Zhang, Hector Gomez
  2. Journal of Materials Processing Technology Special Issue on Artificial Intelligence in Advanced Manufacturing Processes (AiAMP), 2022. Managing Editor: Jian Cao; Guest Editors: Markus Bambach, Robert Gao, Jessica Zhang, Kunpeng Zhu
  3. Computer-Aided Design of Solid and Physical Modeling 2018. Guest Editors: Jessica Zhang, Takashi Maekawa and Johannes Wallner

4. Computer-Aided Design of Solid and Physical Modeling 2017. Guest Editors: Stefanie Hahmann, Mario Botsch and Jessica Zhang
5. Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization of CompIMGAE 2014. Guest Editors: Yongjie Zhang and Joao Tavares
6. Graphical Models of Geometric Modeling and Processing 2014. Guest Editors: Pierre Alliez, Ying He and Yongjie Zhang
7. Engineering with Computers of Symposium of Geometric Modeling and Mesh Generation for FEM and Isogeometric Analysis, Advances in Computational Mechanics – A Conference Celebrating the 70<sup>th</sup> Birthday of Thomas J.R. Hughes. San Diego, CA. Feb. 24-27, 2013. Guest Editors: Yongjie Zhang, Mike Scott, and Suzanne M. Shontz
8. Lecture Notes in Computer Sciences of Workshop on Mesh Processing in Medical Image Analysis, 15<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI). Nice, France. Oct. 1-5, 2012. Guest Editors: Joshua Levine, Rasmus Paulsen and Yongjie Zhang
9. Engineering with Computers of 19<sup>th</sup> International Meshing Roundtable conference. Chattanooga, TN. Oct. 3-6, 2010. Guest Editors: Suzanne M. Shontz and Yongjie Zhang

**TEXTBOOK:**

Yongjie Jessica Zhang. **Geometric Modeling and Mesh Generation from Scanned Images**. Chapman & Hall/CRC Mathematical and Computational Imaging Sciences Series. CRC Press, Taylor & Francis Group. 2016. ISBN10: 1482227762, ISBN13: 978-1482227765.

**EDITED BOOKS:**

1. **Computational Modeling of Objects Presented in Images: Fundamentals, Methods, and Applications**. 4<sup>th</sup> International Conference, CompIMAGE 2014, Pittsburgh, PA, USA, September 3-5, 2014. Lecture Notes in Computer Science, Volume 8641. Springer Publisher. Editor: Yongjie Jessica Zhang and João Manuel R. S. Tavares. ISBN: 978-3-319-09993-4 (Print), 978-3-319-09994-1 (Online).
2. **Image-Based Geometric Modeling and Mesh Generation**. Lecture Notes in Computational Vision and Biomechanics, Volume 3. Springer Publisher. Editor: Yongjie (Jessica) Zhang. ISBN-10: 9400742541, ISBN-13: 978-9400742543. 2013.
3. **Mesh Processing in Medical Image Analysis**. MICCAI 2012 International Workshop, MeshMed 2012, Nice, France, October 2012, Proceedings. Lecture Notes in Computer Science, Volume 7599. Springer Publisher. Editors: Joshua A. Levine, Rasmus R. Paulsen, Yongjie Zhang. ISBN: 978-3-642-33462-7.

**BOOK CHAPTERS:**

1. Yuxuan Yu, Jialei Ginny Liu, Yongjie Jessica Zhang. **HexDom: Polycube-Based Hexahedral Dominant Mesh Generation**. *The Edited Volume of Mesh Generation and Adaptation: Cutting-Edge Techniques for the 60<sup>th</sup> Birthday of Oubay Hassan*. SEMA-SIMAI Springer Series. Editors: Rebén Sevilla, Simona Perotto, Kenneth Morgan. 2021.
2. Yicong Lai, Lei Liu, Yongjie Jessica Zhang, Joshua Chen, Eugene Fang, Jim Lua. **Rhino 3D to Abaqus: A T-spline Based Isogeometric Analysis Software Platform**. *The Edited Volume of the Modeling and Simulation in Science, Engineering and Technology Book Series devoted to AFSI 2014 - a Birthday Celebration Conference for Tayfun Tezduyar*. Springer Publisher. Editors: Yuri Bazilevs and Kenji Takizawa. Part IV:271-281, 2016.
3. Yongjie Zhang. **Challenges and Advances in Image-Based Geometric Modeling and Mesh Generation**. *Image-Based Geometric Modeling and Mesh Generation*. Springer Publisher. Editor: Yongjie (Jessica) Zhang, 2013. (Review Article)
4. Juelin Leng, Guoliang Xu, Yongjie Zhang, Jin Qian. **Quality Improvement of Segmented Hexahedral Meshes using Geometric Flows**. *Image-Based Geometric Modeling and Mesh Generation*. Springer Publisher. Editor: Yongjie (Jessica) Zhang, 2013.
5. Shaolie S. Hossain, Yongjie Zhang. **Application of Isogeometric Analysis to Simulate Local Nanoparticulate Drug Delivery in Patient-Specific Coronary Arteries**. *Multiscale Simulations and Mechanics of Biological Materials: Wing Liu's 60 Anniversary Volume*. John Wiley & Sons Lt. Publisher. Editors: Shaofan Li and Dong Qian. 2012.
6. Shaolie S. Hossain, Adrian M. Kopacz, Yongjie Zhang, Sei-Young Lee, Tae-Rin Lee, Mauro Ferrari, Thomas J.R. Hughes, Wing Kam Liu, Paolo Decuzzi. **Multiscale Modeling for the Vascular Transport of**



**Nanoparticles.** *Nano and Cell Mechanics*. Wiley Series in Micro and Nano Technologies. Editors: Gang Bao and Horacio Espinosa, 2012 (Review Article)

#### REFEREED JOURNAL PUBLICATIONS:

1. Qing Pan, Yunqing Huang, Chong Chen, Xiaofeng Yang, Yongjie Jessica Zhang. **The Subdivision-Based IGA-EIEQ Numerical Scheme for The Cahn-Hilliard-Darcy System of Two-Phase Hele-Shaw Flow on Complex Curved Surfaces.** *Computer Methods in Applied Mechanics and Engineering*, 420:116709, 2024.
2. Liang Jin, Shixuan Gu, Donglai Wei, Jason Ken Adhinarta, Kaiming Kuang, Yongjie Jessica Zhang, Hanspeter Pfister, Bingbing Ni, Jiancheng Yang, and Ming Li. **RibSeg v2: A Large-Scale Benchmark for Rib Labeling and Anatomical Centerline Extraction.** *IEEE Transactions on Medical Imaging*, 2023. DOI: 10.1109/TMI.2023.3313627
3. Zhihao Wang, Juan Cao, Xiaodong Wei, Zhonggui Chen, Hugo Casquero, Yongjie Jessica Zhang. **Kirchhoff-Love Shell Representation and Analysis Using Triangle Configuration B-Splines.** *Computer Methods in Applied Mechanics and Engineering*, 416:116316, 2023.
4. Hua Tong, Kuanren Qian, Eni Halilaj, Yongjie Jessica Zhang. **SRL-Assisted AFM: Generating Planar Unstructured Quadrilateral Meshes with Supervised and Reinforcement Learning-Assisted Advancing Front Method.** *The Special Issue of ICCS AIHPC4AS in Journal of Computational Science*, 72:102109, 2023.
5. Kuanren Qian, Ashlee Liao, Shixuan Gu, Victoria Webster-Wood, Yongjie Jessica Zhang. **Biomimetic IGA Neuron Growth Modeling with Neurite Morphometric Features and CNN-Based Prediction.** *Computer Methods in Applied Mechanics and Engineering Special Issue in Honor of the Lifetime Achievements of T.J.R. Hughes*, 417:116213, 2023.
6. Ashlee Liao, Wenxin Cui, Yongjie Jessica Zhang, Victoria Webster-Wood. **Semi-Automated Quantitative Evaluation of Neuron Developmental Morphology *in vitro* Using the Chang-Point Test.** *Neuroinformatics*, 21:163-176, 2023.
7. Juan Cao, Xiaoyi Zhang, Jiannan Huang, Yongjie Jessica Zhang. **Polygonal Finite Element-Based Content-Aware Image Warping.** *Special Issue of Computational Visual Media Conference 2022 in Computational Visual Media*, 9(2):367-383, 2023.
8. Qing Pan, Chong Chen, Yongjie Jessica Zhang, Xiaofeng Yang. **A Novel Hybrid IGA-EIEQ Numerical Method for The Allen-Cahn/Cahn-Hilliard Equations on Complex Curved Surfaces,** *Computer Methods in Applied Mechanics and Engineering*, 404:115767, 2023.
9. Xuan Liang, Lisha White, Jonathan Cagan, Anthony D. Rollett, Yongjie Jessica Zhang. **Unit-Based Design of Cross-Flow Heat Exchangers for LPBF Additive Manufacturing.** *ASME Journal of Mechanical Design Special Issue on Design for Advanced Manufacturing*, 145:012002, 2023.
10. Angran Li, Yongjie Jessica Zhang. **Isogeometric Analysis-Based Physics-Informed Graph Neural Network for Studying Traffic Jam in Neurons.** *Computer Methods in Applied Mechanics and Engineering*, 403:115757, 2023.
11. Xuan Liang, Angran Li, Anthony D. Rollett, Yongjie Jessica Zhang. **An Isogeometric Analysis-Based Topology Optimization Framework for 2D Cross-Flow Heat Exchangers with Manufacturability Constraints.** *Engineering with Computers Special Issue on Numerical Simulations for Additive Manufacturing Processes and Products*, 38(6):4829-4852, 2022.
12. Mahsa Tajdari, Farzam Tajdari, Pouyan Shirzadian, Aishwarya Pawar, Mirwais Wardak, Sourav Saha, Chanwook Park, Toon Huysmans, Yu Song, Yongjie Jessica Zhang, John F. Sarwark, Wing Kam Liu. **Next-Generation Prognosis Framework for Pediatric Spinal Deformities Using Bio-informed Deep Learning Networks.** *Special Issue of Image-Based Methods in Computational Medicine in Engineering with Computers*, 38(5):4061-4084, 2022.
13. Kuanren Qian, Aishwarya Pawar, Ashlee Liao, Cosmin Anitescu, Victoria Webster-Wood, Adam Feinberg, Timon Rabczuk, Yongjie Jessica Zhang. **Modeling Neuron Growth Using Isogeometric Collocation Based Phase Field Method.** *Scientific Reports*, 12:8120, 2022.
14. Angran Li, Yongjie Jessica Zhang. **Modeling Intracellular Transport and Traffic Jam in 3D Neurons Using PDE-Constrained Optimization.** *Special Issue of Journal of Mechanics on Recent Advances in IGA*, 38:44-59, 2022.
15. Haikuan Zhu, Juan Cao, Yanyang Xiao, Zhonggui Chen, Zichun Zhong, Yongjie Jessica Zhang. **TCB-Spline-Based Image Vectorization.** *Transactions on Graphics*, 41(3), 2022.
16. Angran Li, Yongjie Jessica Zhang. **Modeling Material Transport Regulation and Traffic Jam in Neurons Using PDE-Constrained Optimization.** *Scientific Reports*, 12:3902, 2022.

17. Zhihao Wang, Juan Cao, Xiaodong Wei, Yongjie Jessica Zhang. **TCB-Spline-Based Isogeometric Analysis Method with High-Quality Parameterization.** *Computer Methods in Applied Mechanics and Engineering*, 393:114771, 2022.
18. Juan Cao, Yi Xiao, Yanyang Xiao, Xue Fei, Xiaodong Wei, Zhongui Chen, Yongjie Jessica Zhang. **Quadratic Serendipity Element Shape Functions on General Planar Polygons.** *Computer Methods in Applied Mechanics and Engineering*, 392:114703, 2022.
19. Yuxuan Yu, Kuanren Qian, Humphrey Yang, Lining Yao, Yongjie Jessica Zhang. **Hybrid IGA-FEA of Fiber Reinforced Thermoplastic Composites for Forward Design of AI-Enabled 4D Printing.** *Journal of Materials Processing Technology Special Issue on Artificial Intelligence in Advanced Manufacturing Processes*, 302:117497, 2022.
20. Xiaodong Wei, Xin Li, Kuanren Qian, Thomas J.R. Hughes, Yongjie Jessica Zhang, Hugo Casquero. **Analysis-Suitable Unstructured T-splines: Multiple Extraordinary Points per Face.** *Computer Methods in Applied Mechanics and Engineering*, 391:114494, 2022.
21. Dawar Khan, Alexander Plopski, Yuichiro Fujimoto, Masayuki Kanbara, Gul Jabeen, Yongjie Zhang, Xiaopeng Zhang, Hirokazu Kato. **Surface Remeshing: A Systematic Literature Review of Methods and Research Directions.** *IEEE Transactions on Visualization and Computer Graphics*, 28(3):1680-1713, 2022.
22. Jerard V. Gordon, Joseph Pauza, Ann Choi, Max Farfel, Marvin Bennett, Rick Deering, Brett Griffith, Kyle Johnson, Yongjie Jessica Zhang, Andrew Deal, Anthony D. Rollett. **Method for Rapid Modeling of Distortion in Laser Powder Bed Fusion Metal Additive Manufacturing Parts.** *Journal of Materials Engineering and Performance Special Issue Focus on Additive Manufacturing*, 30:8735-8745, 2021.
23. Angran Li, Amir Barati Farimani, Yongjie Jessica Zhang. **Deep Learning of Material Transport in Complex Neurite Networks.** *Scientific Reports*, 11:11280, 2021.
24. Xiaodong Wei, Xin Li, Yongjie Jessica Zhang, Thomas J.R. Hughes. **Tuned Hybrid Nonuniform Subdivision Surfaces with Optimal Convergence Rates.** *International Journal for Numerical Methods in Engineering*, 122(9):2117-2144, 2021.
25. Xuan Liang, Albert C. To, Jianbin Du, Yongjie Jessica Zhang. **Topology Optimization of Phononic-Like Structures Using Experimental Material Interpolation Model for Additive Manufactured Lattice Infills.** *Computer Methods in Applied Mechanics and Engineering*, 377:113717, 2021.
26. Mahsa Tajdari, Aishwarya Pawar, Hengyang Li, Farzam Tajdari, Ayesha Maqsood, Emmett Cleary, Sourav Saha, Yongjie Jessica Zhang, John F. Sarwark, Wing Kam Liu. **Image-Based Modelling for Adolescent Idiopathic Scoliosis: Mechanistic Machine Learning Analysis and Prediction.** *Computer Methods in Applied Mechanics and Engineering Special Issue on AI in Computational Mechanics and Engineering Sciences*, 374:113590, 2021.
27. Hugo Casquero, Carles Bona-Casas, Deepesh Toshniwal, Thomas J.R. Hughes, Hector Gomez, Yongjie Jessica Zhang. **The Divergence-Conforming Immersed Boundary Method: Application to Vesicle and Capsule Dynamics.** *Journal of Computational Physics*, 425:109872, 2021.
28. Gang Xu, Ran Ling, Yongjie Jessica Zhang, Zhoufang Xiao, Zhongping Ji, Timon Rabczuk. **Singularity Structure Simplification of Hexahedral Meshes via Weighted Ranking.** *Computer-Aided Design*, 130:102946, 2021.
29. Xuanpeng Li, Lifeng Zhu, Qifan Xue, Dong Wang, Yongjie Jessica Zhang. **Fluid-Inspired Field Representation for Risk Assessment in Road Scenes.** *Computational Visual Media*, 6:401-415, 2020.
30. Lifeng Zhu, Wen Xing, Aiguo Song, Yongjie Jessica Zhang. **Visibility-Driven Skeleton Extraction from Unstructured Points.** *Computer Aided Geometric Design*, 82:101929, 2020.
31. Aishwarya Pawar, Yongjie Jessica Zhang. **NeuronSeg\_BACH: Automated Neuron Segmentation Using B-Spline Based Active Contour and Hyperelastic Regularization.** *Communications in Computational Physics*, 28(3):1219-1244, 2020.
32. Bin Li, Jianzhong Fu, Yongjie Jessica Zhang, Aishwarya Pawar. **A Trivariate T-spline Based Framework for Modeling Heterogeneous Solids.** *Computer Aided Geometric Design*, 81:101882, 2020.
33. Jin Xie, Jinlan Xu, Zhenyu Dong, Gang Xu, Chongyang Deng, Bernard Mourrain, Yongjie Jessica Zhang. **Interpolatory Catmull-Clark Volumetric Subdivision over Unstructured Hexahedral Meshes for Modeling and Simulation Applications.** *A Special Issue of International Conference on Geometric Modeling and Processing in Computer Aided Geometric Design*, 80:101867, 2020.
34. Yue Jia, Chun Li, Jin-Wu Jiang, Wei Ning, Chen Yang, Yongjie Jessica Zhang. **Molecular Dynamics Simulations for Anisotropic Thermal Conductivity of Borophene.** *Computers, Materials & Continua*, 63(2):813-823, 2020.

35. Angran Li, Ruijia Chen, Amir Barati Farimani, Yongjie Jessica Zhang. **Reaction Diffusion System Prediction Based on Convolutional Neural Network**. *Scientific Reports*, 10:3894, 2020.
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17. Wenyan Wang, Yongjie Zhang, Michael A. Scott, Thomas J.R. Hughes. **Converting an Unstructured Quadrilateral Mesh to a Standard T-Spline Surface**. *ICES Report 10-50, The University of Texas at Austin*. 2010.
18. Yuri Bazilevs, J. R. Gohean, Thomas J.R. Hughes, Robert D. Moser, Yongjie Zhang. **Patient-Specific Isogeometric Fluid-Structure Interaction Analysis of Thoracic Aortic Blood Flow due to Implantation of the Jarvik 2000 Left Ventricular Assist Device**. *ICES Report 08-14, The University of Texas at Austin*. 2008.
19. Jorgen Isaksen, Yuri Bazilevs, Trond Kvamsdal, Yongjie Zhang, Jon Harald Kaspersen, Knut Waterloo, Bertil Romner, Tor Ingebrigtsen. **Determination of Wall Tension in Cerebral Artery Aneurysms by Numerical Simulation**. *ICES Report 07-18, The University of Texas at Austin*. 2007.
20. Jason F. Shepherd, Claurissa J. Tuttle, Claudio T. Silva, Yongjie Zhang. **Quality Improvement and Feature Capture in Hexahedral Meshes**. *SCI Institute Technical Report UUSCI-2006-029, University of Utah*. 2006.
21. Yongjie Zhang, Guoliang Xu, Chandrajit L. Bajaj. **Quality Meshing of Implicit Solvation Models of Biomolecular Structures**. *ICES Technical Report 04-61, The University of Texas at Austin*, 2004.
22. Wing Kam Liu, Grace Chen, Xiaodong Wang, Yongjie Zhang, Chandrajit L. Bajaj, Thomas J.R. Hughes. **A Study of a Three-Dimensional Heart Model Using Immersed Continuum Method**. *ICES Technical Report, The University of Texas at Austin*, 2004.
23. Yongjie Zhang, Chandrajit L. Bajaj. **Finite Element Meshing for Cardiac Analysis**. *ICES Technical Report 04-26, The University of Texas at Austin*, 2004.
24. Yongjie Zhang, Chandrajit L. Bajaj, Bong-Soo Sohn. **Adaptive Multiresolution and Quality 3D Meshing from Imaging Data**. *CS and ICES Technical Report (TR-02-63, 02-42), The University of Texas at Austin*, 2002.

#### FOUNDER AND OWNER

A Start-up company HexSpline3D LLC, Pennsylvania

#### DISCLOSURES OF INTELLECTUAL PROPERTIES:

1. Yongjie Jessica Zhang, Xuan Liang, Anthony Rollett, Jonathan Cagan, Angran Li, Lisha White. **Isogeometric Analysis-Based Design for Cross-Flow Heat Exchanger Considering Additive Manufacturing Printability Constraint**. Provisional Patent Application No. 63/325,675, 2022.
2. Yongjie Zhang, Xiaodong Wei, Aishwarya Pawar, Kangkang Hu, Lei Liu, Tao Liao, Xinghua Liang, Wenyan Wang, Jin Qian. **Image-Based Mesh Generation and Volumetric Spline Modeling for Finite Element and Isogeometric Analysis Applications**. Disclosure of Intellectual Property (Source Code/Copyrights/APPS), CMU, 2017.
3. Arjun S. Kumar, Pratiti Mandal, Shawn E Litster, Yongjie Zhang. **(Model-Based) Image Segmentation of Nanoscale Zernike Phase Contrast X-ray Computed Tomography Images**. Disclosure of Intellectual Property, CMU, 2017.
4. Yongjie Zhang, Xinghua Liang. **An Octree-Based Dual Contouring Method for Triangular and Tetrahedral Mesh Generation with Guaranteed Angle Range**. Disclosure of Intellectual Property, CMU, 2013.
5. Yongjie Zhang, Lei Liu, Thomas J. R. Hughes, Michael A. Scott, Thomas W. Sederberg. **Volumetric T-spline Construction Using Boolean Operations**. Disclosure of Intellectual Property, CMU, 2013.

#### SELECTED INVITED SEMINARS, PLENARY LECTURES, KEYNOTES AND SHORT COURSES:

1. Workshop on Generative AI in Engineering Design Optimization. The Lorentz Center, Leiden, The Netherlands. May/June, 2025.

2. Modeling Traffic Jam and Growth Process of Neurons Using Isogeometric Analysis and Physics-Informed Neural Network. Workshop on Finite Elements for Cell and Tissue Morphogenesis. Fréjus (French Riviera), France. Sep. 9-13, 2024.
3. Topology Optimization, Residual Deformation and Lattice Support Structure Design for Additive Manufacturing. Dagstuhl Seminar on Geometric Modeling: Challenges for Additive Manufacturing, Design and Analysis, Schloss Dagstuhl – Leibniz-Zentrum für Informatik in Germany. June 9-14, 2024.
4. Image-Based Modeling, Volumetric Parameterization and Isogeometric Analysis with Novel Engineering Applications. Department of Civil and Environmental Engineering Seminar Series “Frontiers in Computational Mechanics”, Princeton University. December 11, 2023.
5. Modeling Traffic Jam and Growth Process of Neurons Using Isogeometric Analysis and Physics-Informed Neural Network. ASME IMECE: CONCAM Distinguished Lectures on Computational Mechanics. New Orleans, LA. Oct. 29-Nov. 2, 2023.
6. Modeling Traffic Jam and Growth Process of Neurons Using Isogeometric Analysis and Physics-Informed Neural Network. 21<sup>st</sup> International Association for Mathematics and Computers in Simulation (IMACS) World Congress. Rome, Italy. September 11-15, 2023. Keynote Lecture (virtual)
7. Modeling Traffic Jam and Growth Process of Neurons Using Isogeometric Analysis and Physics-Informed Neural Network. Mathematical Mechanical Biology: Old School and New School, Methods and Applications, Biomechanics Workshop of Programme Uncertainty Quantification and Stochastic Modeling of Materials, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK. July 31-August 4, 2023. Invited Speaker
8. Modeling Traffic Jam and Growth Process of Neurons Using Isogeometric Analysis and Physics-Informed Neural Network. SIAM International Meshing Roundtable Workshop. Amsterdam, Netherlands. March 6-9, 2023. Plenary Lecture
9. Modeling Traffic Jam and Growth Process of Neurons Using Isogeometric Analysis and Physics-Informed Neural Network. Department of Civil & Environmental Engineering, University of Illinois Urban-Champaign. Nov 28, 2022. Seminar
10. Modeling Traffic Jam and Growth Process of Neurons Using Isogeometric Analysis and Physics-Informed Neural Network. Department of Aerospace and Mechanical Engineering, University of Notre Dame. Nov 15, 2022. Seminar
11. Data-Driven Isogeometric Analysis Applications in Additive Manufacturing and Neuron Computation. 10th International Conference on Isogeometric Analysis. Banff, Canada. November 6-9, 2022. Plenary Lecture
12. Image-Based Mesh Generation and Volumetric Spline Modeling for Isogeometric Analysis with Engineering Applications. Siemens Lecture Series on Geometry and Mesh Generation. September 22, 2022. Virtual Seminar
13. Machine Learning Enhanced Simulation and PDE-Constrained Optimization for Material Transport Control in Neurons. 21st International Workshop on Combinatorial Image Analysis (IWCIA 2022). July 13-15, 2022. Virtual Keynote Lecture
14. Material Transport Simulation in Complex Neurite Networks Using Isogeometric Analysis and Machine Learning Techniques. The 7<sup>th</sup> International Conference on Computational and Mathematical Biomedical Engineering (CMBE22). Politecnico di Milano, Campus Bovisa, Milan, Italy. June 27-29, 2022. Keynote Lecture
15. Intracellular Material Transport Simulation in Neurons Using Isogeometric Analysis, Deep Learning and PDE-Constrained Optimization. Thematic Track on Artificial Intelligence and High-Performance Computing for Advanced Simulations" (AIHPC4AS), The 22<sup>nd</sup> International Conference on Computational Science (ICCS). London, UK. June 21-23, 2022. Keynote Lecture
16. Machine Learning Enhanced Simulation and PDE-Constrained Optimization for Material Transport Control in Neurons. CVPR2022 Workshop and Challenge: Deep Learning for Geometric Computing. June 20, 2022. Hybrid. Keynote Lecture
17. Machine Learning Enhanced Simulation and PDE-Constrained Optimization for Material Transport Control in Neurons. The 8<sup>th</sup> European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS). Oslo, Norway. June 5-9, 2022. Semi-Plenary Lecture
18. Machine Learning Enhanced Simulation and PDE-Constrained Optimization for Material Transport Control in Neurons. Transforming Transplant Initiative Seminar Series, Carnegie Mellon University and Mayo Clinic. May 27, 2022. Virtual Seminar



19. Machine Learning Enhanced Simulation and PDE-Constrained Optimization for Material Transport Control in Neurons. Department of Mechanical Engineering, University of British Columbia, “Distinguished Speaker” Seminar Series. January 20, 2022. Virtual
20. An Isogeometric Analysis Based Topology Optimization Framework for Additive Manufacturing of 2D Cross-Flow Heat Exchangers. Dagstuhl Seminar on Geometric Modeling: Interoperability and New Challenges, Schloss Dagstuhl – Leibniz-Zentrum für Informatik in Germany. Nov. 21-26, 2021. Virtual
21. Unstructured Spline Modeling for Isogeometric Analysis with Engineering Applications. MIT’s Graphics and Vision Seminar. MIT. September 14, 2021. Virtual Seminar
22. Integrating Design with Analysis. NSF Workshop on Democratizing Manufacturing Accessibility for Designers (DEMAND) “Ubering” for Manufacturing. Virtual Meeting, organized by Jian Cao, Northwestern University. August 5, 2021. Virtual Panelist
23. Volumetric Spline Modeling for Isogeometric Analysis: Software Development and Engineering Applications. Workshop on the Theory and Application of Isogeometric Analysis. Jilin University, Changchun, China. July 20-22, 2021. Virtual Plenary Talk
24. Volumetric Spline Modeling for Isogeometric Analysis: Software Development and Engineering Applications. 2021 JST CREST Research Area [Mathematical Information Platform] Project Kickoff. International Conference “Evolving Design and Discrete Differential Geometry - Towards Mathematics Aided Geometric Design.” Waseda University, Japan. June 24-26, 2021. Virtual Invited Lecture
25. Material Transport Simulation in Complex Neurite Networks Using Isogeometric Analysis and Machine Learning Techniques. The 21<sup>st</sup> International Conference on Computational Science (ICCS). Krakow, Poland. June 16-18, 2021. Virtual Keynote Lecture
26. Material Transport Simulation in Complex Neurite Networks Using Isogeometric Analysis and Machine Learning Techniques. Biomedical Engineering and Imaging Institute (BMEII)-Radiology seminar series, Icahn School of Medicine at Mount Sinai in New York City. February 8, 2021. Virtual Seminar
27. Material Transport Simulation in Complex Neurite Networks Using Isogeometric Analysis and Deep Learning Techniques. ASME IMECE: CONCAM Distinguished Lectures on Computational Mechanics. Nov. 16-19, 2020. Virtual Lecture
28. Multiscale Modeling for Biomolecular Complexes and Neural Material Transport Simulation Using Deep Learning. A Virtual Conference on AI-Driven Discovery in Biophysics, NSF AI Planning Institute for Data-Driven Discovery in Physics. Nov. 11, 2020. Virtual Lecture
29. Material Transport Simulation in Complex Neurite Networks Using Isogeometric Analysis and Deep Learning Techniques. Biomechanics in Regenerative Medicine (BiRM) Training Program Virtual Lecture. September 29, 2020. Virtual Lecture
30. Material Transport Simulation in Complex Neurite Networks Using Isogeometric Analysis and Deep Learning Techniques. INDAM Workshop: Geometric Challenges in Isogeometric Analysis. Università di Roma La Sapienza, Italy. January 27-31, 2020. Keynote Lecture
31. SimuLearn: Fast and Accurate Simulation for the Iterative Design of Topological Morphing Structures. NextManufacturing, Carnegie Mellon University. November 25, 2019. Seminar. Co-Present with Lining Yao
32. Image-Based Mesh Generation and Volumetric Spline Modeling for Isogeometric Analysis with Engineering Applications. Department of Computer Science, University of Houston. November 22, 2019. Distinguished Seminar. Host: Guoning Chen
33. Volumetric Spline Parameterization for Isogeometric Analysis with Industry Applications. Isogeometric Analysis Conference. Munich, Germany. September 18-20, 2019. Plenary Lecture
34. Image-Based Mesh Generation and Volumetric Spline Modeling for Isogeometric Analysis with Engineering Applications. Department of Computer Science, Hangzhou Dianzi University. August 12, 2019. Seminar. Host: Gang Xu
35. Image-Based Mesh Generation and Volumetric Spline Modeling for Isogeometric Analysis with Engineering Applications. Department of Mathematics, University of Rome “Tor Vergata”. July 23, 2019. Seminar. Host: Carla Manni
36. A Practical Unstructured Spline Modeling Platform for Isogeometric Analysis Applications. SIAM Conference on Computational Geometric Design (SIAM/GD). Vancouver, Canada. June 17-19, 2019. Plenary Lecture
37. Geometric Modeling and Mesh Generation from Scanned Images. 2<sup>nd</sup> IEEE EMBS (Engineering in Medicine & Biology Society) International Summer School on Computer Modeling in Medicine. Charleston, SC. June 9-14, 2019. Short Course

38. Image-Based Mesh Generation and Volumetric Spline Modeling for Isogeometric Analysis with Engineering Applications. 3DS Simulia ABAQUS. March 5, 2019. Seminar. Host: Victor Oancea
39. Image-Based Mesh Generation and Volumetric Spline Modeling for Isogeometric Analysis with Engineering Applications. School of Engineering, Brown University. March 4, 2019. Seminar. Host: Yuri Bazilevs
40. Mesh Generation for Isogeometric Modeling. 27<sup>th</sup> International Meshing Roundtable. Albuquerque, NM. Oct. 1-5, 2018. Short Course
41. Volumetric Spline Parameterization for Isogeometric Analysis in Abaqus. NAVAIR Program Review of Airframe Technology Branch in Structures Division, Washington DC. August 8-10, 2018. Host: Nam Phan
42. Volumetric Spline Parameterization for Isogeometric Analysis with Engineering Applications. 13rd World Congress on Computational Mechanics (WCCM). New York, USA. July 22-27, 2018. Semi-Plenary Lecture
43. Volumetric Spline Parameterization for Isogeometric Analysis with Engineering Applications. State Key Lab of Scientific and Engineering Computing Institute of Computational Mathematics, Chinese Academy Institute of Mathematics. June 28, 2018. Host: Chong Chen
44. Volumetric Spline Parameterization for Isogeometric Analysis with Industry Applications. Isogeometric Analysis and Applications Conference. Delft, The Netherlands. April 23-27, 2018. Keynote Lecture
45. Geometry and Mesh Construction for Composite Defects. NAVAIR Composite Defects Program Review, NIAR. March 29, 2018. Host: Nam Phan
46. Volumetric Spline Parameterization for Isogeometric Analysis with Engineering Applications. Department of Mechanical Engineering, Purdue University. October 5, 2017. Seminar. Host: Ganesh Subbarayan
47. Volumetric Spline Parameterization for Isogeometric Analysis with Engineering Applications. Texas Applied Mathematics and Engineering Symposium. Austin, TX. September 21-23, 2017. Plenary Lecture
48. Volumetric Spline Parameterization for Isogeometric Analysis with Engineering Applications. IEEE The 12<sup>th</sup> International Conference on Computer Science & Education. Houston, TX. August 22-25, 2017. Keynote Lecture
49. Towards a Seamless Integration of CAD and Simulation. International Centre for Mechanical Sciences (CISM). Udine, Italy. June 5-9, 2017. (with Gernot Beer, Giuseppe Massoni, Stephane Bordas, Kai-Uwe Bletzinger, Michael Scott) Short Course
50. Volumetric T-Spline Parameterization for Isogeometric Analysis with Engineering Applications. The 11<sup>th</sup> International Conference on Geometric Modeling and Processing (GMP 2017). Xiamen, China. April 17-19, 2017. Plenary Lecture
51. Image-Based Mesh Generation and Volumetric T-Spline Modeling for Isogeometric Analysis with Engineering Applications. Department of Mechanical Engineering, University of Connecticut. March 31, 2017. Seminar. Host: Ying Li
52. Image-Based Mesh Generation and Volumetric T-Spline Modeling for Isogeometric Analysis with Engineering Applications. Michigan Institute for Computational Discovery & Engineering, University of Michigan. March 17, 2017. Seminar. Host: Krishnakumar Garikipati
53. Image-Based Mesh Generation and Volumetric T-Spline Modeling for Isogeometric Analysis. Department of Automotive Engineering, Tsinghua University. Beijing, China. July 30, 2016. Seminar. Host: Dihua Guan and Zhichao Hou
54. Image-Based Mesh Generation and Volumetric T-Spline Modeling for Isogeometric Analysis. Department of Computer Science, Seoul National University. Seoul, Korean. July 28, 2016. Seminar. Host: Myung-Soo Kim
55. Volumetric T-Spline Parameterization for Isogeometric Analysis. Department of Computer Science, Technion, Israel Institute of Technology. Haifa, Israel. May 29, 2016. Seminar. Host: Gershon Elber
56. Volumetric T-Spline Parameterization for Isogeometric Analysis. Department of Computer Science, Wayne State University. Detroit, MI. Feb. 23, 2016. Seminar. Host: Jing Hua
57. Weighted T-Spline with Applications in Isogeometric Analysis. Applied Mathematics Seminar, Department of Mathematics, Brigham Young University. Provo, UT. Nov. 12, 2015. Seminar. Host: Emily Evans
58. High-Fidelity Image-based Geometric Modeling and Mesh Generation for Engineering Applications. 5<sup>th</sup> ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing (VipIMAGE 2015). Tenerife Island, Canary Islands, Spain. Oct. 19-21, 2015. Plenary Talk
59. Image-based Mesh Generation and Volumetric T-Spline Construction for Isogeometric Analysis. 24<sup>th</sup> International Meshing Roundtable. Austin, TX. Oct. 11-14, 2015. Short Course
60. Volumetric T-spline Construction for Isogeometric Analysis. The 13<sup>th</sup> US National Congress on Computational Mechanics. San Diego, CA, July 26-30, 2015. Semi-Plenary Lecture

61. Image-based Mesh Generation and Volumetric T-Spline Construction. Computer Science Department, Old Dominion University. Norfolk, VA. Apr. 24, 2015. Seminar. Host: Nikos Chrisochoides
62. Image-based Mesh Generation and Volumetric T-Spline Construction. Department of Mechanical Engineering, Carnegie Mellon University. Pittsburgh, PA. Feb. 27, 2015.
63. Image-based Mesh Generation and Volumetric T-Spline Construction. Department of Mechanical & Industrial Engineering, University of Toronto. Ontario, Canada. Dec. 5, 2014. Distinguished Seminar. Host: Jean Zu
64. Volumetric T-spline Construction for Isogeometric Analysis. Chinagraph 2014 & CAD/CG'14. Wuhan, China, Oct. 17-19, 2014. Keynote Lecture
65. Volumetric T-spline Construction for Isogeometric Analysis. I3MC Seminar Series, AICES Graduate School, RWTH-Aachen University. Oct. 12, 2014. Host: Prof. Stephanie Elgeti
66. New Advances in Volumetric T-Spline Construction. Computational Mechanics and Signatures Program Peer Review, ONR. May 28-29, 2014. Host: Dr. Steve Turner
67. New Advances in Volumetric T-spline Construction: Feature Preservation/Alignment. Isogeometric Analysis and Application. Annweiler am Trifels, Germany. April 7-10, 2014. Keynote Talk
68. Image-based Mesh Generation and Volumetric T-Spline Construction. *22<sup>nd</sup> International Meshing Roundtable*. Orlando, FL. Oct. 13-16, 2013. Short Course
69. Image-based Mesh Generation and Volumetric T-Spline Construction. Department of Mathematics, University of Sciences and Technology in China. July 2, 2013. Host: Prof. Falai Chen
70. Volumetric T-Spline Construction Using Boolean Operations. State Key Lab of Scientific and Engineering Computing Institute of Computational Mathematics, Chinese Academy Institute of Mathematics. June 27, 2013. Host: Prof. Guoliang Xu
71. Image-based Mesh Generation and Volumetric T-Spline Construction. Department of Computer Sciences, University of Hong Kong. June 13, 2013. Host: Prof. Wenping Wang
72. Image-based Mesh Generation and Volumetric T-Spline Construction. State Key Lab of Scientific and Engineering Computing Institute of Computational Mathematics, Chinese Academy Institute of Mathematics. April 28, 2013. Host: Prof. Guoliang Xu
73. Advance in All-Hexahedral Meshing and Solid T-Spline Construction. Computational Mechanics and Signatures Program Peer Review, ONR. April 23-24, 2013. Host: Dr. Steve Turner.
74. Advance in All-Hexahedral Meshing and Solid T-Spline Construction. Computational Mechanics and Signatures Program Peer Review, ONR. April 9-10, 2012. Host: Dr. Steve Turner.
75. Image-Based Geometric Modeling and Mesh Generation for Complicated Domains. Computational Mechanics & Advanced Materials Group. Department of Structural Mechanics, University of Pavia, Italy. June 24, 2011. Host: Alessandro Reali
76. From B-Reps to All-Hexahedral Meshes and Solid T-Splines. Computational Mechanics and Signatures Program Peer Review, ONR. April 25-26, 2011. Host: Dr. Luise Couchman.
77. Image-Based Geometric Modeling and Mesh Generation for Complicated Domains. Department of Mechanical Engineering, Carnegie Mellon University. March 25, 2011.
78. Challenges in Image-Based Geometric Modeling and Mesh Generation. Cardiac Biomechanics Research Center, Department of Bioengineering, University of California, San Diego. February 18, 2011. Host: Andrew McCulloch
79. Challenges in Image-Based Geometric Modeling and Mesh Generation. Operations Research and Industrial Engineering Seminar Series, Department of Mechanical Engineering, The University of Texas at Austin. January 14, 2011. Host: Dragan Djurdjanovic
80. Challenges in Image-Based Geometric Modeling and Mesh Generation. State Key Lab of Scientific and Engineering Computing Institute of Computational Mathematics, Chinese Academy Institute of Mathematics. December 23, 2010. Host: Prof. Guoliang Xu
81. Challenges in Image-Based Geometric Modeling and Mesh Generation. School of Mechanical Engineering and Automation, Beihang University. December 21, 2010. Host: Prof. Gang Zhao
82. Mesh Generation in Mechanics Application. State Key Lab of Scientific and Engineering Computing Institute of Computational Mathematics, Chinese Academy Institute of Mathematics. December 16, 2010. Host: Prof. Guoliang Xu
83. Dynamic Lung Modeling and Tumor Tracking Using Deformable Image Registration and Geometric Modeling. State Key Lab of Scientific and Engineering Computing Institute of Computational Mathematics, Chinese Academy Institute of Mathematics. December 15, 2010. Host: Prof. Guoliang Xu

84. High-Fidelity Geometric Modeling and Mesh Generation for GBCD/GBED & Mechanics Characterization of Polycrystalline Materials. CMU-MRSEC MIMP Seminar. Nov. 9, 2010
85. Automatic and Robust All-Hexahedral Mesh Generation from B-Reps with Sharp Feature Preservation. ONR-YIP Commencement. Oct. 15, 2010.
86. Geometric Modeling from Medical Imaging Data. International Symposium CompIMAGE'10 – Computational Modeling of Objects Presented in Images: Fundamentals, Methods, and Applications. Buffalo, NY. May 5-7, 2010. Plenary Talk
87. Solid T-Spline Construction and From CAD to All-Hexahedral Mesh Generation. Computational Mechanics and Signature Program Review, ONR. April 22-23, 2010. Host: Dr. Luise Couchman.
88. High Fidelity Geometric Modeling and Mesh Generation from Volumetric Imaging Data with Applications in Computational Biomechanics. Penner Biomechanics Seminar Series. Department of Mechanical and Aerospace Engineering, University of California, San Diego. Jan. 27, 2010. Host: Prof. Alison Marsden.
89. High Fidelity Geometric Modeling and Mesh Generation from Volumetric Imaging Data with Applications in Computational Biomechanics. Department of Engineering Mechanics. Tsinghua University, China. Dec. 17, 2009. Host: Prof. Gexue Ren.
90. High Fidelity Geometric Modeling and Finite Element Mesh Generation from Volumetric Imaging Data with Applications in Computational Mechanics. Scientific Computing and Numerics (SCAN) Seminar. Sponsored jointly by the Departments of Mathematics and Computer Science, Cornell University. November 9, 2009. Host: Profs. Wilkins Aquino and David Bindel.
91. All-Hex Mesh Generation from B-Rep Representation. Naval Research Lab. Oct. 2, 2009. Host: Luise Couchman, Saikat Dey.
92. Subject-Specific Modeling for ACL/PCL of the Knee. Muscular Skeleton Research Center (MSRC), Univ. of Pittsburgh. June 26, 2009. Host: Prof. Savio Woo.
93. All-Hex Mesh Generation from B-Rep Representation with Feature Preservation. Naval Research Lab. June 5, 2009. Host: Saikat Dey.
94. Analysis-Suitable Geometric Modeling and Mesh Generation for Navy Structures. Computational Mechanics and Signature Program Review, ONR. April 13, 2009. Host: Dr. Luise Couchman.
95. High Fidelity Finite Element Meshing for Fluid-Structure Interaction Analysis of Aneurysms. Departments of Neurosurgery and Neurology, University Hospital of Norway, Tromsø, Norway. Jan. 31, 2009. Host: Dr. Tor Ingebrigtsen.
96. High Fidelity Finite Element Meshing for Fluid-Structure Interaction Analysis of Aneurysms. SINTEF, Norway. Jan. 30, 2009. Host: Dr. Trond Kvamsdal.
97. Finite Element Mesh Generation from Volumetric Data for Simulation-Based Engineering and Sciences. Mechanics, Materials and Computation (MMC) seminar series, Civil and Environmental Engineering, Carnegie Mellon University. Sept. 5, 2008. Host: Prof. Kaushik Dayal.
98. Boundary/Finite Element Meshing from Imaging Data with Applications. Naval Research Lab, Washington DC. Jun. 9, 2008. Host: Dr. Saikat Dey.
99. Mesh Generation with Applications in Computational Mechanics. Army Research Lab, Aberdeen, MD. June 4, 2008. Host: Dr. John Clayton.
100. Mesh Generation with Applications in Computational Mechanics. Naval Research Lab, Washington DC. Feb. 1, 2008. Host: Dr. Andrew Geltmather.
101. Boundary/Finite Element Meshing from Volumetric Data with Applications. Dept. of Civil and Environmental Engineering, University of Pittsburgh, PA. Jan. 11, 2008. Host: Prof. Jeen-Shang Lin.
102. Mesh Generation for Computational Biomedicine. MuscularSkeleton Research Center (MSRC), Univ. of Pittsburgh. Oct. 8, 2007. Host: Prof. Savio Woo.
103. Boundary/Finite Element Meshing from Volumetric Data with Applications. Allegheny General Hospital. Sept. 13, 2007. Host: Dr. Robert Biederman.
104. Boundary/Finite Element Meshing from Volumetric Data with Applications. Applied Research Laboratories, University of Texas at Austin. June, 2007. Host: Prof. Mark Hamilton.
105. Boundary/Finite Element Meshing from Volumetric Data with Applications. Livermore Software Technology Corporation (LSTC). Livermore, CA. May 17-18, 2007.
106. Boundary/Finite Element Meshing from Volumetric Data with Applications. The University of Texas M.D. Anderson Cancer Center. Houston, TX. May 11, 2007.



107. Boundary/Finite Element Meshing from Volumetric Data with Applications. Dept. of Mechanical Science and Engineering, University of Illinois at Urban-Champaign. Urban-Champaign, IL. March 8-9, 2007.
108. Boundary/Finite Element Meshing from Volumetric Data with Applications. Dept. of Engineering Science and Engineering, Virginia Tech. Blacksburg, VA. Feb. 21-23, 2007.
109. Boundary/Finite Element Meshing from Volumetric Data with Applications. Dept. of Mechanical Engineering, Louisiana Tech. Ruston, LA. Jan. 28-30, 2007.
110. Boundary/Finite Element Meshing from Volumetric Data with Applications. ExxonMobil. Houston, TX. Jan. 4-5, 2007.
111. Boundary/Finite Element Meshing from Volumetric Data with Applications. Dept. of Mechanical Engineering, Carnegie Mellon University. Pittsburgh, PA. Dec. 11-12, 2006.
112. Boundary/Finite Element Meshing from Volumetric Data with Applications. ABAQUS. Providence, RI. 2006.
113. Boundary/Finite Element Meshing from Volumetric Data with Applications. CFDRC. Huntsville, AL. 2006.

#### SELECTED CONFERENCE PRESENTATIONS:

1. Yongjie Jessica Zhang, Angran Li. **Incorporating Experimental Neurite Features into An IGA Neuron Growth Model and CNN-Based Prediction.** *Symposium of Data-Driven Modeling and Simulation for Computational Biomedicine, International Mechanical Engineering Congress and Exposition (IMECE)*. New Orleans, LA. October 29-November 2, 2023. **Invited Talk**
2. Jessica Zhang, Hua Tong, Kuanren Qian, Eni Halilaj. **SRL-Assisted AFM: Generating Planar Unstructured Quadrilateral Meshes with Supervised and Reinforcement Learning-Assisted Advancing Front Method.** *Advances in Computational Mechanics - A Conference Celebrating the 80th Birthday of Prof. Thomas J.R. Hughes*. Austin, TX. October 22-25, 2023.
3. Jessica Zhang, Angran Li, Kuanren Qian. **Modeling Traffic Jam and Growth Process of Neurons Using Isogeometric Analysis and Physics-Informed Neural Network.** *Symposium of Scientific Machine Learning for Computational Mechanics (SciML4CM), 17th US National Congress on Computational Mechanics (USNCCM17)*. Albuquerque, NM. July 23-27, 2023.
4. Kuanren Qian, Xuan Liang, Maggie Chen, Yongjie Jessica Zhang. **Residual Deformation Learning and Mitigation for Component Printability Enhancement.** *17th US National Congress on Computational Mechanics (USNCCM17)*. Albuquerque, NM. July 23-27, 2023. **Poster**
5. Hua Tong, Eni Halilaj, Yongjie Jessica Zhang. **Generating Planar Unstructured Quadrilateral Meshes with Advancing Front Method and Neural Networks.** *17th US National Congress on Computational Mechanics (USNCCM17)*. Albuquerque, NM. July 23-27, 2023. **Poster**
6. Kuanren Qian, Ashlee Liao, Shixuan Gu, Victoria Webster-Wood, Yongjie Jessica Zhang. **Incorporating Experimental Neurite Features into an IGA Neuron Growth Model and CNN-based Prediction.** *Symposium of Imaging-Based Methods in Computational Medicine, 17th US National Congress on Computational Mechanics (USNCCM17)*. Albuquerque, NM. July 23-27, 2023.
7. Hua Tong, Eni Halilaj, Yongjie Jessica Zhang. **Generating Planar Unstructured Quadrilateral Control Meshes with Advancing Front Method and Neural Networks for IGA.** *Symposium of Industrial Applications of IGA, 17th US National Congress on Computational Mechanics (USNCCM17)*. Albuquerque, NM. July 23-27, 2023.
8. Jessica Zhang, Angran Li, Kuanren Qian. **Modeling Traffic Jam and Growth Process of Neurons Using Isogeometric Analysis and Physics-Informed Neural Network.** *Thematic Session of New IGA Technologies, ROM, AI and Digital Twins, 11th International Conference on Isogeometric Analysis*. Lyon, France. June 18-21, 2023.
9. Jessica Zhang. **Incorporating Experimental Neurite Features into an IGA Neuron Growth Model and CNN-based Prediction.** *Workshop in Honor of Leszek Demkowicz's 70th Birthday*. The University of Texas at Austin, Austin, TX. April 11, 2023.
10. Yongjie Jessica Zhang, Angran Li. **Deep Learning of Complex Material Distribution Patterns During Neural Material Transport.** *Symposium of Data-Driven Modeling and Simulation for Computational Biomedicine, International Mechanical Engineering Congress and Exposition (IMECE)*. Columbus, OH. October 31-November 3, 2022. **Invited Talk**
11. Jessica Zhang. **Isogeometric Analysis-Based Physics-Informed Graph Neural Network for Studying Traffic Jam in Neurons.** *Monie A. Ferst Award Symposium in Honor of Thomas J.R. Hughes*. Georgia Institute of Technology. October 3, 2022. **Invited Talk**

12. Xuan Liang, Lisha White, Jonathan Cagan, Anthony D. Rollett, Yongjie Jessica Zhang. **Design and Printability Evaluation of Heat Exchangers for Laser Powder Bed Fusion Process.** *ASME International Design Engineering Technical Conference & Computers and Information in Engineering Conference (IDETC/CIE)*. St. Louis, MI. Aug 14-17, 2022.
13. X. Liang, L. White, J. Cagan, A. D. Rollett, and Y. J. Zhang. **Design and Printability Evaluation of Heat Exchangers with Respect to Laser Powder Bed Fusion Additive Manufacturing.** *The 15th World Congress on Computational Mechanics & the 8th Asian Pacific Congress on Computational Mechanics (WCCM-APCOM2022)*. Yokohama, Japan. July 31-August 5, 2022. Virtual
14. Ahmed Salah Mohamed, Ashlee S. Liao, Yongjie Jessica Zhang, Victoria A. Webster-Wood, and Joseph Najem. **Design of a Biomolecular Neuristor Circuit for Bioinspired Control.** *Living Machines*. July 19-22, 2022.
15. Yongjie Jessica Zhang, Yuxuan Yu, Kuanren Qian, Humphrey Yang, Lining Yao. **Hybrid IGA-FEA of Fiber Reinforced Thermoplastic Composites for Forward Design of AI-Enabled 4D Printing.** *Journal of Materials Processing Technology Special Issue on Artificial Intelligence in Advanced Manufacturing Processes Webinar*. April 24, 2022. Virtual
16. Juan Cao, Xiaoyi Zhang, Jiannan Huang, Zhonggui Chen, Yongjie Jessica Zhang. **Polygonal Finite Element Based Content-Aware Image Warping.** *Computational Visual Media Conference*. Beijing, China. April 7-9, 2022.
17. Jessica Zhang. **An Isogeometric Analysis Based Topology Optimization Framework for Additive Manufacturing of 2D Cross-Flow Heat Exchangers.** *Dagstuhl Seminar on Geometric Modeling: Interoperability and New Challenges, Schloss Dagstuhl – Leibniz-Zentrum für Informatik in Germany*. Nov. 21-26, 2021. **Invited Talk**
18. Yongjie Jessica Zhang, Angran Li. **PDE-Constrained Optimization and Data-Driven Simulation for the Material Transport Control in Neurons.** *Symposium of Data-Driven Modeling and Simulation for Computational Biomedicine, International Mechanical Engineering Congress and Exposition (IMECE)*. USA. November 1-4, 2021. **Invited Talk**
19. Yongjie Jessica Zhang, Angran Li. **Machine Learning Enhanced Simulation and PDE-Constrained Optimization for Material Transport Control in Neurons.** *Oden Institute Workshop Honoring 95<sup>th</sup> Birthday of Prof. Ivo Babuska. Albuquerque, NM*. October 11, 2021. **Invited Talk**
20. Angran Li, Yongjie Jessica Zhang. **PDE-Constrained Optimization and Data-Driven Simulation for the Material Transport Control in Neurons.** *Symposium of Data-Driven Modeling and Simulation for Computational Biomedicine, 1st IACM Conference for Machine Learning and Digital Twins for Computational Science and Engineering*. Mission Bay, San Diego, CA, USA. September 26-29, 2021. **Invited Talk**
21. X. Liang, A. Li, A. D. Rollett, and Y. J. Zhang. **Topology optimization of 2D heat exchangers based on isogeometric analysis.** *8th International Conference on Isogeometric Analysis (IGA 2021)*, Lyon, France, September 26-29, 2021. Virtual
22. Jessica Zhang. **Material Transport Simulation in Complex Neurite Networks Using Isogeometric Analysis and Machine Learning Techniques.** *Symposium of Advances and Applications of Mechanistic Machine Learning, Reduced-Order and Data-Driven Analyses, 16th US National Congress on Computational Mechanics (USNCCM16)*. Chicago, IL. July 25-29, 2021. **Invited Keynote Talk**
23. Xuan Liang, Angran Li, Anthony D. Rollett, Yongjie Jessica Zhang. **Topology Optimization of 2D Heat Exchangers for Additive Manufacturing based on Isogeometric Analysis and Machine Learning.** *Symposium of Modeling and Simulation for Additive Manufacturing in Computational Mechanics. 16th US National Congress on Computational Mechanics (USNCCM16)*. Chicago, IL. July 25-29, 2021.
24. Kuanren Qian, Aishwarya Pawar, Ashlee Liao, Victoria Webster-Wood, Yongjie Jessica Zhang. **Modeling Multi-Neuron Growth with Dendritic Spines using Isogeometric Collocation and Phase Field Model.** *Symposium of Phase-field Modeling and Simulation in Computational Mechanics. 16th US National Congress on Computational Mechanics (USNCCM16)*. Chicago, IL. July 25-29, 2021.
25. Angran Li, Yongjie Jessica Zhang. **A PDE-Constrained Optimization Model for the Material Transport Control in Neurons.** *Symposium of Imaging-Based Methods in Computational Medicine, 16th US National Congress on Computational Mechanics (USNCCM16)*. Chicago, IL. July 25-29, 2021. **Invited Talk**
26. Yuxuan Yu, Xiaodong Wei, Angran Li, Jialei Ginny Liu, Jeffrey He, Yongjie Jessica Zhang. **HexGen and Hex2Spline: Polycube-based Hexahedral Mesh Generation and Spline Modeling for Isogeometric Analysis Applications in LS-DYNA.** *Symposium of Industrial Application of IGA, 16th US National Congress on Computational Mechanics (USNCCM16)*. Chicago, IL. July 25-29, 2021. **Invited Talk**

27. Juan Cao, Zhihao Wang, Xiaodong Wei, Yongjie Jessica Zhang. **TCB-Spline Based Isogeometric Method with High Quality Parameterization**. *Symposium of Isogeometric Spline Techniques on Complex Geometries, 16th US National Congress on Computational Mechanics (USNCCM16)*. Chicago, IL. July 25-29, 2021. **Invited Talk**
28. Xuan Liang, Angran Li, Anthony D. Rollett, Yongjie Jessica Zhang. **Topology Optimization of 2D Heat Exchangers for Improving Heat Exchange Performance based on Isogeometric Analysis**. *Session of isogeometric methods in design optimization, 14th World Congress on Structural and Multidisciplinary Optimization (virtual)*. June 13-18, 2021. **Invited Talk**
29. Angran Li, Yongjie Jessica Zhang. **PDE-Constrained Optimization and Data-Driven Simulation for the Material Transport Control in Neurons**. *47<sup>th</sup> Northeast Bioengineering Conference*. USA. March 23-25, 2021.
30. Constance M. Robbins, Kuanren Qian, Yongjie Jessica Zhang, Jana M. Kainerstorfer. **Combined mechanical and optical simulation of the effect of compression on breast-tumor mimicking software phantoms**. Annual McGowan Institute Retreat, Pittsburgh, PA. March 9-11, 2021. **Poster**
31. Jessica Zhang. **Material Transport Simulation in Complex Neurite Networks Using Isogeometric Analysis and Machine Learning Techniques**. *Symposium of Unstructured Spline Technologies for Isogeometric Analysis with Applications, WCCM 2020 (14th World Congress on Computational Mechanics)*. Virtual Congress. Jan 11-15, 2021. **Invited Talk**
32. Jin Xie, Jinlan Xu, Zhenyu Dong, Gang Xu, Chongyang Deng, Bernard Mourrain, Yongjie Jessica Zhang. **Interpolatory Catmull-Clark Volumetric Subdivision over Unstructured Hexahedral Meshes for Modeling and Simulation Applications**. *International Conference on Geometric Modeling and Processing*. Okinawa, Japan. Sep. 23-25, 2020.
33. M. Tajdari, A. Pawar, A. Maqsood, S. Saha, Y.J. Zhang, J.F. Sarwark, W.K. Liu. **Artificial Intelligence Data-driven Model for Adolescent Idiopathic Scoliosis: Analysis, Prediction and Treatment**. *Integrating Machine Learning with Multiscale Modeling for Biomedical, Biological, and Behavioral Systems (2019 ML-MSM)*. Bethesda, Maryland (NIH Campus). Oct. 24-25, 2019. **Poster**
34. Jessica Zhang. **An Isogeometric Analysis Computational Platform for Material Transport Simulation in Complex Neurite Networks**. *International Conference on Biomechanics and Medical Engineering (ICBME 2019) Yuan-Cheng Fung 100<sup>th</sup> Birthday Celebration*. San Diego, CA. Sept. 20-23, 2019. **Invited Talk**
35. Yongjie Jessica Zhang. **A Practical Unstructured Spline Modeling Platform for Isogeometric Analysis Applications**. *Symposium of Unstructured Spline Techniques for Isogeometric Analysis with Applications in The 15th US National Congress on Computational Mechanics (USNCCM)*. Austin, TX. July 28-Aug. 1, 2019. **Invited Talk**
36. Hugo Casquero, Xiaodong Wei, Deepesh Toshniwal, Angran Li, Thomas J.R. Hughes, Josef Kiendl, Yongjie Jessica Zhang. **Integrating the Design of Smooth Surfaces with Arbitrary Topology and Kirchhoff-Love Shell Analysis**. *Symposium of Non-Standard Formulations and Discretizations for Thin-Walled Structures in The 15th US National Congress on Computational Mechanics (USNCCM)*. Austin, TX. July 28-Aug. 1, 2019. **Keynote Talk**
37. Aishwarya Pawar, Yongjie Jessica Zhang. **B-Spline Based Neuron Reconstruction Using Level Set Method**. *Symposium of Computational Methods in Image Analysis in The 15th US National Congress on Computational Mechanics (USNCCM)*. Austin, TX. July 28-Aug. 1, 2019. **Invited Talk**
38. Angran Li, Yongjie Jessica Zhang. **Reaction Diffusion System Prediction Based on Convolutional Neural Network**. *Symposium of Data-Driven Modeling Using Uncertainty Quantification, Machine Learning and Optimization in The 15th US National Congress on Computational Mechanics (USNCCM)*. Austin, TX. July 28-Aug. 1, 2019.
39. Yuxuan Yu, Yongjie Jessica Zhang, Kenji Takizawa, Tayfun E. Tezduyar, Takfumi Sasaki. **Mesh Optimization for Space-Time Isogeometric Analysis of Coronary Blood Flow with Vessel Wall Motion**. *Symposium of Computational Fluid-Structure Interaction and Moving Boundaries and Interfaces in The 15th US National Congress on Computational Mechanics (USNCCM)*. Austin, TX. July 28-Aug. 1, 2019. **Invited Talk**
40. Zhonggui Chen, Jinxin Huang, Juan Cao, Yongjie Jessica Zhang. **Interpolatory Curve Modeling with Feature Points Control**. *Solid and Physical Modeling*. Vancouver, Canada. June 17-19, 2019.
41. Aishwarya Pawar, Yongjie Jessica Zhang. **Joint Image Segmentation and Registration Based on a Dynamic Level Set Approach Using Truncated Hierarchical B-Splines**. *Minisymposium of Non-Standard Spline Approximation Schemes in SIAM Conference on Computational Geometric Design (SIAM/GD)*. Vancouver, Canada. June 17-19, 2019. **Invited Talk**
42. Hugo Casquero, Xiaodong Wei, Deepesh Toshniwal, Angran Li, Thomas J.R. Hughes, Josef Kiendl, Yongjie Jessica Zhang. **Integrating the Design of Smooth Surfaces with Arbitrary Topology and Kirchhoff-Love**



- Shell Analysis.** *Minisymposium of Volumetric parameterization and mesh generalization* in SIAM Conference on Computational Geometric Design (SIAM/GD). Vancouver, Canada. June 17-19, 2019. **Invited Talk**
43. Yuxuan Yu, Humphrey Yang, Haolin Liu, Kuanren Qian, Jianzhe Gu, Lining Yao, Yongjie Jessica Zhang. **SimuLearn: Combining Finite Element Simulation and Machine Learning for Inverse Design and Manufacture of Self-Assembling Viscoelastic Materials.** *Minisymposium of V-rep and IgA for Design and Additive Manufacturing* in SIAM Conference on Computational Geometric Design (SIAM/GD). Vancouver, Canada. June 17-19, 2019. **Invited Talk**
  44. Angran Li, Ruijia Chen, Amir Barati Farimani, Yongjie Jessica Zhang. **Reaction Diffusion System Prediction Based on Convolutional Neural Network.** *Annual Data Science Forum featuring Machine Learning in Science and Engineering*, Georgia Institute of Technology, June 9-12, 2019.
  45. Hugo Casquero, Carles Bona-Casas, Hector Gomez, Yongjie Jessica Zhang, **The divergence-conforming immersed boundary method: Solids of codimension zero and one.** *Coupled Problems*. Spain. June 3-5, 2019. **Invited Talk**
  46. Hugo Casquero, Carles Bona-Casas, Hector Gomez, Yongjie Jessica Zhang, **The divergence-conforming immersed boundary method.** *Structure Preserving Discretizations: FEMs, Splines, and IGA*. University of Pittsburgh, PA. May 31-June 1, 2019.
  47. Jessica Zhang. **Blended B-Spline Construction on Unstructured Quadrilateral and Hexahedral Meshes with Optimal Convergence Rates in Isogeometric Analysis.** *Structure Preserving Discretizations: FEMs, Splines, and IGA*. University of Pittsburgh, PA. May 31-June 1, 2019.
  48. Jianzhe Gu, David Edward Breen, Jenny Hu, Lifeng Zhu, Ye Tao, Charles Tyson Van de Zande, Guanyun Wang, Yongjie Jessica Zhang, Lining Yao. **Geodesy: Self-Rising 2.5D Tiles by Printing along 2D Geodesic Closed Path.** *ACM CHI Conference on Human Factors in Computing Systems*. Glasgow, UK. May 4-9, 2019. Bulletin of the American Physical Society.
  49. Hugo Casquero, Carles Bona-Casas, Hector Gomez, Yongjie Jessica Zhang, **The divergence-conforming immersed boundary method: Solids of codimension zero and one.** *20th International Conference on Fluid Flow Problems*, Chicago, IL March 31-April 3, 2019.
  50. Yongjie Jessica Zhang. **A Practical Unstructured Spline Modeling Platform for Isogeometric Analysis Applications.** *Banff International Research Station Workshop on Isogeometric Splines: Theory and Applications*. Banff, Canada. Feb. 24-Mar. 1, 2019. **Invited Talk**
  51. Jessica Zhang. **Volumetric Spline Parameterization for Isogeometric Analysis with Industry Applications.** *IGA2018: Integrating Design and Analysis*. Austin, TX. Oct. 10-12, 2018.
  52. Aishwarya Pawar, Yongjie Jessica Zhang, Cosmin Anitescu, Timon Rabczuk. **Joint Image Segmentation and Registration Based on a Dynamic Level Set Approach Using Truncated Hierarchical B-splines.** *IGA2018: Integrating Design and Analysis*. Austin, TX. Oct. 10-12, 2018.
  53. Michael Johnson, Benjamin Urick, Travis Sanders, Shoalie S. Hossain, Yongjie Zhang, Tom Hughes. **A CAD-Integrated Patient-Specific Vascular Modeling Pipeline for IGA.** *IGA2018: Integrating Design and Analysis*. Austin, TX. Oct. 10-12, 2018.
  54. Yuxuan Yu, Yongjie Zhang, Kenji Takizawa, Tayfun Tezduyar. **CFD-Based Optimizatio of Data-Driven Mesh Deformation.** *IGA2018: Integrating Design and Analysis*. Austin, TX. Oct. 10-12, 2018.
  55. Angran Li, Xiaoqi Chai, Yongjie Jessica Zhang, Ge Yang. **Numerical Simulation of Material Transport in Complex Neurons Using Isogeometric Analysis.** *IGA2018: Integrating Design and Analysis*. Austin, TX. Oct. 10-12, 2018.
  56. Bin Li, Jianzhong Fu, Yongjie Jessica Zhang. **An Octree-Based Adaptive Subdivision Algorithm for Slicing Heterogeneous Solid Using Trivariate T-Splines.** *IGA2018: Integrating Design and Analysis*. Austin, TX. Oct. 10-12, 2018.
  57. Aishwarya Pawar, Yongjie Jessica Zhang, Cosmin Anitescu, Yue Jia, Timon Rabczuk. **DTHB3D\_Reg: Dynamic Truncated Hierarchical B-Spline Based 3D Nonrigid Image Registration.** *IGA2018: Integrating Design and Analysis*. Austin, TX. Oct. 10-12, 2018. **Poster**
  58. Angran Li, Yuxuan Yu, Xiaodong Wei, Yongjie Jessica Zhang. **Centroidal Voronoi Tessellation-Based Volumetric Spline Construction for Isogeometric Analysis.** *IGA2018: Integrating Design and Analysis*. Austin, TX. Oct. 10-12, 2018. **Poster**
  59. Yuxuan Yu, Humphrey Yang, Jianzhe Gu, Yongjie Jessica Zhang, Lining Yao. **4D Printing: Inverse Design and Manufacture of Self-Assembling Fiber-Reinforced Composites with Maching Learning.** *IGA2018: Integrating Design and Analysis*. Austin, TX. Oct. 10-12, 2018. **Poster**



60. Jessica Zhang. **Volumetric Spline Parameterization for Isogeometric Analysis with Industry Applications.** Workshop of Geometric and Image Data Sciences: Big Data Analysis, Graphics and Visualization on the Occasion of Celebrating the 60<sup>th</sup> Birthday of Chandrapi Bajaj. Austin, TX. Sep. 14, 2018. **Invited Talk**
61. Xiaodong Wei, Yongjie Jessica Zhang, Deepesh Toshniwal, Hendrik Speleers, Xin Li, Carla Manni, John Evans, Thomas J.R. Hughes. **Blended B-Spline Construction on Unstructured Quadrilateral and Hexahedral Meshes with Optimal Convergence Rates in Isogeometric Analysis.** *Isogeometric Methods – A Symposium in Honor of Tom Hughes, 13rd World Congress on Computational Mechanics (WCCM)*. New York, USA. July 22-27, 2018. **Invited Talk**
62. Aishwarya Pawar, Yongjie Jessica Zhang, Cosmin Anitescu, Timon Rabczuk. **Joint Image Segmentation and Registration Based on a Dynamic Level Set Approach Using Hierarchical B-splines.** *Symposium of Computational Bio-Imaging and Visualization, 13rd World Congress on Computational Mechanics (WCCM)*. New York, USA. July 22-27, 2018. **Invited Talk**
63. Angran Li, Xiaoqi Chai, Ge Yang, Yongjie Jessica Zhang. **Simulation of Material Transport in Complex Geometry of Neurons Using Isogeometric Analysis.** *Isogeometric Methods – A Symposium in Honor of Tom Hughes, 13rd World Congress on Computational Mechanics (WCCM)*. New York, USA. July 22-27, 2018.
64. Hugo Casquero, Yongjie Jessica Zhang, Carles Bona-Casas, Hector Gomez. **The Divergence-Conforming Immersed Boundary Method.** *Symposium of Immersed Methods for CFD and Fluid-Structure Interaction, 13rd World Congress on Computational Mechanics (WCCM)*. New York, USA. July 22-27, 2018. **Invited Talk**
65. Juan Cao, Zhonggui Chen, Xiaodong Wei, Yongjie Jessica Zhang. **A Smooth Finite Element Method Based on Bivariate Simplex Splines on Triangular Configurations.** *Isogeometric Methods – A Symposium in Honor of Tom Hughes, 13rd World Congress on Computational Mechanics (WCCM)*. New York, USA. July 22-27, 2018.
66. Cosmin Anitescu, Yue Jia, Yongjie Jessica Zhang, Timon Rabczuk. **An Adaptive IGA Collocation Method with A Recovery-Based Error Estimator.** *Isogeometric Methods – A Symposium in Honor of Tom Hughes, 13rd World Congress on Computational Mechanics (WCCM)*. New York, USA. July 22-27, 2018.
67. Adam R. Updegrove, Nathan M. Wilson, Yongjie J. Zhang, Shawn C Shadden. **Creation of Analysis-Suitable Non-Uniform Rational B-Splines (NURBS) Volumes from Discrete Image-Based Models.** *13rd World Congress on Computational Mechanics (WCCM)*. New York, USA. July 22-27, 2018.
68. Hugo Casquero, Yongjie Jessica Zhang, Carles Bona-Casas, Hector Gomez. **The Divergence-Conforming Immersed Boundary Method.** *SIAM Annual Meeting*. Portland, Oregon, USA. July 9-13, 2018.
69. Adam R. Updegrove, Nathan M. Wilson, Yongjie J. Zhang, Shawn C Shadden. **Novel and Automatic Conversion of Image-Based Models into Analysis Representations Suitable for Isogeometric Analysis.** *8th World Congress of Biomechanics (WCB)*. Dublin Ireland. July 8-12, 2018.
70. Yongjie Jessica Zhang. **Volumetric Spline Parameterization for Isogeometric Analysis with Engineering Applications.** Tsinghua Mechanics Workshop, School of Aerospace and Aeronautics. Tsinghua University, Beijing, China. July 2-3, 2018. **Invited Talk**
71. Xiaodong Wei, Yongjie Jessica Zhang, Deepesh Toshniwal, Hendrik Speleers, Xin Li, Carla Manni, John Evans, Thomas J.R. Hughes. **Blended B-Spline Construction on Unstructured Quadrilateral and Hexahedral Meshes with Optimal Convergence Rates in Isogeometric Analysis.** *Minisymposium on Mathematical Aspects of Isogeometric Analysis in ECCM-ECCFD 2018 Conference*. Glasgow, UK. June 11-15, 2018. **Invited Talk**
72. Yanyang Xiao, Zhonggui Chen, Juan Cao, Yongjie Jessica Zhang, Cheng Wang. **Optimal Power Diagrams via Function Approximation.** *Solid and Physical Modeling*. Bilbao, Spain. June 11-13, 2018.
73. Zhonggui Chen, Tieyi Zhang, Juan Cao, Yongjie Jessica Zhang, Cheng Wang. **Point Cloud Resampling Using Centroid Voronoi Tessellation Methods.** *Solid and Physical Modeling*. Bilbao, Spain. June 11-13, 2018.
74. Aishwarya Pawar, Yongjie Jessica Zhang, Cosmin Anitescu, Yue Jia, Timon Rabczuk. **DTHB3D\_Reg: Dynamic Truncated Hierarchical B-Spline Based 3D Nonrigid Image Registration.** *Minisymposium of Splines in Imaging, SIAM Conference on Imaging Science*. Bologna, Italy. June 5-8, 2018. **Invited Talk**
75. Zhonggui Chen, Wen Chen, Jianzhi Guo, Juan Cao, Yongjie Jessica Zhang. **Orientation Field Guided Line Abstraction for 3D Printing.** *The 12<sup>th</sup> International Conference on Geometric Modeling*. Aachen, Germany. April 9-11, 2018.
76. Xiaoqi Chai, Douglas Qian, Qinle Ba, Angran Li, Yongjie Jessica Zhang, Ge Yang. **Image-Based Measurement of Cargo Traffic Flow in Complex Neurite Networks.** *IEEE International Conference on Image Processing*. Beijing, China. Sept. 17-20, 2017.
77. Hugo Casquero, Carles Bona-Casas, Hector Gomez, Yongjie Zhang. **Divergence-Conforming and Fully-Implicit Simulation of Microscale Blood Flow.** *Invited Session on IGA of Fluids and Fluid-Structure Interaction in Isogeometric Analysis Conference*. Pavia, Italy. Sep. 11-13, 2017. **Invited Talk**

78. Yongjie Zhang. **Integrating CAD with Abaqus: A Practical Isogeometric Analysis Software Platform for Industrial Applications.** *Symposium of Isogeometric Methods for Complex Geometries and Multi-Physics Systems in The 14th US National Congress on Computational Mechanics (USNCCM)*. Montreal, Canada. July 17-20, 2017. **Invited Talk**
79. Hugo Casquero, Carles Bona-Casas, Hector Gomez, Yongjie Zhang. **Divergence-Conforming and Fully-Implicit Simulation of Cell-Scale Blood Flow.** *Symposium of Mechanobiology of Cells, Vesicles and Biomembranes in The 14th US National Congress on Computational Mechanics (USNCCM)*. Montreal, Canada. July 17-20, 2017. **Invited Talk**
80. Hugo Casquero, Carles Bona-Casas, Hector Gomez, Yongjie Jessica Zhang. **Divergence-Conforming and Fully-Implicit Simulation of Cell-Scale Blood Flow.** *The 14th US National Congress on Computational Mechanics (USNCCM)*. Montreal, Canada. July 17-20, 2017. **Poster**
81. Travis Sanders, Benjamin Urick, Shaolie Hossain, Jessica Zhang, Thomas J.R. Hughes. **CAD-Based Patient-Specific Vascular NURBS Modeling for Isogeometric Analysis.** *Symposium of Imaged-Based Models for Biomedical Applications in The 14th US National Congress on Computational Mechanics (USNCCM)*. Montreal, Canada. July 17-20, 2017.
82. Yongjie Jessica Zhang. **Integrating CAD with Abaqus: A Practical Isogeometric Analysis Software Platform for Industrial Applications.** *Mini-symposium of Geometric Representations for Integrating Isogeometric Design and Analysis in Solid and Physical Modeling Symposium (SPM) 2017*. Berkeley, CA. June 19-21, 2017.
83. Aishwarya Pawar, Yongjie Jessica Zhang, Cosmin Anitescu, Yue Jia, Timon Rabczuk. **DTHB3D\_Reg: Dynamic Truncated Hierarchical B-spline Based 3D Nonrigid Image Registration.** *Solid and Physical Modeling Symposium (SPM) 2017*. Berkeley, CA. June 19-21, 2017. **Poster**
84. Hugo Casquero, Carles Bona-Casas, Yongjie Zhang, Hector Gomez. **Continuum-Based Modeling and Simulations of Biological Cells Embedded in Blood Plasma.** *Coupled Problems 2017*. Rhodes Island, Greece. Jun. 12-14, 2017.
85. Yongjie Zhang. **Integrating CAD with Abaqus: A Practical Isogeometric Analysis Software Platform for Industrial Applications.** *Coupled Problems 2017*. Rhodes Island, Greece. Jun. 12-14, 2017. **Invited Talk**
86. Xiaodong Wei, Yongjie Jessica Zhang, Thomas J.R. Hughes. **Volumetric Truncated Hierarchical T-spline Construction on Unstructured Hexahedral Meshes for IGA Applications.** *Engineering Mechanics Institute Conference (EMI 2017)*. San Diego, CA. June 4-7, 2017. **Invited Talk**
87. Aishwarya Pawar, Yongjie Zhang, Yue Jia, Cosmin Anitescu, Timon Rabczuk. **3D Nonrigid Image Registration Using Truncated Hierarchical B-splines.** *5<sup>th</sup> International Conference on Computational and Mathematical Biomedical Engineering*. Pittsburgh, PA. April 10-12, 2017.
88. Hugo Casquero, Carles Bona-Casas, Yongjie Zhang, Hector Gomez. **Dynamics and Rheology of Biological Cells in Flow.** *5<sup>th</sup> International Conference on Computational and Mathematical Biomedical Engineering*. Pittsburgh, PA. April 10-12, 2017.
89. Yongjie Zhang. **Integrating CAD with Abaqus: A Practical Isogeometric Analysis Software Platform for Industrial Applications.** *Symposium of Geometric Modeling, Mesh Generation and Adaptation, 19th International Conference on Finite Elements in Flow Problems (FEF 2017)*. Rome, Italy. April 5-7, 2017. **Invited Talk**
90. Yongjie Zhang. **Recent Developments in Volumetric T-spline Parameterization.** *USACM Conference on Isogeometric Analysis and Meshfree Methods*. La Jolla, CA. Oct. 10-12, 2016.
91. Xiaodong Wei, Yongjie Jessica Zhang, Thomas J.R. Hughes. **Truncated Hierarchical Volumetric Splines over Unstructured Hexahedral Meshes.** *USACM Conference on Isogeometric Analysis and Meshfree Methods*. La Jolla, CA. Oct. 10-12, 2016.
92. Aishwarya Pawar, Yongjie Zhang Yue Jia, Xiaodong Wei, Timon Rabczuk, Chiu Ling Chan, Cosmin Anitescu. **Adaptive FEM-Based Nonrigid Image Registration Using Truncated Hierarchical B-Splines.** *USACM Conference on Isogeometric Analysis and Meshfree Methods*. La Jolla, CA. Oct. 10-12, 2016.
93. Yongjie Zhang. **Advances and Challenges in Volumetric T-spline Parameterization for Isogeometric Analysis.** *Symposium of Isogeometric Analysis and Analysis-Suitable Geometry in 12<sup>th</sup> World Congress on Computation Mechanics (WCCM XII)*. Seoul, Korea. July 24-29, 2016. **Keynote Talk**
94. Yongjie Zhang. **Advances and Challenges in Volumetric T-spline Parameterization for Isogeometric Analysis.** *7<sup>th</sup> International Workshop on High-Order Finite Element and Isogeometric Methods*. Jerusalem, Israel. May 30 – June 2, 2016. **Invited Talk**
95. Yongjie Zhang. **Truncated T-splines with Applications in Isogeometric Analysis.** *15<sup>th</sup> International Conference on Approximation Theory*. San Antonio, TX. May 22-25, 2016. **Invited Talk**

96. Xinge Li, Guoliang Xu, Yongjie Jessica Zhang. **Localized Discrete Laplace-Beltrami Operator over Triangular Mesh**. 10th International Conference on Geometric Modeling and Processing (GMP 2016). San Antonio, TX. Apr. 11-13, 2016. **Invited Talk**
97. Yongjie Zhang. **Truncated T-spline Modeling for Isogeometric Analysis**. *ICES/USACM Workshop on Advances in Mathematics of Finite Elements in Honor of Ivo Babuska's 90<sup>th</sup> Birthday*. Austin, TX. March 21-22, 2016. **Poster**
98. Yongjie Zhang. **High-Fidelity Image-based Geometric Modeling and Mesh Generation for Engineering Applications**. *5<sup>th</sup> ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing (VipIMAGE 2015)*. Tenerife Island, Canary Islands, Spain. Oct. 19-21, 2015. **Plenary Talk**
99. Aishwarya Pawar, Yongjie Zhang, Xiaodong Wei, Yue Jia, Timon Rabczuk, Chiu Ling Chan, Cosmin Anitescu. **Non-rigid Image Registration Using Hierarchical B-splines**. *VipImage (V ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing)*. Tenerife, Canary Islands, Spain. Oct. 19-21, 2015.
100. Tao Liao, Xinge Li, Guoliang Xu, Yongjie Jessica Zhang. **Secondary Laplace Operator and Generalized Giaquinta-Hildebrandt Operator with Applications on Surface Segmentation and Smoothing**. *SIAM Conference on Geometric & Physical Modeling*. Salt Lake City, UT. Oct. 12-14, 2015.
101. Yongjie Zhang. **Polycube-based Volumetric T-spline Construction for Isogeometric Analysis**. *Mini-Symposium of Isogeometric Analysis on Complex Geometries in SIAM Conference on Geometric & Physical Modeling*. Salt Lake City, UT. Oct. 12-14, 2015.
102. Xiaodong Wei, Yongjie Zhang, Thomas Hughes, Michael Scott. **Truncated Hierarchical Catmull-Clark Subdivision**. *Mini-Symposium of Numerical Integration Schemes for Isogeometric Discretizations in SIAM Conference on Geometric & Physical Modeling*. Salt Lake City, UT. Oct. 12-14, 2015.
103. Lei Liu, Yongjie Zhang, Xiaodong Wei. **Weighted T-spline and Its Application in Isogeometric Analysis**. *Mini-Symposium of Isogeometric Representation and Analysis in SIAM Conference on Geometric & Physical Modeling*. Salt Lake City, UT. Oct. 12-14, 2015.
104. Kangkang Hu, Yongjie Jessica Zhang. **Surface Segmentation and Polycube Construction Based on Generalized Centroidal Voronoi Tessellation**. *24<sup>th</sup> International Meshing Roundtable*. Austin, TX. Oct. 12-14, 2015. **Research Notes**.
105. Lei Liu, Yongjie Jessica Zhang, Xiaodong Wei. **Handling Extraordinary Nodes with Weighted T-spline Basis Functions**. *24<sup>th</sup> International Meshing Roundtable*. Austin, TX. Oct. 12-14, 2015.
106. Yongjie Zhang. **Volumetric T-spline Construction for Isogeometric Analysis**. *The 13<sup>th</sup> US National Congress on Computational Mechanics (USNCCM)*. San Diego, CA. July 26-30, 2015. **Semi-Plenary Lecture**
107. Yongjie Zhang, Xiaodong Wei, Thomas Hughes, Michael Scott. **Truncated Hierarchical Catmull-Clark Subdivision with Local Refinement**. *Symposium of Isogeometric Methods in The 13<sup>th</sup> US National Congress on Computational Mechanics (USNCCM)*. San Diego, CA. July 26-30, 2015.
108. Xiaodong Wei, Yongjie Zhang. **Truncated T-splines**. *Symposium of Isogeometric Methods in The 13<sup>th</sup> US National Congress on Computational Mechanics (USNCCM)*. San Diego, CA. July 26-30, 2015.
109. Yicong Lai, Joshua Chen, Lei Liu, Yongjie Jessica Zhang, Eugene Fang, Jim Lua. **Rhino 3D to Abaqus Design-Through-Analysis: T-spline Based Isogeometric Analysis Software Solution**. *Symposium of Isogeometric Methods in The 13<sup>th</sup> US National Congress on Computational Mechanics (USNCCM)*. San Diego, CA. July 26-30, 2015.
110. Lei Liu, Yongjie Zhang. **Weighted T-spline and Its Application in Isogeometric Analysis**. *Symposium of Isogeometric Methods in The 13<sup>th</sup> US National Congress on Computational Mechanics (USNCCM)*. San Diego, CA. July 26-30, 2015.
111. Yongjie Zhang, Lei Liu and Xiaodong Wei. **Weighted T-spline and Its Application in Reparameterizing Trimmed NURBS Surfaces**. *Symposium of Isogeometric Methods in Computational Mechanics, Engineering Mechanics Institute Conference (EMI 2015)*. Stanford, CA. June 16-19, 2015.
112. Yongjie Zhang, Lei Liu and Xiaodong Wei. **Weighted T-spline and Its Application in Reparameterizing Trimmed NURBS Surfaces**. *III International Conference on Isogeometric Analysis (IGA 2015)*. Trondheim, Norway. June 1-3, 2015.
113. Yongjie Zhang. **New Advances in Volumetric T-spline Construction for Isogeometric Analysis**. *Symposium of Geometric Modeling and Mesh Generation for Finite Element Applications and Isogeometric Analysis, 18th International Conference on Finite Elements in Flow Problems (FEF 2015)*. Taipei, Taiwan. March 16-18, 2015.



114. Lei Liu, Yongjie Jessica Zhang, Yang Liu, Wenping Wang. **Feature-Preserving T-mesh Construction Using Skeleton-based Polycubes**. *Symposium on Solid and Physical Modeling*. Hong Kong. Oct. 26-28, 2014.
115. Yongjie Jessica Zhang. **Volumetric T-spline Construction for Isogeometric Analysis**. Chinagraph 2014 & CAD/CG'14. Wuhan, China, Oct. 17-19, 2014. Keynote Lecture
116. Lei Liu, Yongjie Jessica Zhang, Xiaodong Wei. **NURBS Surface Reparameterization Using Truncated T-splines**. *23<sup>rd</sup> International Meshing Roundtable*. London, UK. Oct. 12-15, 2014.
117. Arjun Kumar, Pratiti Mandal, Yongjie Zhang, Shawn Litster. **Image Restoration of Phase Contrast Nano Scale X-ray CT Images**. *CompIMAGE (Computer Modeling of Objects Presented in Images: Fundamentals, Methods, and Applications)*. Pittsburgh, PA. Sept. 3-5, 2014.
118. Kangkang Hu, Yongjie Zhang. **Extended Edge-Weighted Centroidal Voronoi Tessellation for Image Segmentation**. *CompIMAGE (Computer Modeling of Objects Presented in Images: Fundamentals, Methods, and Applications)*. Pittsburgh, PA. Sept. 3-5, 2014.
119. Yongjie Zhang. **Volumetric T-spline Construction for Complex Geometries**. *Symposium of Isogeometric Methods in 11<sup>th</sup> World Congress on Computation Mechanics (WCCM XI)*. Barcelona, Spain. July 20-25, 2014. **Keynote Talk**
120. Yongjie Zhang. **Volumetric T-spline Construction from Boundary Representations**. *6<sup>th</sup> International Workshop on High-Order Finite Element and Isogeometric Methods*. Frauenchiemsee Island, Germany. July 15-18, 2014. **Invited Talk**
121. Tao Liao, Guoliang Xu, Yongjie Zhang. **Structure-Aligned Guidance Estimation in Surface Parameterization Using Eigenfunction-based Cross Field**. *Geometric Modeling and Processing*. Singapore, June 29-July 1, 2014.
122. Xiaodong Wei, Yongjie Zhang. **Truncated Hierarchical Catmull-Clark Subdivision with Local Refinement for Arbitrary Topology**. *Workshop on Structured Meshing: Theory, Application and Evaluation, the 27<sup>th</sup> Conference on Computer Animation and Social Agents (CASA 2014)*. Houston, TX. May 26-28, 2014.
123. Tao Liao, Wenyan Wang, Yongjie Zhang. **Adaptive and Anisotropic T-mesh Generation from Cross Field**. *Workshop on Structured Meshing: Theory, Application and Evaluation, the 27<sup>th</sup> Conference on Computer Animation and Social Agents (CASA 2014)*. Houston, TX. May 26-28, 2014.
124. Yongjie Zhang. **New Advances in Volumetric T-spline Construction**. *Isogeometric Analysis and Applications (IGAA 2014)*. Annweiler am Trifels, Germany. Apr. 7-10, 2014. **Plenary Talk**
125. Yongjie Zhang. **Challenges and Advances in Image-Based Geometric Modeling and Mesh Generation**. *Advances in Computational Fluid-Structure Interaction and Flow Simulation – A Conference Celebrating the 60<sup>th</sup> Birthday of Tayfun E. Tezduyar*. Tokyo, Japan. Mar. 19-21, 2014. **Invited Talk**
126. Yongjie Zhang. **Multicore-CPU Or GPU Accelerated Geometry Modeling for Proteins**. *Minisymposium: Recent Advances in Parallel Meshing Algorithms in SIAM Conference on Parallel Processing for Scientific Computing*. Portland, OR. Feb. 18-21, 2014. **Invited Talk**
127. Yongjie Zhang. **Volumetric T-spline Construction for Complex Geometries**. *Isogeometric Analysis: Integrating Design and Analysis (IGA 2014)*. Austin, TX. Jan. 8-10, 2014. **Invited Talk**
128. Yongjie Zhang. **Volumetric T-spline Construction from Boundary Representations**. *Symposium of Isogeometric Methods, 5<sup>th</sup> Asia Pacific Congress on Computational Mechanics & 4<sup>th</sup> International Symposium on Computational Mechanics (APCOM & ISCM 2013)*. Singapore. Dec. 11-14, 2013. **Invited Talk**
129. Yongjie Zhang. **Volumetric T-spline Construction from Boundary Representations**. *Symposium of Isogeometric Representation and Analysis, SIAM Conference on Geometric & Physical Modeling (GD/SPM13)*. Denver, CO. Nov. 11-14, 2013. **Invited Talk**
130. Qing Pan, Guoliang Xu, Yongjie Zhang. **A Unified Method for Hybrid Subdivision Surface Design Using Geometric Partial Differential Equations**. *SIAM Conference on Geometric & Physical Modeling (GD/SPM13)*. Denver, CO. Nov. 11-14, 2013.
131. Kangkang Hu, Jin Qian, Yongjie Zhang. **Adaptive All-Hexahedral Mesh Generation Based on A Hybrid Octree and Bubble Packing**. *22<sup>nd</sup> International Meshing Roundtable*. Orlando, FL. Oct. 13-16, 2013.
132. Lei Liu, Yongjie Zhang, Thomas J.R. Hughes, Mike A. Scott, Thomas W. Sederberg. **Volumetric T-Spline Construction Using Boolean Operations**. *22<sup>nd</sup> International Meshing Roundtable*. Orlando, FL. Oct. 13-16, 2013.
133. Yongjie Zhang. **Volumetric T-spline Construction from Boundary Representations**. *12<sup>th</sup> US National Congress on Computational Mechanics (USNCCM)*. Raleigh, NC. Jul. 22-25, 2013. **Keynote Talk**
134. Lei Liu, Yongjie Zhang. **Volumetric T-spline Construction Using Boolean Operations**. *12<sup>th</sup> US National Congress on Computational Mechanics (USNCCM)*. Raleigh, NC. Jul. 22-25, 2013. **Invited Talk**



135. Tao Liao, Yongjie Zhang. **GPU-accelerated Multi-scale Modeling for Biomolecular Complexes**. 12<sup>th</sup> US National Congress on Computational Mechanics (USNCCM). Raleigh, NC. Jul. 22-25, 2013. **Invited Talk**
136. Jin Qian, Yongjie Zhang. **Anisotropic Mesh Generation Using Octree-based Dual Contouring**. 12<sup>th</sup> US National Congress on Computational Mechanics (USNCCM). Raleigh, NC. Jul. 22-25, 2013. **Keynote Talk**
137. Yongjie Zhang. **Multi-core CPU or GPU-accelerated Multiscale Modeling for Biomolecular Complexes**. *NSF CyberBridges Workshop: Developing the Next Generation of Cyberinfrastructure Faculty for Computational and Data-enabled Science and Engineering*. Arlington, VA. July 15-16, 2013. **Invited Poster**
138. Yongjie Zhang. **Volumetric T-spline Construction from Boundary Representations**. *Advances in Computational Mechanics – A Conference Celebrating the 70<sup>th</sup> Birthday of Thomas J.R. Hughes*. San Diego, CA. Feb. 24-27, 2013.
139. Yongjie Zhang. **Image-based Mesh Generation and Volumetric T-spline Construction**. *ITN-INSIST Workshop*. Valencia, Spain. Feb. 4-6, 2013. **Invited Talk**
140. Wenyan Wang, Yongjie Zhang, Lei Liu, Thomas J.R. Hughes. **Solid T-spline Construction from Boundary Triangulation with Arbitrary Genus Topology**. *ACM Symposium on Solid and Physical Modeling*. University of Burgundy, Dijon, France. Oct. 29-31, 2012.
141. Yongjie Zhang, Xinghua Liang, Guoliang Xu. **A Robust 2-Refinement Algorithm for Octree and Rhombic Dodecahedral Tree Based All-Hexahedral Mesh Generation**. *21<sup>th</sup> International Meshing Roundtable*. San Jose, CA. Oct. 7-10, 2012.
142. Hong Zhang, Yuanfeng Jiao, Yongjie Zhang, Kenji Shimada. **Automated Segmentation of Cerebral Aneurysms Based on Conditional Random Field and Gentle Adaboost**. *Workshop on Mesh Processing in Medical Image Analysis in Conjunction with 14<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Nice, France. Oct. 1-5, 2012.
143. Yongjie Zhang, Yiming Jing, Xinghua Liang, Guoliang Xu, Lei Dong. **Dynamic Lung Modeling and Tumor Tracking Using Deformable Image Registration and Geometric Smoothing**. *CompImage (Computational Modeling of Objects Presented in Images: Fundamentals, Methods and Applications)*. Rome, Italy. Sept. 5-7, 2012.
144. Hong Zhang, Yuanfeng Jiao, Erick Johnson, Yongjie Zhang, Kenji Shimada. **Modeling Anisotropic Material Property of Cerebral Aneurysms for Fluid-Structure Interaction Computational Simulation**. *CompImage (Computational Modeling of Objects Presented in Images: Fundamentals, Methods and Applications)*. Rome, Italy. Sept. 5-7, 2012.
145. Guoliang Xu, Juelin Leng, Yanmei Zheng, Yongjie Zhang. **Biomedical Image Interpolation Based on Multi-resolution Transformations**. *CompImage (Computational Modeling of Objects Presented in Images: Fundamentals, Methods and Applications)*. Rome, Italy. Sept. 5-7, 2012.
146. Rui Zhang, Khee Poh Lam, Shi-Chune Yao, Yongjie Zhang. **Annual Coupled EnergyPlus and Computational Fluid Dynamics Simulation of Natural Ventilation**. *International Building Performance Simulation Association (IBPSA)-USA's SimBuild*. Madison, WI. Aug. 1-3, 2012.
147. Rui Zhang, Khee Poh Lam, Shi-Chune Yao, Yongjie Zhang. **Coupled EnergyPlus and CFD for Annual Natural Ventilation Simulation**. *International Building Performance Simulation Association (IBPSA)-USA's SimBuild*. Madison, WI. Aug. 1-3, 2012.
148. Yongjie Zhang. **Resolving Topology Ambiguity for Complicated Domains**. *NU2012 Summer Workshop on Recent Advances in Computational Mechanics in honor of Professor Wing Kam Liu's 60<sup>th</sup> Birthday*. Evanston, IL. July 22-23, 2012. **Invited Talk**
149. Yongjie Zhang. **Solid T-spline Construction from Boundary Representations**. *SIAM Annual Meeting, Symposium of Isogeometric Analysis*. Minneapolis, MN. July 9-13, 2012. **Invited Talk**
150. Yongjie Zhang, Jin Qian. **Resolving Topology Ambiguity for Complicated Domains**. *SIAM Annual Meeting, Symposium of Recent Advances in Biomedical Modeling, Simulation, and Visualization*. Minneapolis, MN. July 9-13, 2012. **Invited Talk**
151. Yongjie Zhang. **A Parallel Computational Framework of Multiscale Geometric Modeling and Mesh Generation for Cardiac Biomechanics Applications**. *NSF CyberBridges Workshop: Developing the Next Generation of Cyberinfrastructure Faculty for Computational and Data-enabled Science and Engineering*. Arlington, VA. June 25-26, 2012. **Invited Poster**
152. Rui Zhang, Khee Poh Lam, Yongjie Zhang. **Conformal and Adaptive Hexahedral-Dominant Mesh Generation for CFD Simulation of Architecture Applications**. *Winter Simulation Conference (WSC)*, Phoenix, Arizona. Dec. 11-14, 2011.

153. Jin Qian, Yongjie Zhang. **Dual Contouring for Domains with Topology Ambiguity**. *20<sup>th</sup> International Meshing Roundtable*. Paris, France. Oct. 23-26, 2011.
154. Juelin Leng, Yongjie Zhang, Guoliang Xu. **A Novel Geometric Flow-Driven Approach for Quality Improvement of Segmented Tetrahedral Meshes**. *20<sup>th</sup> International Meshing Roundtable*. Paris, France. Oct. 23-26, 2011.
155. Yongjie Zhang, Xinghua Liang, Jun Ma, Yiming Jing, Matt Gonzales, Adarsh Krishnamurthy, Paul Stark, Sanjiv M. Narayan, Andrew McCulloch. **An Atlas-Based Geometry Pipeline for Cardiac Hermite Model Construction**. Workshop on Mesh Processing in Medical Image Analysis in Conjunction with 14<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), Toronto, Canada. Sept. 18-22, 2011.
156. Yongjie Zhang. **Meshing Challenges in Constructing Implicit Solvation Models of Biomolecular Structures**. Second Midwest Conference on Mathematical Models for Images and Surfaces. Michigan State University, MI. Aug.27-28, 2011. **Invited Talk**
157. Yongjie Zhang, Jin Qian. **Automatic All-Hexahedral Mesh Generation from B-Reps for Non-Manifold CAD Assemblies**. 11<sup>th</sup> US National Congress on Computational Mechanics (USNCCM). University of Minnesota, MN. Jul.25-29, 2011. **Invited Talk**
158. Yongjie Zhang, Wenyan Wang. **Converting an Unstructured Quadrilateral Mesh to a T-Spline Surface**. 11<sup>th</sup> US National Congress on Computational Mechanics (USNCCM). University of Minnesota, MN. Jul.25-29, 2011. **Invited Talk**
159. Yongjie Zhang. **Converting Unstructured Quadrilateral Mesh to T-Spline Surface**. Higher Order Finite Element and Isogeometric Methods. Krakow, Poland. Jun. 27-29, 2011. **Invited Talk**
160. Yongjie Zhang. **Meshing Challenges in Constructing Implicit Solvation Models of Biomolecular Structures**. Coupled Problems 2011. Kos Island, Greece. Jun.20-22, 2011. **Invited Talk**
161. Yongjie Zhang. **Challenges in Image-Based Geometric Modeling and Mesh Generation**. 2<sup>nd</sup> International Conference on Computational & Mathematical Biomedical Engineering. George Mason University, Washington DC. Mar.30-Apr.1, 2011. **Invited Talk**
162. Yongjie Zhang. **Meshing Challenges for Patient-Specific Cardiovascular Systems**. 2<sup>nd</sup> International Conference on Computational & Mathematical Biomedical Engineering. George Mason University, Washington DC. Mar.30-Apr.1, 2011. **Invited Talk**
163. Erick Johnson, Yongjie Zhang, Kenji Shimada. **An Equivalent Wall Thickness Estimation for Cerebral Aneurysms**. 2<sup>nd</sup> International Conference on Computational & Mathematical Biomedical Engineering. George Mason University, Washington DC. Mar.30-Apr.1, 2011.
164. Yongjie Zhang. **Guaranteed-Quality All-Quadrilateral Mesh Generation for Planar Domains**. SIAM Conference on Computational Science and Engineering. Reno, Nevada. Feb. 28-Mar.4, 2011. **Invited Talk**
165. Yongjie Zhang, Wenyan Wang, Michael A. Scott, Thomas J.R. Hughes. **Converting an Unstructured Quadrilateral Mesh to a Standard T-Spline Surface**. Isogeometric Analysis 2011: Integrating Design and Analysis. Austin, TX. Jan. 12-15, 2011. **Invited Talk**
166. Yongjie Zhang. **Converting Unstructured Quadrilateral Mesh to T-Spline Surface**. International Congress of Chinese Mathematician. Tsinghua University, Beijing, China. Dec. 17-22, 2010. **Invited Talk**
167. Yongjie Zhang, Wenyan Wang, Xinghua Liang, Yuri Bazilevs, Ming-Chen Hsu, Trond Kvamsdal, Reidar Brekken, Jorgen Isaksen. **Meshing Challenges in Fluid-Structure Interaction Analysis of Cerebral Aneurysms: Wall-Thickness Estimation**. ASME International Mechanical Engineering Congress & Exposition (IMECE). Vancouver, British Columbia. Nov. 12-18, 2010. **Invited Talk**.
168. Xinghua Liang, Yongjie Zhang. **Hexagon-based All-Quadrilateral Mesh Generation with Guaranteed Angle Bounds**. *19<sup>th</sup> International Meshing Roundtable*, pp. 1-22. Chattanooga, TN. Oct. 3-6, 2010.
169. Jin Qian, Yongjie Zhang. **Sharp Feature Preservation in Octree-based All-Hexahedral Mesh Generation for CAD Assembly Models**. *19<sup>th</sup> International Meshing Roundtable*, pp. 243-262. Chattanooga, TN. Oct. 3-6, 2010.
170. Yongjie Zhang. **High-Fidelity Geometric Modeling and Mesh Generation for Biomechanics Applications**. CMU-PITT 2<sup>nd</sup> Annual Biomechanics Day. Sept. 21, 2010. **Invited Talk**.
171. Wenyan Wang, Yongjie Zhang. **T-Spline Construction for Complex Geometries**. 16<sup>th</sup> US National Congress of Theoretical and Applied Mechanics (USNCTAM), State College, PA. June 27-July 2, 2010. **Invited Talk**.
172. Yongjie Zhang. **Geometric Modeling from Medical Imaging Data**. International Symposium CompIMAGE'10 – Computational Modeling of Objects Presented in Images: Fundamentals, Methods, and Applications. Buffalo, NY. May 5-7, 2010. **Keynote Talk**.

173. Yongjie Zhang. **High Fidelity Geometric Modeling and Finite Element Mesh Generation from Volumetric Imaging Data with Applications in Computational Mechanics.** ASME 2010 First Global Congress on NanoEngineering for Medicine and Biology. Houston, TX. Feb. 7-10, 2010. **Invited talk**
174. Yongjie Zhang, Lei Dong. **Dynamic Lung Modeling and Tumor Tracking for Image-Guided Radiation Therapy.** ASME 2010 First Global Congress on NanoEngineering for Medicine and Biology. Houston, TX. Feb. 7-10, 2010. **Invited talk**
175. Jin Qian, Yongjie Zhang, Wenyan Wang, Alexis C. Lewis, M.A. Siddiq Qidwai, Andrew B. Geltmacher. **Quality Improvement of Non-Manifold Hexahedral Meshes for Critical Feature Determination of Microstructure Materials.** *18<sup>th</sup> International Meshing Roundtable*, pp. 211-230. Salt Lake City, Utah. Oct. 25-28, 2009.
176. Xinghua Liang, Mohamed Ebeida, Yongjie Zhang. **Guaranteed-Quality All-Quadrilateral Mesh Generation with Feature Preservation.** *18<sup>th</sup> International Meshing Roundtable*, pp. 45-64. Salt Lake City, Utah. Oct. 25-28, 2009.
177. Mohamed Ebeida, Eric Mestreau, Yongjie Zhang, Saikat Dey. **Mesh Insertion of Hybrid Meshes.** *18<sup>th</sup> International Meshing Roundtable*, pp. 359-376. Salt Lake City, Utah. Oct. 25-28, 2009.
178. Erick Johnson, Yongjie Zhang, Kenji Shimada. **Using Conformal Mapping and Springs to Determine Aneurysm Wall Thickness.** *18<sup>th</sup> International Meshing Roundtable*, pp. 397-414. Salt Lake City, Utah. Oct. 25-28, 2009.
179. Wenyan Wang, Yongjie Zhang. **Wavelets-Based NURBS Simplification, Fairing and Offsetting for Isogeometric Analysis.** *10<sup>th</sup> US National Congress on Computational Mechanics (USNCCM 10)*, Columbus, OH. July 16-19, 2009.
180. Yongjie Zhang, Mohamed Ebeida, Xinghua Liang. **Guaranteed-Quality All-Quadrilateral Mesh Generation with Feature Preservation.** *10<sup>th</sup> US National Congress on Computational Mechanics (USNCCM 10)*, Columbus, OH. July 16-19, 2009.
181. Yongjie Zhang, Jin Qian, Andrew Geltmacher. **Automatic 3D Mesh Generation and Mesh Quality Improvement for Microstructure Materials.** *10<sup>th</sup> US National Congress on Computational Mechanics (USNCCM 10)*, Columbus, OH. July 16-19, 2009.
182. Yongjie Zhang, Xinghua Liang, Lei Dong. **Dynamic Modeling and Bioheat Transfer Analysis of Laser Therapy for Lung Cancer Treatment Planning.** *10<sup>th</sup> US National Congress on Computational Mechanics (USNCCM 10)*, Columbus, OH. July 16-19, 2009.
183. Yongjie Zhang, Wenyan Wang, Xinghua Liang, Yuri Bazilevs, Ming-Chen Hsu, Trond Kvamsdal, Reidar Brekken, Jorgen Isaksen. **High Fidelity Tetrahedral Mesh Generation for Fluid-Structure Interaction Analysis of Aneurysms.** *10<sup>th</sup> US National Congress on Computational Mechanics (USNCCM 10)*, Columbus, OH. July 16-19, 2009.
184. Yongjie Zhang, Wenyan Wang, Xinghua Liang, Yuri Bazilevs, Ming-Chen Hsu, Trond Kvamsdal, Reidar Brekken, Jorgen Isaksen. **High Fidelity Finite Element Mesh Generation for Fluid-Structure Interaction Analysis of Cerebral Aneurysms.** *Summer Bioengineering Conference*, Lake Tahoe, CA. June 17-21, 2009.
185. Yongjie Zhang, Wenyan Wang, Jin Qian. **Error-Bounded Solid NURBS Construction for Navy Structures Using Offsets.** *Marine 2009*, pp. 205-208, Trondheim, Norway. June 15-17, 2009. **Invited talk**
186. Yongjie Zhang, Wenyan Wang, Xinghua Liang, Yuri Bazilevs, Ming-Chen Hsu, Trond Kvamsdal, Reidar Brekken, Jorgen Isaksen. **High Fidelity Finite Element Meshing for Fluid-Structure Interaction Analysis of Aneurysms.** *Coupled Problems 2009*. Ischia Island, Italy. June 8-10, 2009. **Invited talk**
187. Yongjie Zhang, Wenyan Wang, Xinghua Liang, Yuri Bazilevs, Ming-Chen Hsu, Trond Kvamsdal, Reidar Brekken, Jorgen Isaksen. **High Fidelity Finite Element Meshing for Fluid-Structure Interaction Analysis of Cerebral Aneurysms.** *4<sup>th</sup> Annual Carnegie Mellon BME & Biotechnology Research Symposium*, April 23, 2009. **Poster.**
188. Yuri Bazilevs, Victor Carlo, Thomas J.R. Hughes, Yongjie Zhang. **Isogeometric FSI: Theory, Algorithms, and Computations.** *15<sup>th</sup> International Conference on Finite Elements in Flow Problems*, Tokyo, Japan. April 1-3, 2009. **Keynote Talk.**
189. Yuri Bazilevs, Ming-Cheng Chen, Yongjie Zhang, Wenyan Wang, Xinghua Liang, Trond Kvamsdal, Reidar Brekken, Jorgen Isaksen. **Vascular Fluid-Structure Interaction: Methodology and Application to Cerebral Aneurysms.** *15<sup>th</sup> International Conference on Finite Elements in Flow Problems*, Tokyo, Japan. April 1-3, 2009. **Invited Talk.**
190. Daniel Cook, Changho Oh, Yongjie Zhang, James Burgess, Boyle C. Cheng. **Development of an Automated Technique for Calculating Center of Vertebral Rotation from Dynamic Fluoroscopy.** *Orthopaedic Research Society (ORS) 55<sup>th</sup> Annual Meeting*, Feb. 22-25, 2009. **Poster.**



191. Yongjie Zhang, Xinghua Liang, Lei Dong. **Dynamic Modeling and Bioheat Transfer Analysis of Laser Therapy for Lung Cancer Treatment Planning.** 5<sup>th</sup> Annual BioImaging Day, Carnegie Mellon University, PA. Feb. 18, 2009. Host: Prof. Stefan Zappe. **Invited Talk.**
192. Mohamed Ebeida, Roger Davis, Roland Freund, Yongjie Zhang. **A New Technique for Quad Dominant Adaptive Mesh Generation.** 17<sup>th</sup> International Meshing Roundtable. Pittsburgh, PA. Oct. 12-15, 2008. **Poster.**
193. Rong Li, Yongjie Zhang, David Archer. **Computation of Air Flow in CMU's Intelligent Workplace and Its Effect on Occupant Comfort and Health.** *ASME 2<sup>nd</sup> International Conference on Energy Sustainability*, Jacksonville, FL. Aug. 10-14, 2008.
194. Yuri Bazilevs, Victor Calo, Jeff Gohean, Thomas J.R. Hughes, Tor Ingebrigtsen, Jorgen Isaksen, Trond Kvamsdal, Robert Moser and Yongjie Zhang. **A Fully Integrated Fluid-Structure Interaction Methodology and Applications.** *8<sup>th</sup> World Congress on Computational Mechanics*, Venice, Italy. June 30-July 4, 2008. **Keynote Lecture.**
195. Yongjie Zhang. **Geometric Modeling and Mesh Generation in Biomedical Engineering.** *Inaugural International Conference of the Engineering Mechanics Institute (EM08)*, Minneapolis, MI. May 18-21, 2008. **Invited Talk.**
196. Boyle C. Cheng, Yongjie Zhang, Changho Oh, Jessica L. Spehar, James Burgess. **Direct New Method for Dynamic Neural Foramina Cross Section Measurement.** *The Spine Arthroplasty Society – Global Symposium on Motion Preservation Technology 8<sup>th</sup> Annual Meeting*, Miami, FL. May 6-9, 2008. **Poster.**
197. Luke Xie, Corey Pacek, Yongjie Zhang, Zong-Ming Li. **Image Segmentation and Geometric Modeling of the Transverse Carpal Ligament and the Carpal Tunnel.** *Biomedical Imaging and Biotechnology Research Symposium, Carnegie Mellon University*, Pittsburgh, PA. April 25, 2008. **Poster.**
198. Chandrajit Bajaj, Yongjie Zhang, Guoliang Xu. **Physically-based Texture Synthesis using A Coupled Finite Element System.** *Geometric Modeling and Physics (GMP)*, Hangzhou, China. April 23-25, 2008.
199. Yongjie Zhang. **Geometric Modeling and Mesh Generation for Computational Biomedicine.** *International Conference on Computational & Experimental Engineering and Sciences*, Honolulu, Hawaii. Mar. 17-22, 2008. **Keynote Talk.**
200. Yongjie Zhang, Boyle C. Cheng, Changho Oh, Jessica L. Spehar, James Burgess. **Dynamic Neural Foramina Cross Section Measurement and Kinematic Analysis of Lumbar Spine Undergoing Extension.** *International Conference on Computational & Experimental Engineering and Sciences*, Honolulu, Hawaii. Mar. 17-22, 2008. **Invited Talk.**
201. Yongjie Zhang. **Boundary/Finite Element Meshing from Imaging Data with Applications.** 4<sup>th</sup> Annual BioImaging Day, Carnegie Mellon University, PA. Feb. 27, 2008. Host: Prof. Gustavo K. Rohde. **Invited Talk.**
202. Yongjie Zhang. **Mesh Generation for Computational Mechanics.** *Workshop on Microstructure Simulation and Mesh Generation for FE Analysis.* The Ohio State University, OH. Dec. 6-7, 2007. Host: Prof. Anthony Rollet, Prof. Somnath Ghosh, Dr. Andrew Geltmacher. **Invited Talk.**
203. Mark Wochner, Yongjie Zhang, Yurii LLinskii, Mark Hamilton, Zhenia Zabolotskaya. **Influence of Inhomogeneity on Lung Response to Low-Frequency Underwater Sound.** *154<sup>th</sup> Meeting of the Acoustical Society of America*. New Orleans, LA. Nov. 28, 2007.
204. Yuri Bazilevs, Victor M. Calo, Yongjie Zhang, Thomas J.R. Hughes. **Isogeometric Fluid-Structure Interaction Analysis of Vascular Blood Flow.** *44<sup>th</sup> Annual Technical Meeting of the Society of Engineering Science*. Texas A&M, TX. Oct. 21-24, 2007. **Invited Talk.**
205. Yongjie Zhang, Thomas J.R. Hughes, Chandrajit L. Bajaj. **Automatic 3D Meshing for A Domain with Multiple Materials.** *Proceedings of 16th International Meshing Roundtable*. Seattle, Washington. Oct. 14-17, 2007.
206. Yongjie Zhang, Yuri Bazilevs, Samrat Goswami, Chandrajit Bajaj, Thomas J.R. Hughes. **Patient-Specific Cardiovascular NURBS Modeling for Blood Flow.** *9<sup>th</sup> US National Congress on Computational Mechanics*. San Francisco, CA. July 23-26, 2007. **Invited Talk.**
207. Andrew Gillette, Chandrajit Bajaj, Samrat Goswami, Sangmin Park, Yongjie Zhang. **Volumetric Image and Geometry Segmentation of Human Cardiovasculature.** *9<sup>th</sup> US National Congress on Computational Mechanics*. San Francisco, CA. July 23-26, 2007. **Keynote Talk.**
208. Yuri Bazilevs, Victor M. Calo, Thomas J.R. Hughes, Yongjie Zhang. **A Fully Integrated Isogeometric Fluid-Structure Interaction Analysis.** *9<sup>th</sup> US National Congress on Computational Mechanics*. San Francisco, CA. July 23-26, 2007. **Invited Talk.**
209. Trond Kvamsdal, Yuri Bazilevs, Tor Ingebrigtsen, Jorgen Isaksen, Jon Harald Kaspersen, Bertil Romner, Knut Waterloo, Yongjie Zhang. **Numerical Simulation of Wall Tension in Cerebral Aneurysms.** *9<sup>th</sup> US National Congress on Computational Mechanics*. San Francisco, CA. July 23-26, 2007.



210. Luciano Teresi, Chandrajit Bajaj, Antonio DiCarlo, Samrat Goswami, Alberto Paoluzzi, Yongjie Zhang. **Topological Curation for Accurate Micro-Mechanical and Mesoscopic Modelling of Trabecular Bone.** *9<sup>th</sup> US National Congress on Computational Mechanics.* San Francisco, CA. July 23-26, 2007.
211. Yongjie Zhang. **Boundary/Finite Element Meshing from Volumetric Data with Applications.** *ASEM Applied Mechanics and Materials Conference (McMat 2007).* Austin, TX. June 3-7, 2007. **Keynote Talk.**
212. Yuri Bazilevs, Victor Calo, Yongjie Zhang, Thomas J.R. Hughes. **Isogeometric Fluid-Structure Interaction Analysis with Application to Cardiovascular Modeling.** *Engineering Mechanics Seminar.* Delft University, Delft, Netherlands. May 5, 2007.
213. Yongjie Zhang, Yuri Bazilevs, Samrat Goswami, Chandrajit Bajaj, Thomas J.R. Hughes. **Mesh Generation with Applications.** *Finite Element Rodeo.* Houston, TX. Mar. 2-3, 2007.
214. Yuri Bazilevs, Yongjie Zhang, Victor Calo, Thomas J.R. Hughes. **Isogeometric FSI for Blood Flow Applications.** *Seminar on Computational Biomechanics.* Trondheim, Norway. Nov. 7, 2006.
215. Yongjie Zhang, Yuri Bazilevs, Samrat Goswami, Chandrajit Bajaj, Thomas J.R. Hughes. **Patient-Specific Vascular NURBS Modeling for Isogeometric Analysis of Blood Flow.** *15th International Meshing Roundtable.* Birmingham, AL. Sept. 17-20, 2006.
216. Yuri Bazilevs, Victor M. Calo, Austin J. Cottrell, Thomas J.R. Hughes, Yongjie Zhang. **Isogeometric Analysis: Geometry Considerations in Analysis.** *7th World Congress on Computational Mechanics.* Los Angeles, CA. July 16-22, 2006.
217. Yongjie Zhang, Yuri Bazilevs, Samrat Goswami, Chandrajit Bajaj, Thomas J.R. Hughes. **Patient-Specific Cardiovascular Modeling for Blood Flow.** *7th World Congress on Computational Mechanics.* Los Angeles, CA. July 16-22, 2006. **Invited Talk.**
218. Yuri Bazilevs, Victor M. Calo, Yongjie Zhang, Thomas J.R. Hughes. **Isogeometric Fluid-Structure Interaction Analysis with Particular Emphasis on Cardiovascular Modeling.** *Finite Element Rodeo.* Texas A&M, TX. Mar. 3-4, 2006.
219. Yongjie Zhang, Yuri Bazilevs, Samrat Goswami, Chandrajit Bajaj, Thomas J.R. Hughes. **Patient-Specific Cardiovascular Modeling for Isogeometric Analysis of Blood Flow.** *Finite Element Rodeo.* Texas A&M, TX. Mar. 3-4, 2006.
220. Yongjie Zhang, Chandrajit L. Bajaj, Guoliang Xu. **Surface Smoothing and Quality Improvement of Quadrilateral/Hexahedral Meshes with Geometric Flow.** *14th International Meshing Roundtable.* San Diego, CA. Sept. 11-14, 2005.
221. Yongjie Zhang, Samrat Goswami, Thomas J.R. Hughes, Chandrajit L. Bajaj. **Towards Patient-Specific Geometric Modeling from Imaging Data.** *14th International Meshing Roundtable.* Sept. 11-14, 2005. **Poster.**
222. Yongjie Zhang, Chandrajit L. Bajaj. **Boundary and Finite Element Meshing from Volumetric Data with Applications.** *8<sup>th</sup> US National Congress on Computational Mechanics.* July 24-28, 2005. **Invited Talk.**
223. Yongjie Zhang, Chandrajit L. Bajaj. **Tetrahedral/Hexahedral Finite Element Meshing from Volumetric Data with Applications.** *Finite Element Rodeo.* Mar. 4-5, 2005.
224. Deqiang Zhang, Jason Suen, Yongjie Zhang, Yuhua Song, Zoran Radic, Palmer Taylor, Michael J. Holst, Chandrajit L. Bajaj, Nathan A. Baker, J. Andrew McCammon. **Continuum rate calculations by solving Smoluchowski equation using finite element method: Application to tetrameric mouse Acetylcholinesterase.** *49th Biophysical Society Annual Meeting, Long Beach, CA.* Feb. 11-16, 2005.
225. Yongjie Zhang, Chandrajit L. Bajaj, Zeyun Yu, Yuhua Song, Deqiang Zhang, Nathan A. Baker, J. Andrew McCammon. **Tetrahedral Finite Element Meshing for Biomolecules.** *13th International Meshing Roundtable.* Williamsburg, VA. September 19-22, 2004. (Best Student Poster Award).
226. Yongjie Zhang, Chandrajit L. Bajaj, Thomas J.R. Hughes, Wing Kam Liu, Grace Chen, Xiaodong Wang, Marius Lysaker, Christian Tarróu. **Finite Element Meshing for Cardiac Analysis.** *13th International Meshing Roundtable.* Williamsburg, VA. September 19-22, 2004. **Poster.**
227. Yongjie Zhang, Chandrajit L. Bajaj. **Adaptive and Quality Quadrilateral/Hexahedral Meshing from Volumetric Data.** *13th International Meshing Roundtable.* Williamsburg, VA. September 19-22, 2004.
228. Wing Kam Liu, Grace Chen, Xiaodong Wang, Yongjie Zhang, Chandrajit L. Bajaj, Thomas J.R. Hughes. **A Study of a Three-Dimensional Heart Model Using Immersed Continuum Method.** *Sixth World Congress on Computational Mechanics, Beijing, China.* September 5-10, 2004.
229. Yuhua Song, Yongjie Zhang, Tongye Shen, Chandrajit L. Bajaj, J. Andrew McCammon, Nathan A. Baker. **Finite Element Solution of the Steady-state Diffusion Equation for Rate Constant Calculations.** *Biophysical Society Meeting.* Feb. 2004.

230. Yuhua Song, Yongjie Zhang, Chandrajit L. Bajaj, Nathan A. Baker. **Computational Modeling of Biomolecular Diffusion**. *17th Annual Gibbs Conference on Biothermodynamics*. Sep. 2003. **Poster**.
231. Yongjie Zhang, Chandrajit L. Bajaj, Bong-Soo Sohn. **Adaptive and Quality 3D Meshing from Imaging Data**. *8th ACM Symposium on Solid Modeling and Applications*. Seattle, WA. June 16-20, 2003. **Poster**.
232. Dong Xue, Yongjie Zhang, Leszek F. Demkowicz, Chandrajit L. Bajaj. **Geometry Modeling and Mesh Generation for hp Finite Elements**. *NPACIAHM (All-Hands Meeting)*. UC San Diego. Mar. 18-21, 2003. (Best Student Poster Award).

#### PROFESSIONAL SERVICES:

- ❖ Research Impact Fund Committee of the Research Grants Council (RGC) of Hong Kong, China, May 1, 2018 – February 28, 2025.
- ❖ Academic Program Review Committee for the Department of Aerospace and Mechanical Engineering, University of South California, Fall 2017.
- ❖ Advisory Board of
  1. Solid Modeling Association, 2021-2024
  2. Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization, 2017 - present
  3. NIH P41 National Biomedical Computation Resource (NBCR), University of California, San Diego. 2016-2017
  4. Editorial Advisory Board of the book series 2011: Lecture Notes in Computational Vision and Biomechanics (LNCVB) – Book Editor of “Image-Based Geometric Modeling and Mesh Generation”
- ❖ Organizer or Co-organizer of
  1. BIRS Workshop on Computationally efficient Spline Methods for Isogeometric Modeling (COSMIC). Oaxaca, Mexico, 2025.
  2. Conference Co-Chair of SIAM Conference on Computational Geometric Design (GD25) co-located with the SIAM Annual Meeting (AN25). Montreal, Canada. July 28 - August 1, 2025. (Co-organize with Hendrik Speleers)
  3. CONCAM Distinguished Lectures on Computational Mechanics of ASME International Mechanical Engineering Congress and Exposition (IMECE). Portland, OR. November 17-21, 2024. (Co-organize with Huijuan Zhao)
  4. Symposium of Data-Enabled Predictive Modeling, Scientific Machine Learning, and Uncertainty Quantification in Computational Mechanics of ASME International Mechanical Engineering Congress and Exposition (IMECE). Portland, OR. November 17-21, 2024. (Co-organize with Danial Faghihi, Ramine Bostanabad, Alireza Tabarraei, Pania Newell)
  5. Minisymposium of Machine Learning and IGA, the 12nd International Conference on Isogeometric Analysis conference (IGA2024). St. Augustine, Florida, USA. October 27-30, 2024. (Co-organize with Wing Kam Liu and Ye Lu)
  6. Organizing Committee of SIAM International Meshing Roundtable Conference. Baltimore, MD. March 4-8, 2024.
  7. Symposium of Data-Enabled Predictive Modeling, Scientific Machine Learning, and Uncertainty Quantification in Computational Mechanics of ASME International Mechanical Engineering Congress and Exposition (IMECE). New Orleans, LA. October 29-November 2, 2023. (Co-organize with Danial Faghihi, Alireza Tabarraei, Kathryn Maupin)
  8. Symposium of Imaging-Based Methods in Computational Medicine, 17th US National Congress on Computational Mechanics (USNCCM17). Albuquerque, NM. July 23-27, 2023. (Co-organize with A. Buganza Tepole, R. Grytz, M. Holland, J. Weickenmeier, A. Pawar)
  9. Symposium of Industrial Applications of IGA, 17th US National Congress on Computational Mechanics (USNCCM17). Albuquerque, NM. July 23-27, 2023. (Co-organize with E. Johnson, H. Casquero, M.-C. Hsu, Y. J. Zhang, M. Sederberg)
  10. Scientific Organizing Committee, the 17th U.S. National Congress on Computational Mechanics (USNCCM17). Albuquerque, New Mexico. July 23-27, 2023.
  11. Thematic Session on New IGA technologies, ROM, AI and Digital twins, the 11<sup>th</sup> International Conference on Isogeometric Analysis conference (IGA2023). Lyon, France. June 18-21, 2023. (Co-organize with David Kamensky, Georgios Moutsanidis, Kurtis Ford)
  12. Symposium of Data-Driven Modeling and Simulation for Computational Biomedicine of ASME International Mechanical Engineering Congress and Exposition (IMECE). Columbus, OH. November 16-19,

2022. (Co-organize with Adrian Buganza Tepole, Aishwarya Pawar, Adarsh Krishnamurthy, Johannes Weickenmeier)
13. Minisymposium of Unstructured Spline Technologies, the 10<sup>th</sup> International Conference on Isogeometric Analysis conference (IGA2022). Banff, Canada. November 6-9, 2022. (Co-organize with Deepesh Toshniwal, Gershon Elber, Jorg Peters, Xiaodong Wei)
  14. Symposium of Imaging-Informed Computational Modeling in Medicine, WCCM-APCOM Yokohama 2022 (15<sup>th</sup> World Congress on Computational Mechanics & 8<sup>th</sup> Asian Pacific Congress on Computational Mechanics). Yokohama, Japan. July 31-August 5, 2022. (Co-organize with R. Grytz, M. Girard, I. Sigal)
  15. Symposium of Isogeometric Spline Techniques on Complex Geometries, WCCM-APCOM Yokohama 2022 (15<sup>th</sup> World Congress on Computational Mechanics & 8<sup>th</sup> Asian Pacific Congress on Computational Mechanics). Yokohama, Japan. July 31-August 5, 2022. (Co-organize with X. Wei, D. Toshniwal and H. Casquero)
  16. Symposium of Industrial Application of IGA, WCCM-APCOM Yokohama 2022 (15<sup>th</sup> World Congress on Computational Mechanics & 8<sup>th</sup> Asian Pacific Congress on Computational Mechanics). Yokohama, Japan. July 31-August 5, 2022. (Co-organize with H. Casquero, X. Wei, E. Johnson, A. Nagy, M. Sederberg)
  17. Symposium of Image Processing and Analysis for Biomedical Engineering, 7<sup>th</sup> International Conference on Computational and Mathematical Biomedical Engineering (CMBE). Polytechnic University of Milan, Milan, Italy. June 27-29, 2022. (Co-organize with João Manuel R. S. Tavares, R. M. Natal Jorge)
  18. Mini-Symposium of Advances in IGA and Its Applications, Curves and Surfaces. Aracchon, France. June 20-24, 2022. (Co-organize with D. Toshniwal and X. Wei)
  19. Mini-Symposium of Locally Refined Spline Spaces – Properties and Structures for Different Refinement Frameworks, 8<sup>th</sup> European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMA2022). Oslo, Norway. June 5-9, 2022. (Co-organize with T. Dokken, H. Speleers and F. Chen)
  20. Symposium of Data-Driven Modeling and Simulation for Computational Biomedicine of ASME International Mechanical Engineering Congress and Exposition (IMECE). USA. November 1-4, 2021. (Co-organize with Adrian Buganza Tepole, Ming-Chen Hsu, Adarsh Krishnamurthy, Johannes Weickenmeier)
  21. Symposium of Data-Driven Modeling and Simulation for Computational Biomedicine of Mechanistic Machine Learning and Digital Twins for Computational Science, Engineering and Technology (MMLDT-CSET). Mission Bay, San Diego, CA, USA. September 26-29, 2021. Hybrid (Co-organize with Adrian Buganza Tepole, Ming-Chen Hsu, Adarsh Krishnamurthy)
  22. Symposium on Splines and Subdivision, SIAM Conference on Geometric and Physical Modeling. University of California, Davis, CA. September 27-29, 2021. Virtual (Co-organize with Lucia Romani)
  23. Thematic Session on Analysis Aware CAGD, IGA conference (IGA2021) in Lyon, France. September 26-29, 2021. Virtual (Co-organize with Tor Dokken, Gershon Elber)
  24. Symposium of Imaging-Based Methods in Computational Medicine, 16<sup>th</sup> US National Congress on Computational Mechanics (USNCCM16). Chicago, IL. July 25-29, 2021. Virtual (Co-organize with R. Grytz, A. Buganza Tepole, D. Nordsletten, M. Holland, J. Weickenmeier)
  25. Symposium of Isogeometric Spline Techniques on Complex Geometries, 16<sup>th</sup> US National Congress on Computational Mechanics (USNCCM16). Chicago, IL. July 25-29, 2021. Virtual (Co-organize with X. Wei and D. Toshniwal)
  26. Symposium of Industrial Application of IGA, 16<sup>th</sup> US National Congress on Computational Mechanics (USNCCM16). Chicago, IL. July 25-29, 2021. Virtual (Co-organize with H. Casquero, X. Wei, D. Benson, M. Sederberg, E. Johnson)
  27. A Virtual Networking Event and Best Female Presentation Awards for Career Development Organized by IACM Female Researchers Chapter and USACM Female Researchers Group (FRG), 16<sup>th</sup> US National Congress on Computational Mechanics (USNCCM16). Chicago, IL. July 25-29, 2021. Virtual
  28. Symposium of Unstructured Spline Technologies for Isogeometric Analysis with Applications, WCCM 2020 (14<sup>th</sup> World Congress on Computational Mechanics). Virtual Congress. Jan 11-15, 2021. (Co-organize with Xiaodong Wei, Thomas Takacs, Hendrik Speleers, Jorg Peters, Deepesh Toshniwal, Carla Manni)
  29. A Virtual Networking Event for Career Development Organized by USACM Female Researchers Group (FRG), Virtual Isogeometric Analysis (VIGA 2020). Aug 12, 2020.
  30. Invited Session Organizer (Unstructured Spline Technologies), Virtual Isogeometric Analysis (VIGA 2020). Aug 11-12, 2020. (Co-organize with Deepesh Toshniwal, Gershon Elber, Jorg Peters and Xiaodong Wei)

31. Symposium of Image Processing and Analysis, International Conference on Computational & Experimental Engineering and Sciences (ICCES). Budva, Montenegro. April 26-30, 2020. (Co-organize with João Manuel R. S. Tavares and Renato Manuel Natal Jorge)
32. Invited Session Organizer (Unstructured Spline Technologies), Isogeometric Analysis (IGA 2019). Munich, Germany. Sep. 18-20, 2019. (Co-organize with Thomas Takacs and Xiaodong Wei)
33. Symposium of Unstructured Spline Technologies for Isogeometric Analysis with Applications, 15th US National Congress on Computational Mechanics (USNCCM15). Austin, TX. July 28-Aug 1, 2019. (Co-organize with Carla Manni, Hendrik Speelers, Jorg Peters, Xiaoping Qian, Annalisa Buffa)
34. Symposium of Immersed Methods for CFD and Fluid-Structure Interaction, 15th US National Congress on Computational Mechanics (USNCCM15). Austin, TX. July 28-Aug 1, 2019. (Co-organize with H. Casquero, D. Kamensky, M.-C. Hsu)
35. Symposium of Computational Methods in Image Analysis, 15th US National Congress on Computational Mechanics (USNCCM15). Austin, TX. July 28-Aug 1, 2019. (Co-organize with João Manuel R. S. Tavares and Renato Manuel Natal Jorge)
36. Symposium of Image Processing and Analysis for Biomedical Engineering, 6th International Conference on Computational and Mathematical Biomedical Engineering (CMBE) and Celebrating the 60<sup>th</sup> Brithday of Prof. Rainald Lohner. Sohoku University, Katahira Campus, Sendai City, Japan. June 10-12, 2019. (Co-organize with João Manuel R. S. Tavares, R. M. Natal Jorge)
37. Symposium of V-Rep and IGA for Design and Additive Manufacturing, SIAM Conference on Computational Geometric Design. Vancouver, Canada. June 17-19, 2019. (Co-organize with Tor Dokken, Gershon Elber and Annalisa Buffa)
38. Symposium of Immersed Methods for Fluid-Structure Interaction, Computational Methods for Coupled Problems in Science and Engineering (Coupled Problems 2019). Sitges (Barcelona), Spain. June 3-5, 2019. (Co-organize with Hugo Casquero, Hector Gomez and Ming-Chen Hsu)
39. Symposium of Image Processing and Analysis, International Conference on Computational & Experimental Engineering and Sciences (ICCES). Tokyo, Japan. March 25-28, 2019. (Co-organize with João Manuel R. S. Tavares and Renato Manuel Natal Jorge)
40. Invited Session Organizer (Unstructured Spline Technologies), Isogeometric Analysis (IGA 2018). Austin, TX. Oct. 10-12, 2018. (Co-organize with M. Bercovier, C. Manni, B. Mourrain, J. Peters, G. Sangalli, H. Speelers and T. Lyche)
41. Workshop of Geometric and Image Data Sciences: Big Data Analysis, Graphics and Visualization on the Occasion of Celebrating the 60<sup>th</sup> Birthday of Chandrajit Bajaj. Austin, TX. Sep. 14, 2018. (Co-organize with Tamal Dey and Andrew Gillette)
42. Symposium of Immersed Methods for CFD and Fluid-Structure Interaction, WCCM 2018 (13rd World Congress on Computational Mechanics). New York, USA. July 22-27, 2018. (Co-organize with H. Casquero, M-C Hsu, J. Evans and H. Geomez)
43. Symposium of Computational Bioimaging and Visualization, WCCM 2018 (13rd World Congress on Computational Mechanics). New York, USA. July 22-27, 2018. (Co-organize with Joao Manuel R.S. Tavares, Renato Natal Jorge and Joao Paulo Papa)
44. Symposium of Image Processing and Visualization, 6<sup>th</sup> European Conference on Computational Mechanics (Solids, Structures and Coupled Problems) (ECCM 6) and 7<sup>th</sup> European Conference on Computational Fluid Dynamics (ECFD 7). Glasgov, UK. June 11-15, 2018. (Co-organize with Joao Manuel R.S. Tavares and Renato Natal Jorge)
45. Program Co-chair for Solid and Physical Modeling Symposium (SPM) 2018. Bilbao, Spain. June 11-13, 2018.
46. Invited Session Organizer (Isogeometric Spaces over Unstructured Meshes) and Scientific Committee, Isogeometric Analysis (IGA 2017). Pavia, Italy. Sept. 11-13, 2017. (Co-organize with Jorg Peters and Thomas Takacs)
47. Symposium of Isogeometric Methods for Complex Geometries and Multi-Physics Systems, 14th US National Congress on Computational Mechanics (USNCCM14). Montreal, Canada. July 17-20, 2017. (Co-organize with John Evans and Hector Gomez)
48. Symposium of Computational Methods in Image Analysis, 14th US National Congress on Computational Mechanics (USNCCM14). Montreal, Canada. July 17-20, 2017. (Co-organize with João Manuel R. S. Tavares and Renato Manuel Natal Jorge)



49. Program Co-chair for Solid and Physical Modeling Symposium (SPM) 2017. Berkeley, CA. June 19-21, 2017.
50. Symposium of Isogeometric Methods for Coupled Problems on Complex Geometries, Computational Methods for Coupled Problems in Science and Engineering (Coupled Problems 2017). Islands of Rhodes, Greece. June 12-14, 2017. (Co-organize with John Evans, Hector Gomez and Hugo Casquero)
51. Local Organizing Committee and Program Committee, 5<sup>th</sup> International Conference on Computational and Mathematical Biomedical Engineering (CMBE). University of Pittsburgh, Pittsburgh, PA. Apr. 10-12, 2017.
52. Symposium of Image Processing and Analysis for Biomedical Engineering, 5th International Conference on Computational and Mathematical Biomedical Engineering (CMBE). University of Pittsburgh, Pittsburgh, PA. Apr. 10-12, 2017. (Co-organize with João Manuel R. S. Tavares, Xianghua Xie, R. M. Natal Jorge, Majid Mirmehdi)
53. Symposium of Geometric Modeling, Mesh Generation and Adaptation, 19th International Conference on Finite Elements in Flow Problems (FEF 2017). Rome, Italy. April 5-7, 2017. (Co-organize with Hendrik Speleers, Suzanne Shontz and Simona Perotto)
54. Thematic Session Organizer and Scientific Advisory Committee, USACM Conference on Isogeometric Analysis and Meshfree Methods. La Jolla, California. October 10-12, 2016. (Co-organize with Bert Juttler and Mike Scott)
55. Symposium of Isogeometric Analysis and Analysis-Suitable Geometry, WCCM 2016 (12nd World Congress on Computational Mechanics). Seoul, Korea. July 24-29, 2016. (Co-organize with P. Hu, W. Wang, D. Wang, X. Li, X. Zhu, Y. Xia)
56. Minisymposium of Computational Bioimaging, Simulation and Visualization, 7<sup>th</sup> Europe Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2016). Crete, Greece. June 5-10, 2016.
57. Mini Symposium of Biomedical Imaging and Visualization, the VI International Conference on Computational Bioengineering (ICCB'2015). Barcelona, Spain. Sept. 14-16, 2015. (Co-organize with João Manuel R. S. Tavares)
58. Symposium of Computational Methods in Image Analysis, 13th US National Congress on Computational Mechanics (USNCCM13). San Diego, CA. July 26-30, 2015. (Co-organize with João Manuel R. S. Tavares and Renato Manuel Natal Jorge)
59. Symposium of Image Processing and Analysis, International Conference on Computational & Experimental Engineering and Sciences (ICCES). Reno, NV. July 20-24, 2015. (Co-organize with João Manuel R. S. Tavares and Renato Manuel Natal Jorge)
60. Symposium of Image Processing and Analysis for Biomedical Engineering, 5th International Conference on Computational and Mathematical Biomedical Engineering (CMBE). ENS Cachan, France. June 29-July 1, 2015. (Co-organize with João Manuel R. S. Tavares, R. M. Natal Jorge, Xianghua Xie, Majid Mirmehdi)
61. 2nd Workshop on Computational Biomedical Image Processing and Analysis, 10th Iberian Conference on Information Systems and Technologies (CISTI'2015). Aveiro, Portugal. June 17-20, 2015. (Co-organize with João Manuel R. S. Tavares, Alex F. de Araujo and Faniela Iacoviello)
62. Symposium of Geometric Modeling and Mesh Generation for Finite Element Applications and Isogeometric Analysis, 18th International Conference on Finite Elements in Flow Problems (FEF 2015). Taipei, Taiwan. March 16-18, 2015. (Co-organize with Mike Scott and Suzanne Shontz)
63. Chair of CompIMAGE 2014 Conference – Computational Modeling of Objects Presented in Images: Fundamentals, Methods and Applications. Pittsburgh, PA. Sept. 3-5, 2014.
64. Symposium of Computational Bioimaging and Visualization, WCCM 2014 (11th World Congress on Computational Mechanics). Barcelona, Spain. July 20-25, 2014.
65. Co-chair of North America, Geometric Modeling and Processing (GMP), June 29-July 1, 2014. Singapore.
66. A thematic session on “Computational Bio-Imaging and Visualization” in the scope of IWCI 2014 (16th International Workshop on Combinatorial Image Analysis). Brno, Czech Republic. May 28-30, 2014.
67. Workshop on Structured Meshing: Theory, Applications and Evaluation in the 27<sup>th</sup> Conference on Computer Animation and Social Agents (CASA 2014). University of Houston, TX. May 26-28, 2014. (Co-organize with Guoning Chen and Jin Huang)
68. Symposium of Recent Advances in Parallel Meshing Algorithms, 16th SIAM Conference on Parallel Processing for Scientific Computing (SIAM PP14). Portland, OR. Feb. 18-21, 2014. (Co-organize with Suzanne Shontz)

69. Workshop on Bio-Imaging and Visualization for Patient-Customized Simulations, 16th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI). Nagoya, Japan. Sept. 22-26, 2013.
70. Workshop on Mesh Processing in Medical Image Analysis, 16<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI). Nagoya, Japan. Sept. 22-26, 2013.
71. Symposium of Computational Methods in Image Analysis, 12th US National Congress on Computational Mechanics (USNCCM12). Raleigh, NC. July 22-25, 2013.
72. Symposium of Image Processing and Analysis, International Conference on Computational & Experimental Engineering and Sciences (ICCES). Seattle, WA. May 24-28, 2013.
73. Symposium of Geometric Modeling and Mesh Generation for FEM and Isogeometric Analysis, the 17<sup>th</sup> International Conference on Finite Elements in Flow Problems (FEF 2013) celebrating the 70<sup>th</sup> Birthday of Thomas J.R. Hughes. San Diego, CA. Feb. 24-28, 2013.
74. Workshop on Mesh Processing in Medical Image Analysis, 15<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI). Nice, France. Oct. 1-5, 2012.
75. Minisymposium of Computational Bioimaging and Visualization, 6<sup>th</sup> Europe Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2012). Vienna, Austria. Sept. 10-14, 2012.
76. Minisymposium of Experimental and Computational Bioimaging and Visualization, 15<sup>th</sup> International Conference on Experimental Mechanics (ICEM15). Porto, Portugal. July 22-27, 2012.
77. Symposium of Computational Bioimaging and Visualization, WCCM 2012 (10th World Congress on Computational Mechanics). Sao Paulo, Brazil. July 8-13, 2012.
78. Workshop on Mesh Processing in Medical Image Analysis, 14<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI). Toronto, Canada. Sept. 18-22, 2011.
79. Symposium of Computational Methods in Image Analysis, 11th US National Congress on Computational Mechanics (USNCCM11). Minneapolis, MN. July 25-28, 2011.
80. Symposium of Multiresolution Biomechanics: From Nano to Micro, Coupled Problems 2011. Kos Island, Greece. June 20-22, 2011.
81. Symposium of Image Processing and Analysis in Biomedical Engineering, 2<sup>nd</sup> International Conference on Computational and Mathematical Biomedical Engineering (CMBE). George Mason University, Washington DC. Mar.30-Apr.1, 2011.
82. Symposium of Isogeometric Methods, ASME International Mechanical Engineering Congress & Exposition (IMECE). Vancouver, British Columbia. Nov. 12-18, 2010.
83. Symposium of Computational Methods in Image Processing Analysis, WCCM/APCOM 2010 (9th World Congress on Computational Mechanics and 4<sup>th</sup> Asian Pacific Congress on Computational Mechanics). Sydney, Australia. July 19-23, 2010.
84. Symposium of Isogeometric Analysis, 16<sup>th</sup> USNCTAM 2010 (16<sup>th</sup> US National Congress on Theoretical and Applied Mechanics). Penn State University, PA. June 27-July 2, 2010.
85. Symposium of Image Processing and Analysis, International Conference on Computational & Experimental Engineering and Sciences (ICCES). Las Vegas, NV. March 28-April 1, 2010.
86. Topic of Computational Methods for Image Processing and Analysis, ASME 1<sup>st</sup> NEMB 2010 (ASME 2010 First Global Congress on NanoEngineering for Medicine and Biology). Houston, TX. Feb. 7-10, 2010.
87. Symposium of Computational Methods in Image Analysis, 10th US National Congress on Computational Mechanics (USNCCM10). Columbus, OH. July, 2009.
88. Symposium of Image Processing and Analysis, International Conference on Computational & Experimental Engineering and Sciences (ICCES). Phuket, Thailand. April 8-13, 2009.
89. Symposium of Computational Methods in Image Analysis, 9th US National Congress on Computational Mechanics (USNCCM9). San Francisco, CA. July 22-26, 2007
- ❖ Scientific Committee or Technical Program Committee of
  1. International Scientific Committee of Asian Pacific Congress on Computational Mechanics (APCOM). Suwon, Korea. 2025.
  2. Steering Committee for Isogeometric Analysis Conference. Augustine, Florida. Oct. 27-30-21, 2024.
  3. International Scientific Committee of 16th World Congress on Computational Mechanics (WCCM2024). Vancouver, BC, Canada. July 21-26, 2024
  4. International Program Committee of Symposium on Shape and Modeling International (SMI 2024). Detroit, MI. Jul. 12-14, 2024.

5. International Program Committee of Symposium on Solid and Physical Modeling (SPM 2024). Montreal, Canada. Jul. 8-10, 2024.
6. 8th International Conference on Computational and Mathematical Biomedical Engineering (CMBE). George Mason University, Arlington, VA. June 24-26, 2024.
7. International Program Committee for the International Conference on Geometric Modeling and Processing (GMP 2024). Qingdao, China. June 5-7, 2024.
8. The 12nd International conference on Computational Visual Media (CVM 2024), Wellington, New Zealand. April 10-12, 2024.
9. General Scientific Committee of the 2<sup>nd</sup> IACM Mechanics Machine Learning and Digital Engineering for Computational Science, Engineering & Technology (MMLDE-CSET). El Paso, TX. Sep. 24-27, 2023.
10. International Program Committee for the International Conference on Geometric Modeling and Processing (GMP 2023). Genova, Italy. July 2023.
11. Steering Committee for Isogeometric Analysis Conference. Lyon, France. Jun. 18-21, 2023.
12. International Program Committee of Symposium on Solid and Physical Modeling (SPM 2023). Genova, Italy. Jul. 5-7, 2023.
13. Scientific Committee of the 11<sup>th</sup> International Conference on Isogeometric Analysis conference (IGA2023). Lyon, France. June 18-21, 2023.
14. International Conference on Computational Methods for Coupled Problems in Science and Engineering (Coupled Problems 2023). Chania, Crete, Greece. June 5-7, 2023.
15. The 11th International conference on Computational Visual Media (CVM 2023), Shenzhen University, China. April 6-8, 2023.
16. Member of Subcommittee for USACM Naming Plenary Lectures, 2023.
17. Member of the USACM Award Subcommittee, 2023.
18. Chair of Selection Committee for the 2023 SIAG/GD Early Career Prize, 2022-2023.
19. Steering Committee for Isogeometric Analysis Conference. Banff, Canada. Nov. 6-9, 2022.
20. International Scientific Committee of WCCM-APCOM 2022 (15th World Congress on Computational Mechanics & 8<sup>th</sup> Asian Pacific Congress on Computational Mechanics). Yokohama, Japan. July 31-August 5, 2022.
21. Chair for the Review Subcommittee, AIMBE College of Fellows, 2022.
22. International Program Committee of Symposium on Solid and Physical Modeling (SPM 2022). Jun. 27-29, 2022. Online event.
23. 7th International Conference on Computational and Mathematical Biomedical Engineering (CMBE). Polytechnic University of Milan, Milan, Italy. June 27-29, 2022.
24. Program Committee for 16th International Conference on Geometric Modeling and Processing (GMP 2022). Okinawa, Japan. May 11-13, 2022.
25. The 10th International conference on Computational Visual Media (CVM 2022), Tsinghua University (Beijing). April 7-9, 2022.
26. International Program Committee of SIAM Conference on Geometric and Physical Modeling (GD/SPM21). Davis, CA. Sep. 27-29, 2021.
27. Track 5 Chair and International Scientific Committee of the 1st IACM Conference for Machine Learning and Digital Twins for Computational Science and Engineering. Mission Bay, San Diego, CA, USA. September 26-29, 2021.
28. Scientific Committee of IGA conference (IGA2021) in Lyon, France. September 26-29, 2021.
29. Technical Advisory Board of the CMBBE 2021 Symposium (17th International Symposium on Computer Methods on Biomechanics and Biomedical Engineering, and 5th Conference on Imaging and Visualization). Bonn, Germany. September 7-9, 2021.
30. Chair for the Review Subcommittee, AIMBE College of Fellows, 2021.
31. Fellowship Award Committee of 16th US National Congress on Computational Mechanics (USNCCM16). Chicago, IL. July 25-29, 2021.
32. 16th US National Congress on Computational Mechanics (USNCCM16). Chicago, IL. July 25-29, 2021.
33. International program committee for the 2021 Eurographics Symposium on Geometry Processing (SGP). Toronto, Canada. July 12-14, 2021.
34. International Conference on Computational Methods for Coupled Problems in Science and Engineering (Coupled Problems 2021). Chia Laguna, Italy. June 13-16, 2021.

35. The 9th International conference on Computational Visual Media (CVM 2021), Shandong University (Qingdao). April 21-23, 2021.
36. Advisory Board of Solid Modeling Association, January 1, 2021-December 31, 2024.
37. Steering Committee for Isogeometric Analysis Conference. Virtual. Oct. 18-21, 2020.
38. USACM Biological Systems Technical Thrust Area Committee Vice-Chair, 2020-2024.
39. The International Program Committee for the Eurographics Symposium on Geometry Processing (SGP). Utrecht, The Netherlands. July 6-8, 2020.
40. Symposium on Solid and Physical Modeling (SPM 2020). Strasbourg, France. Jun. 2-4, 2020.
41. Geometric Modeling and Processing (GMP). Okinawa, Japan. May 13-15, 2020.
42. The 8th International conference on Computational Visual Media (CVM 2020). Macau University of Science and Technology. April 15-17, 2020.
43. 7th ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing (VipIMAGE 2019). Porto, Portugal. October 16-18, 2019.
44. Scientific Committee of Isogeometric Analysis Conference. Munich, Germany. Sep. 18-20, 2019.
45. International Program Committee for Eurographics Symposium on Geometry Processing (SGP), Università degli Studi di Milano, Italy. July 8-10, 2019.
46. 6th International Conference on Computational and Mathematical Biomedical Engineering (CMBE). Tohoku University, Katahira Campus, Sendai City, Japan. June 10-12, 2019.
47. VIII International Conference on Computational Methods for Coupled Problems in Science and Engineering (Coupled Problems 2019). Sitges, Spain. June 3-5, 2019.
48. Geometric Modeling and Processing (GMP), Vancouver, Canada. June 19-21, 2019.
49. USACM Award Subcommittee Chair, 2019.
50. Chair of Solid Modeling Association, January 1, 2019-December 31, 2020.
51. Steering Committee for Isogeometric Analysis Conference. Austin, TX. Oct. 10-12, 2018.
52. Paper Committee of Advances in Architectural Geometry 2018. Chalmers University of Technology, Gothenburg, Sweden. Sep. 22-25, 2018.
53. International Scientific Organizing Committee, The 13<sup>th</sup> World Congress on Computational Mechanics (WCCM XIII) / 2<sup>nd</sup> Pan American Congress on Computational Mechanics (PANACM II). New York City, USA. July 22-27, 2018.
54. CompIMAGE 2018 Conference – Computational Modeling of Objects Presented in Images: Fundamentals, Methods and Applications. Cracow, Poland. July 2-5, 2018.
55. Geometric Modeling and Processing (GMP), Aachen, Germany. April 9-11, 2018.
56. The 6<sup>th</sup> ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing (VipIMAGE 2017). Porto, Portugal. Oct. 18-20, 2017.
57. Workshop on BIVPCS: Bio-Imaging and Visualization for Patient-Customized Simulations, 20th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI). Quebec City, Canada. Sept. 14, 2017.
58. Executive Committee of Solid Modeling Association, January 1, 2017-December 31, 2020.
59. IACM General Council Ordinary Member, 2017-present
60. USACM Executive Council Member-at-Large, July 2017-2020.
61. VII International Conference on Computational Methods for Coupled Problems in Science and Engineering (Coupled Problems 2017). Island of Rhodes, Greece. June 12-14, 2017.
62. USACM Award Subcommittee Chair, 2017.
63. Geometric Modeling and Processing (GMP), Xiamen, China. April 17-19, 2017.
64. CompIMAGE 2016 Conference – Computational Modeling of Objects Presented in Images: Fundamentals, Methods and Applications. Niagara Falls, USA. Sept. 21-23, 2016.
65. The 4th International Conference on Biodental Engineering, Porto, Portugal. Jun. 21-23, 2016.
66. Symposium on Solid and Physical Modeling (SPM 2016). Berlin, Germany. Jun. 20-24, 2016.
67. Geometric Modeling and Processing (GMP), San Antonio, TX. April 11-13, 2016.
68. The 5<sup>th</sup> ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing (VipIMAGE 2015). Tenerife Island, Canary Islands, Spain. Oct. 19-21, 2015.
69. SIAM Conference on Geometric and Physical Modeling (GD/SPM15). Salt Lake City, UT. Oct. 12-14, 2015.
70. Workshop on Bio-Imaging Visualization for Patient-Customized Simulations, 18<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI). Munich, Germany. Oct. 5-9, 2015.



71. Workshop on DLMIA: Deep Learning in Medical Image Analysis, 18th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI). Munich, Germany. Oct. 5-9, 2015.
72. 13th US National Congress on Computational Mechanics (USNCCM13). San Diego, CA. July 26-30, 2015.
73. USACM Isogeometric Analysis Technical Thrust Area Committee Chair, 2015-2019.
74. USACM Award Subcommittee, 2015.
75. VI International Conference on Computational Methods for Coupled Problems in Science and Engineering (Coupled Problems 2015). Island of San Servolo, Venice, Italy. May 18-20, 2015.
76. Symposium on Solid and Physical Modeling (SPM14). Hong Kong. Oct. 26-28, 2014.
77. The 3rd International Conference on Biodental Engineering, Porto, Portugal. Jun. 22-23, 2014.
78. 3<sup>rd</sup> International Conference on Mechanical Engineering and Mechatronics. Prague, Czech Republic. Aug., 2014.
79. SIAM Conference on Geometric and Physical Modeling (GD/SPM13). Denver, Colorado. Nov. 11-14, 2013.
80. International Conference on Computational and Experimental Biomedical Sciences (ICCEBS2013). Ponta Delgada, S Miguel Island, Azores. Oct. 20-22, 2013.
81. The Fourth ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing (VipIMAGE 2013). Madeira Island, Portugal. Oct. 14-16, 2013.
82. Workshop on Bio-Imaging and Visualization for Patient-Customized Simulations, 16<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI). Nagoya, Japan. Sept. 22-26, 2013.
83. International Conference on Computational Methods for Coupled Problems in Science and Engineering (Coupled 2013). Ibiza, Spain. June 17-19, 2013.
84. 2<sup>nd</sup> International Conference on Mechanical Engineering and Mechatronics. Toronto, Canada. Aug. 8-10, 2013.
85. IEEE Workshop on Nanoinformatics for Biomedicine (NanoInfo 2012) in Conjunction with 2012 IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2012). Philadelphia, PA, USA. Oct. 4-7, 2012.
86. CompIMAGE 2012 Conference – Computational Modeling of Objects Presented in Images: Fundamentals, Methods and Applications. Rome, Italy. Sept. 5-7, 2012.
87. 1<sup>st</sup> International Conference on Mechanical Engineering and Mechatronics. Ottawa, Ontario, Canada. Aug. 15-17, 2012.
88. Workshop on Computational Biomedical Image Processing and Analysis in 7th Iberian Conference on Information Systems and Technologies (CISTI 2012). Madrid, Spain. June 20- 23, 2012.
89. Europe Community on Computational Methods in Applied Sciences (ECCOMAS) – Young Investigators Conference 2012, University of Aveiro, Portugal. April 24-27, 2012.
90. International Conference & Exhibition on Nanotechnology & Nanomedicine. Omaha, NV. Mar.12-14, 2012.
91. The 2<sup>nd</sup> International Conference on Computer and Management (CAMAN 2012), Wuhan, China, Mar.9-11, 2012.
92. 2011 International Conference on Computational Intelligence and Software Engineering (CiSE 2011), Wuhan, China, Dec.9-11, 2011.
93. The VI International Congress on Computational Bioengineering, Mazatlan, Mexico. November 2011.
94. The special track “Computational Bioimaging” within the ISVC11 - 7th International Symposium on Visual Computing, Las Vegas, Nevada. September 26-28, 2011.
95. The III Europe Community on Computational Methods in Applied Sciences (ECCOMAS) Thematic Conference on Computational Vision and Medical Image Processing (International ECCOMAS Thematic Conference VipIMAGE). Algarve, Portugal. Oct., 2011.
96. 20<sup>th</sup> International Meshing Roundtable Conference, Paris, France, Oct. 23-26, 2011.
97. The special track “Computational Bioimaging” within the ISVC10 - 6th International Symposium on Visual Computing, Las Vegas, Nevada. November 29 - December 1, 2010.
98. TMSi2010 - 6th International Conference on Technology and Medical Sciences. Porto, Portugal, October 21-23, 2010.
99. 19<sup>th</sup> International Meshing Roundtable Conference, Chattanooga, TN, Oct. 3-6, 2010.
100. The special track “Computational Bioimaging” within the ISVC09 - 5th International Symposium on Visual Computing, Las Vegas, Nevada, November 30 - December 2, 2009.

101. The workshop “Medical Imaging Systems” within EUROMEDIA 2009-2010 – The Multimedia Applications Conference, organized under the auspices of EUROSIS – The European Multidisciplinary Society for Modelling and Simulation Technology.
  102. The I International Conference on Biodental Engineering, Porto, Portugal. Jun. 26-27, 2009.
  103. International Conference on Imaging Theory and Applications (IMAGAPP), 2009-2010.
  104. The II Europe Community on Computational Methods in Applied Sciences (ECCOMAS) Thematic Conference on Computational Vision and Medical Image Processing (International ECCOMAS Thematic Conference VipIMAGE). University of Porto, Portugal. Oct., 2009.
  105. A Special Track on “Computational Bioimaging and Visualization” within 4<sup>th</sup> International Symposium on Visual Computing, Las Vegas, Nevada, Dec. 1-3, 2008.
  106. The International Workshop on “Medical Imaging Systems” within EUROMEDIA 2008.
  107. The I Europe Community on Computational Methods in Applied Sciences (ECOCMAS) Thematic Conference on Computational Vision and Medical Image Processing (International ECOCMAS Thematic Conference VipIMAGE). University of Porto, Portugal. Oct. 17-19, 2007.
- ❖ Session Chair of
1. Semiplenary Lecture, 17th US National Congress on Computational Mechanics (USNCCM17). Albuquerque, NM. July 23-27, 2023.
  2. Symposium of Imaging-Based Methods in Computational Medicine, 17th US National Congress on Computational Mechanics (USNCCM17). Albuquerque, NM. July 23-27, 2023. (Co-organize with A. Buganza Tepole, R. Grytz, M. Holland, J. Weickenmeier, A. Pawar)
  3. Thematic Session on New IGA technologies, ROM, AI and Digital twins, the 11<sup>th</sup> International Conference on Isogeometric Analysis conference (IGA2023). Lyon, France. June 18-21, 2023. (Co-organize with David Kamensky, Georgios Moutsanidis, Kurtis Ford)
  4. Symposium of Data-Driven Modeling and Simulation for Computational Biomedicine of ASME International Mechanical Engineering Congress and Exposition (IMECE). Columbus, OH. November 16-19, 2022. (Co-organize with Adrian Buganza Tepole, Aishwarya Pawar, Adarsh Krishnamurthy, Johannes Weickenmeier)
  5. Minisymposium of Unstructured Spline Technologies, the 10<sup>th</sup> International Conference on Isogeometric Analysis conference (IGA2022). Banff, Canada. November 6-9, 2022. (Co-organize with Deepesh Toshniwal, Gershon Elber, Jorg Peters, Xiaodong Wei)
  6. Mini-Symposium of Locally Refined Spline Spaces – Properties and Structures for Different Refinement Frameworks, 8<sup>th</sup> European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMA2022). Oslo, Norway. June 5-9, 2022. (Co-organize with T. Dokken, H. Speleers and F. Chen)
  7. Symposium of Data-Driven Modeling and Simulation for Computational Biomedicine of ASME International Mechanical Engineering Congress and Exposition (IMECE). USA. November 1-4, 2021. (Co-organize with Adrian Buganza Tepole, Ming-Chen Hsu, Adarsh Krishnamurthy, Johannes Weickenmeier)
  8. Symposium of Data-Driven Modeling and Simulation for Computational Biomedicine of Mechanistic Machine Learning and Digital Twins for Computational Science, Engineering and Technology (MMLDT-CSET). Mission Bay, San Diego, CA, USA. September 26-29, 2021. Hybrid (Co-organize with Adrian Buganza Tepole, Ming-Chen Hsu, Adarsh Krishnamurthy)
  9. Symposium on Splines and Subdivision, SIAM Conference on Geometric and Physical Modeling. University of California, Davis, CA. September 27-29, 2021. Virtual (Co-organize with Lucia Romani)
  10. Thematic Session on Analysis Aware CAGD, IGA conference (IGA2021) in Lyon, France. September 26-29, 2021. Virtual (Co-organize with Tor Dokken, Gershon Elber)
  11. Navigating the Emerging Landscape of Computational Mechanics, 16th US National Congress on Computational Mechanics (USNCCM16). Chicago, IL. July 25-29, 2021. Virtual
  12. Symposium of Imaging-Based Methods in Computational Medicine, 16th US National Congress on Computational Mechanics (USNCCM16). Chicago, IL. July 25-29, 2021. Virtual (Co-organize with R. Grytz, A. Buganza Tepole, D. Nordsletten, M. Holland, J. Weickenmeier)
  13. Symposium of Isogeometric Spline Techniques on Complex Geometries, 16th US National Congress on Computational Mechanics (USNCCM16). Chicago, IL. July 25-29, 2021. Virtual (Co-organize with X. Wei and D. Toshniwal)
  14. Symposium of Industrial Application of IGA, 16th US National Congress on Computational Mechanics (USNCCM16). Chicago, IL. July 25-29, 2021. Virtual (Co-organize with H. Casquero, X. Wei, D. Benson, M. Sederberg, E. Johnson)

15. A Virtual Networking Event and Best Femal Presentation Awards for Career Development Organized by IACM Femal Researchers Chapter and USACM Female Researchers Group (FRG), 16th US National Congress on Computational Mechanics (USNCCM16). Chicago, IL. July 25-29, 2021. Virtual
16. Symposium of Unstructured Spline Technologies for Isogeometric Analysis with Applications, WCCM 2020 (14th World Congress on Computational Mechanics). Virtual Congress. Jan 11-15, 2021. (Co-organize with Xiaodong Wei, Thomas Takacs, Hendrik Speelers, Jorg Peters, Deepesh Toshniwal, Carla Manni)
17. A Virtual Networking Event for Career Development Organized by USACM Female Researchers Group (FRG), Virtual Isogeometric Analysis (VIGA 2020). Aug 12, 2020.
18. INdAM Workshop: Geometric Challenges in Isogeometric Analysis. Università di Roma La Sapienza, Italy. January 27-31, 2020.
19. Invited Session of CAGD and Analysis-Suitable Geometry Modeling, Isogeometric Analysis Conference. Munich, Germany. Sep. 18-20, 2019.
20. Invited Session Alternative Geometry Description and Analysis Integration, Isogeometric Analysis Conference. Munich, Germany. Sep. 18-20, 2019.
21. Invited Session of Unstructured Spline Technologies, Isogeometric Analysis Conference. Munich, Germany. Sep. 18-20, 2019.
22. Symposium of Unstructured Spline Technologies for Isogeometric Analysis with Applications, 15th US National Congress on Computational Mechanics (USNCCM15). Austin, TX. July 28-Aug 1, 2019.
23. Symposium of Immersed Methods for CFD and Fluid-Structure Interaction, 15th US National Congress on Computational Mechanics (USNCCM15). Austin, TX. July 28-Aug 1, 2019.
24. Geometric Modeling and Processing (GMP), Vancouver, Canada. June 19-21, 2019.
25. Symposium of V-Rep and IGA for Design and Additive Manufacturing, SIAM Conference on Computational Geometric Design. Vancouver, Canada. June 17-19, 2019.
26. Symposium of Local Refinement and Adaptivity for IGA 2018: Integrating Design and Analysis. Austin, TX. Oct. 10-12, 2018.
27. Workshop of Geometric and Image Data Sciences: Big Data Analysis, Graphics and Visualization on the Occasion of Celebrating the 60<sup>th</sup> Birthday of Chandrapi Bajaj. Austin, TX. Sep. 14, 2018.
28. Symposium of Immersed Methods for CFD and Fluid-Structure Interaction, WCCM 2018 (13rd World Congress on Computational Mechanics). New York, USA. July 22-27, 2018.
29. Solid and Physical Modeling Symposium (SPM) 2018. Bilbao, Spain. June 11-13, 2018.
30. Symposium of Isogeometric Methods for Complex Geometries and Multi-Physics Systems, 14th US National Congress on Computational Mechanics (USNCCM14). Montreal, Canada. July 17-20, 2017.
31. Invited Keynote Lecture, Solid and Physical Modeling Symposium (SPM) 2017. Berkeley, CA. June 19-21, 2017.
32. Symposium of Isogeometric Methods for Coupled Problems on Complex Geometries, Computational Methods for Coupled Problems in Science and Engineering (Coupled Problems 2017). Islands of Rhodes, Greece. June 12-14, 2017.
33. Symposium of Image Processing and Analysis for Biomedical Engineering and Invited Keynote Lecture, 5th International Conference on Computational and Mathematical Biomedical Engineering (CMBE). University of Pittsburgh, Pittsburgh, PA. Apr. 10-12, 2017.
34. Symposium of Geometric Modeling and Mesh Generation, 19th International Conference on Finite Elements in Flow Problems (FEF 2017). Rome, Italy. April 5-7, 2017.
35. Thematic Session Organizer and Scientific Advisory Committee, USACM Conference on Isogeometric Analysis and Meshfree Methods. La Jolla, California. October 10-12, 2016.
36. Symposium of Isogeometric Analysis and Analysis-Suitable Geometry, WCCM 2016 (12nd World Congress on Computational Mechanics). Seoul, Korea. July 24-29, 2016.
37. Geometric Modeling and Processing (GMP), San Antonio, TX. April 11-13, 2016.
38. 5th ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing (VipIMAGE 2015). Tenerife Island, Canary Islands, Spain. Oct. 19-21, 2015.
39. Symposium of Geometric Modeling and Mesh Generation for Finite Element Applications and Isogeometric Analysis, 18th International Conference on Finite Elements in Flow Problems (FEF 2015). Taipei, Taiwan. March 16-18, 2015.
40. Symposium on Solid and Physical Modeling. Hong Kong. Oct. 26-28, 2014.
41. Geometric Modeling and Processing (GMP). Singapore. June 29-July 1, 2014.

42. Workshop on Structured Meshing: Theory, Applications and Evaluation in the 27<sup>th</sup> Conference on Computer Animation and Social Agents (CASA 2014). University of Houston, TX. May 26-28, 2014.
43. Isogeometric Analysis and Applications (IGAA 2014). Annweiler am Trifels, Germany. Apr. 7-10, 2014.
44. Symposium of Recent Advances in Parallel Meshing Algorithms, 16th SIAM Conference on Parallel Processing for Scientific Computing (SIAM PP14). Portland, OR. Feb. 18-21, 2014.
45. Symposium of Isogeometric Methods, 5<sup>th</sup> Asia Pacific Congress on Computational Mechanics & 4<sup>th</sup> International Symposium on Computational Mechanics (APCOM & ISCM 2013). Singapore. Dec. 11-14, 2013.
46. SIAM Conference on Geometric & Physical Modeling (GD/SPM13). Denver, CO. Nov. 11-14, 2013.
47. Symposium of Geometric Modeling and Mesh Generation for FEM and Isogeometric Analysis, The 17<sup>th</sup> International Conference on Finite Elements in Flow Problems (FEF 2013) Celebrating the 70<sup>th</sup> Birthday of Thomas J.R. Hughes. San Diego, CA. Feb. 24-28, 2013.
48. Workshop on Mesh Processing in Medical Image Analysis, 15<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI). Nice, France. Oct. 1-5, 2012.
49. CompIMAGE 2012 Conference – Computational Modeling of Objects Presented in Images: Fundamentals, Methods and Applications. Rome, Italy. Sept. 5-7, 2012.
50. Professional Development session, The 20th International Meshing Roundtable. Paris, France. Oct. 24-27, 2011.
51. Technical Session of Hexahedral Meshing. The 20<sup>th</sup> International Meshing Roundtable. Paris, France. Oct. 24-27, 2011.
52. Symposium of Meshing Trends, 11th US National Congress on Computational Mechanics (USNCCM11). Minneapolis, MN. July 25-28, 2011.
53. Symposium of Computational Methods in Image Analysis, 11th US National Congress on Computational Mechanics (USNCCM11). Minneapolis, MN. July 25-28, 2011.
54. Isogeometric Analysis. Austin, TX. Jan. 12-15, 2011.
55. The 19<sup>th</sup> International Meshing Roundtable Conference, Professional Development session, Oct. 3-6, 2010.
56. Symposium of Isogeometric Analysis, 16<sup>th</sup> USNCTAM 2010 (16<sup>th</sup> US National Congress on Theoretical and Applied Mechanics). Penn State University, PA. June 27-July 2, 2010.
57. Topic of Computational Methods for Image Processing and Analysis, ASME 1<sup>st</sup> NEMB 2010 (ASME 2010 First Global Congress on NanoEngineering for Medicine and Biology). Houston, TX. Feb. 7-10, 2010.
58. Symposium of Trends in Unstructured Mesh Generation, 10th US National Congress on Computational Mechanics (USNCCM10). Columbus, OH. July, 2009.
59. Symposium of Computational Vascular and Cardiovascular Mechanics, 10th US National Congress on Computational Mechanics (USNCCM10). Columbus, OH. July, 2009.
60. Symposium of Computational Methods in Image Analysis, 10th US National Congress on Computational Mechanics (USNCCM10). Columbus, OH. July, 2009.
61. Symposium of Advances in Mesh Generation for Computational Mechanics, The Inaugural International Conference of the Engineering Mechanics Institute (EM 08). University of Minnesota, Minneapolis, MN. May 18-21, 2008.
62. Symposium of Computational Biology, International Conference on Computational & Experimental Engineering and Sciences (ICCES). Honolulu, HI. March 17-20, 2008.
63. Symposium of Computational Methods in Image Analysis, 9th US National Congress on Computational Mechanics (USNCCM9). San Francisco, CA. July 22-26, 2007.
64. ASME Applied Mechanics and Materials Conference (McMat). Austin, TX. June 3-7, 2007.
65. CompIMAGE Symposium. Coimbra, Portugal. Oct. 20-21, 2006.
66. Symposium of Computational Geometry and Analysis, 7th World Congress on Computational Mechanics. Los Angeles, CA. July 16-22, 2006.

#### MEMBERSHIPS:

- ❖ American Association for the Advancement of Science (AAAS)
- ❖ Fellow, American Institute for Medical and Biological Engineering (AIMBE)
- ❖ Fellow, American Society of Mechanical Engineers (ASME)
- ❖ Biomedical Engineering Society (BMES)
- ❖ International Association for Computational Mechanics (IACM)
- ❖ Fellow, International Academy of Medical and Biological Engineers (IAMBE)



- ❖ Fellow, Society for Industrial and Applied Mathematics (SIAM), SIAG on Geometric Design
- ❖ Fellow, Solid Modeling Association (SMA)
- ❖ Fellow, US Association of Computational Mechanics (USACM)

**GRANT REVIEWS:**

1. NSF Engineering Design and Systems Engineering Program
2. NSF LEAP HI (Leading Engineering for America's Prosperity, Health, and Infrastructure) Program
3. NSF Graduate Research Fellowship Program
4. NSF BRITE Program
5. NSF Software Infrastructure for Sustained Innovation (SI2) Program
6. NSF Advanced Cyberinfrastructures (ACI) Program
7. NSF Biomechanics and Mechanobiology Program
8. NSF Mechanics of Materials and Structures Program
9. NSF Mechanics and Structural Materials Program
10. NSF Biomedical Engineering Program
11. NSF Interdisciplinary Research (IDR) Program
12. ARO Computational Mathematics Program
13. NASA Space Technology Graduate Research Opportunities
14. US Civilian Research and Development Foundation (CRDF)
15. European Research Council
16. Swiss National Science Foundation
17. Medical Research Council, UK
18. Research Council of Norway
19. Austrian Science Fund (FWF)
20. Czech Science Foundation, Czech Republic
21. Israeli Ministry of Science & Technology
22. Junior Principal Investigator Fellowships Program, RWTH Aachen University
23. Linz Institute of Technology, Austria
24. University of Wisconsin – Milwaukee
25. Research Grants Council of Hong Kong
26. The Education University of Hong Kong

**MANUSCRIPT REVIEWS:**

1. AMS (American Mathematical Society) Contemporary Mathematics
2. Annals of Biomedical Engineering
3. Applied Mathematical Modeling
4. Biomechanics and Modeling in Mechanobiology
5. Communications in Computational Physics (CiCP)
6. Computational and Applied Mathematics
7. Computational and Mathematical Methods in Medicine
8. Computational Geosciences
9. Computational Mechanics
10. Computational Science & Discovery
11. Computer Methods in Applied Mechanics and Engineering (CMAME)
12. Computer Methods in Biomechanics and Biomedical Engineering
13. Computer Modeling in Engineering & Sciences
14. Computer-Aided Design
15. Computer-Aided Geometric Design
16. Computers & Graphics
17. Computers and Mathematics with Applications (CAMWA)
18. Engineering with Computers
19. EURASIP Journal on Advances in Signal Processing
20. Finite Elements in Analysis and Design
21. Graphical Models
22. IEEE Computer Graphics & Applications

23. International Journal for Computation Vision and Biomechanics (IJC&B)
24. International Journal for Numerical Methods in Engineering (IJNME)
25. International Journal of Biometrics and Bioinformatics (IJBB)
26. International Journal of Tomography and Statistics
27. Journal of Biomolecular Structure and Dynamics (JBSD)
28. Journal of Computational Physics
29. Journal of Computer Science and Technology
30. Journal of Computing and Information Science in Engineering (JCISE)
31. Journal of Microscopy
32. Mathematical and Computer Modeling
33. Mathematical Reviews (MR)
34. Medical & Biological Engineering & Computing
35. Medical Engineering & Physics
36. Nature Machine Intelligence
37. NDT & E International
38. PLOS Computational Biology
39. PNAS
40. SIAM Journal on Numerical Analysis (SINUM)
41. Transactions on Graphics
42. Transactions on Medical Imaging
43. 14<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Intervention 2010
44. ASME International Mechanical Engineering Congress and Exposition (IMECE) Conference 2021-present
45. ASME 2010 International Manufacturing Science and Engineering Conference
46. ASME Summer Bioengineering Conference (SBC), MS-level student competition 2008-2009.
47. CompIMAGE Symposium 2006-present
48. Eurographics 2004-2005, 2010 Annual Conference of the European Association for Computer Graphics
49. EUROGRAPH 2014
50. Eurographics Symposium on Geometry Processing (SGP), 2020-2021
51. Geometric Modeling and Physics (GMP) 2008-present
52. IEEE Visualization 2006-2007
53. International Meshing Roundtable 2007-present
54. International Symposium on Visual Computing (ISVC) 2010
55. Pacific Graphics 2011
56. SIGGRAPH 2020
57. SIGGRAPH Asia 2012
58. Solid and Physical Modeling 2013-present
59. VipImage Conference 2013

#### **DEI AND OUTREACH ACTIVITIES:**

1. Invited Panelist of USNCCM Career Panel. Albuquerque, NM. July 23-27, 2023.
2. Mentor of USACM Student Chapter, 2023-present
3. Organizer, Women's Networking Event in USNC/TAM2022. Austin, TX. June 21, 2022.
4. Invited Mentor, ECCOMAS Young Investigators Career Forum. Oslo, Norway. June 5-9, 2022.
5. Faculty Mentor of Geometric Modeling for Isogeometric Analysis with Engineering Applications. MIT Summer Geometry Initiative (SGI), 2021-2022.
6. Guest Lecturer of Northwestern University Summer School on Introduction to Mechanistic Data Science for Engineering, 2021.
7. Panelist of CMU-CEE Rising Stars on Beginning and Managing Your Academic Career, March 22, 2021.
8. Founding Chair of USACM Female Researchers Group, 2020-present
9. Judge for Girls International Three Minute Science Competition (<http://www.girlsthreeminutescience.org>), supported by GirlUp ([www.girlup.org](http://www.girlup.org)), an initiative of the United Nations Foundation, 2020-2022.
10. Organizer of the Virtual Networking Event for Career Development in VIGA2020, USACM Female Researchers Group, August 12, 2020.
11. Northwestern University Summer School on Introduction to Mechanistic Data Science for Engineering, Guest Lecture, 2020.

12. Panelist of USNCCM Women's Networking and Career Development. San Diego, CA. July 26-30, 2015.
13. C-MITES Workshop, 20 High School Students, 3 hours, Sept. 15, 2012.
14. CMU-ICES Summer School for Girls, 20 Middle/High School Girls, 4 hours, July 24, 2012.

**UNIVERSITY SERVICES:**

1. CMU Faculty Senate's Faculty Affairs Council, 2023-2025
2. CIT Faculty Chair-Elect 2023-2024 and Chair 2024-2025
3. Mathematical Sciences Department Faculty Search Committee 2023-2024
4. MechE Graduate Education Committee Chair, 2024-present
5. MechE Graduate Student Recruitment Subcommittee Chair, 2023-2024
6. CMU Goldwater Committee for Nominating Undergraduate Candidates, 2018-2022
7. CIT Strategic Planning Working Committee, 2022
8. MechE Awards Committee, 2022-present
9. MechE Qualifier Exam Organizer, 2014-2016, 2022-2023
10. MechE Distinguished Seminar Coordinator, 2022-present
11. MechE Graduate Education Committee, 2007-2008, 2010-2011, 2019-present
12. MechE Representative to CIT Curriculum Review Committee (CRC), 2014-2015, 2019
13. Biomedical Engineering Department Head Search Committee, 2021
14. MechE PhD Student Research Symposium Organizer, 2021
15. MechE Faculty Liaison with Graduate Students, 2020-2021
16. Materials Science and Engineering Department Head Search Committee, 2019-2020
17. CIT Research Ecosystem Committee, 2018-2020, 2022
18. CIT Moonshot Committee, 2020
19. CIT RPT Ad Hoc Committee, 2016-2017, 2019-2021
20. Chair of MechE Research Strategic Planning Committee, 2019-2021
21. MechE Strategic Planning Subcommittee: Bioengineering, Additive Manufacturing, 2019-2020
22. MechE Undergraduate Education Committee, 2013-2019
23. MechE Strategic Planning Subcommittee: Design Innovation, Computational Engineering, 2013-2014
24. MechE Department Head Search Committee, 2012-2013
25. MechE Library Representative, 2011-2012, 2014-present
26. MechE Faculty Senate Representative, 2011-2013
27. MechE MCDM Director, 2011-2012
28. Member of MechE Qualifier Exam Committee, 2007-present
29. MechE Graduate Seminar Coordinator, Carnegie Mellon University, Fall 2008 – Fall 2009
30. Undergraduate Advisor, Carnegie Mellon University, Fall 2008 – present

**TEACHING:**

- 24-658/42-640: "Image-Based Computational Modeling and Analysis", Fall 2019-present
- 24-311: "Numerical Methods", Fall 2008-2012, Spring 2019-present
- 24-703/12-703: "Numerical Methods in Engineering", Fall 2013-2018, 2020
- 24-658/42-640: "Computational Biomodeling and Visualization", Spring 2010-2018
- 24-700: "Computational Biomodeling and Visualization", Spring 2009
- 24-500: "Computational Biomodeling and Visualization", Spring 2008
- ASE 211: "Engineering Computation" (The University of Texas at Austin), Fall 2006

**STUDENTS:** (Postdocs: 6; PhD students: 18; MS students: 28; Undergraduates: 35; Visiting Scholars: 20)

- Aviral Prakash, Postdoc, September 2023 – present
- Kaixin Zhan, PhD student, Fall 2023 – present
- Vedant Puri, PhD student, Spring 2023 – present (co-advised with Prof Burak Kara)
- Hua Tong, PhD student, Fall 2022 – present (co-advised with Prof. Eni Halilaj)
- Lisha White, PhD student, Jan. 2021 – present (co-advised with Prof. Jonathan Cagan)
- Kuanren Qian, PhD student, Aug. 2020 – present (co-advised with Prof. Victoria Webster-Wood)
- Ashlee Liao, PhD student, Aug. 2019 – present (co-advised with Prof. Victoria Webster-Wood)
- Akshay Minocha, Undergraduate student in Mechanical Engineering, Summer 2023

**Alumni***Postdocs*

1. Xuan Liang, Postdoc, Oct. 2020 – Sep. 2022 (now Postdoc at University of Maryland, Assistant Professor at Nanyang Technological University, Singapore starting from January 2024)
2. Hugo Casquero Penelas, Postdoc, Apr. 2017 – Aug. 2020 (now Assistant Professor at University of Michigan - Dearborn)
3. Xiaodong Wei, Postdoc, Dec. 2017 – Sep. 2018 (now Assistant Professor at University of Michigan – Shanghai Jiao Tong University Joint Institute)
4. Hong Zhang, Postdoc, 2011 – 2013, co-advised by Prof. Kenji Shimada (now Assistant Professor at University of Maryland School of Medicine)
5. Mohamed Ebeida, Postdoc, Sept. 2008 – May 2010 (now Senior Member of Technical Staff at Sandia National Laboratory)

*PhD Students*

1. Angran Li, PhD student, Aug. 2016 – Jul. 2022 (now Postdoc at University of Colorado Boulder)
2. Yuxuan Yu, Ph.D. student, Aug. 2017 – Sep. 2021 (now Assistant Professor in Donghua University, Shanghai, China)
3. Aishwarya Pawar, Ph.D. student, Jan. 2016 – Aug. 2020 (now Assistant Professor at Iowa State University)
4. Xiaodong Wei, Ph.D. student in Aug. 2013 – Nov. 2017 (now Assistant Professor at University of Michigan – Shanghai Jiao Tong University Joint Institute)
5. Arjun Kumar, Ph.D. student, July 2013 – Dec 2016 (co-advised with Prof. Shawn Litster, now Computer Vision Scientist at NextDroid)
6. Kangkang Hu, Ph.D. student, Aug. 2012 – July 2016 (now Technical Director at Huawei, China)
7. Tao Liao, Ph.D. student, Aug. 2011 – Aug. 2015 (now Software Engineer at Google, Boston)
8. Lei Liu, Ph.D. student, Aug. 2011 – Sept. 2015 (now Software Engineer at Google, Seattle)
9. Jin Qian, Ph.D. student, Aug. 2008 – Mar. 2013 (now Investment Director at Huatai Ruilian Fund, Beijing)
10. Xinghua Liang, Ph.D. student, June 2008 – Jan. 2013 (now Lead Research Engineer at HERE Technologies)
11. Wenyan Wang, Ph.D. student, Feb. 2008 – June 2012 (now Lead Software Developer at ANSYS, Chicago)
12. Erick L. Johnson, Ph.D. student, Spring 2009 – Summer 2010 (co-advised with Prof. Kenji Shimada, now Associate Professor in Montana State University)

*Master Students*

1. Shixuan Gu, MS-P student in BME, Fall 2022 – 2023 (PhD student in Harvard Computer Science)
2. Charlotte Avra, MS-P student in BRIDGE program, Summer 2022
3. Brian Heecheon Kang, MS-P student, Summer 2019, Jan. 2020 – Dec. 2020
4. Max Farfel, MS Student in Materials Science and Engineering (co-advised with Prof. Anthony Rollett), 2019-2020
5. Kuanren Qian, MS-P student, Aug. 2018 – May 2020
6. Haolin Liu, MS-P student, Summer 2019
7. Zilu Wang, MS-P student in Mechanical Engineering, Aug. 2018 – 2019 (co-advised with Prof. Jimmy Hsia)
8. Jingru Wu, MS student in BME, 2019
9. Yile Feng, MS-P student in Biomedical Engineering, 2019
10. Lichengxi Huang, MS student in Civil Engineering, Fall 2016
11. Shuo Li, MS student in Civil Engineering, Fall 2016
12. Yicong Lai, MS-P student in Mechanical Engineering, Aug. 2014 – 2016
13. Aishwarya Pawar, MS-P student in Mechanical Engineering, Aug. 2014 – 2015
14. Shuai Cui, MS-P student in Mechanical Engineering, Fall 2015
15. Charles Scott Gerfen, MS student in Mechanical Engineering, Summer 2015
16. Joshua Chen, MS-P student in School of Architecture, Aug. 2014 – 2015
17. Yang Gao, MS-P student in Biomedical Engineering, Spring 2014 – 2015 (co-advised with Prof. Prahlad Menon)
18. Chiyu Dong, MS-P student in Mechanical Engineering, Fall 2012 – May 2014
19. Suyue Han, MS-P student in Mechanical Engineering, Fall 2012 – May 2014 (co-advised with Prof. Kenji Shimada)
20. Runtian Liu, MS-P student in Mechanical Engineering, Fall 2012 – May 2014 (co-advised with Prof. Satbir Singh)



21. You Zhou, MS-P student in Mechanical Engineering, Spring 2013 – May 2014 (co-advised with Prof. Satbir Singh)
22. Ling Zhan, MS-P student in Mechanical Engineering, Fall 2012 – Fall 2013
23. Xiaoyi Fu, MS-P student in Mechanical Engineering, Fall 2011 – May 2013
24. Kibaek Lee, MS-P student in Mechanical Engineering, Fall 2011 – May 2012 (co-advised with Prof. Ender Finol)
25. Yuanfeng Jiao, MS-P student in Biomedical Engineering, Fall 2010 – May 2012
26. Yiming Jing, MS-P student, Aug. 2009 – May 2011 (Now at Risk Analyst at BNP Paribas)
27. Jun Ma, MS-P student, Aug. 2009 – May 2011 (Now at LinkedIn)
28. Rong Li, MS-P, Aug. 2007 – Dec. 2008 (co-advised with Dr. David Archer, now at SINOPEC Engineering Inc., Beijing, China)

#### *Undergraduate Students*

1. Christopher Oh, Undergraduate student in Mechanical Engineering, Summer 2023
2. Margaret Chen, Undergraduate student in Mathematics, 2022 – present
3. Remington Frank-Marquez, Undergraduate student in MechE, SURG, Fall 2022 (co-advised with Prof. Sneha Narra)
4. Hyunji Kim, Undergraduate student in MechE and BME, Fall 2020 – 2021, CIT Honored Research 2021-2022
5. Wenxin Jenna Cui, Undergraduate student in MechE and BME, 2021 – 2022
6. Marione Aluoch, Undergraduate student in MechE, Summer 2020 – 2021
7. Noel Barnes, Undergraduate student in MechE, Summer 2021
8. Audrey Young, Undergraduate student in MechE, Summer 2021
9. Willetta Wisely, Undergraduate student in MechE, Summer 2021
10. Joshua Turney, Undergraduate student in MechE, Summer 2021
11. Sara Begane, NSF REU student in MechE, 06/01-08/17, 2020 – 2021
12. Marvin Bennett, NSF REU student in MechE, 06/20-08/20; MechE Honors Research, 2020 – 2021
13. Raaga Singireddy, Undergraduate student in ChemE and BME, Fall 2020 – 2021
14. Jialei (Ginny) Liu, Undergraduate student in MechE, Sep. 2019 – 2020
15. Kyuwon Weon, Undergraduate student in MechE and BME, Fall 2020
16. Kyle Wagner, Undergraduate student in Statistics and Machine Learning, 06/03-08/28, 2020
17. Jeffrey He, Undergraduate student in Northwestern University, Summer 2019 and 2020
18. David Oh, Undergraduate student, June 3 – July 22, 2019
19. Brian (Heecheon) Kang, Undergraduate student, June 3 – July 31, 2019
20. Gregory Miller, Undergraduate student, Summer 2017
21. Qingyuan Wu, Undergraduate student, Summer 2017
22. Brandon Xu, Undergraduate student, Summer 2017
23. Diana Li, Undergraduate student, Fall 2016
24. Robert Macedo, Undergraduate student in Physics, Fall 2014
25. Conor Fitzgerald, Undergraduate student, MechE and BME, Summer 2013
26. Jennifer Elkin, undergraduate, MechE and BME, Fall 2012
27. Andrew Kelly, undergraduate, MechE, Fall 2012
28. Mark Erazo, undergraduate, MechE, Fall 2011
29. Huan (Steve) Qin, undergraduate, MechE, Fall 2011
30. Ojas Mainkar, undergraduate, MechE and BME, Summer 2011
31. Deborah Gruner, undergraduate, July 2010 – Fall 2010
32. Indira Biswas, undergraduate, May 2009 – Fall 2009
33. Mikhail Lara, undergraduate, Fall 2008
34. Changho Oh, undergraduate, Sept. 2007 – Aug. 2008
35. Julie Ng, undergraduate, Jan. 2008 – May 2008

#### *Visiting Scholars*

1. Yanyang Xiao, Visiting Ph.D. student from Xiamen University, Oct. 2018 – Sep. 2019 (now faculty in Nanchang University, China)
2. Yundong Gai, Visiting Ph.D. student from Dalian Institute of Technology, Oct. 2018 – Sep. 2019
3. Juan Cao, Visiting Professor from Xiamen University, China, July 19, 2019 – Sep. 15, 2019
4. Zhonggui Chen, Visiting Professor from Xiamen University, China, July 19, 2019 – Sep. 15, 2019

5. Yue Jia, Visiting Professor from Northwestern Polytechnic University, China, Nov. 2017 – Mar. 2019
6. Lifeng Zhu, Visiting Professor from Southeast University, China, Jan. 2018 – Jan. 2019
7. Bin Li, Visiting PhD Student from Zhejiang University, China, Nov. 2017 – Nov. 2018 (now faculty in Lanzhou University, China)
8. Xin Li, Visiting Professor from University of Science and Technology of China, 2018.
9. Juan Cao, Visiting Professor from Xiamen University, China, Sep. 2017 – Sep. 2018
10. Zhonggui Chen, Visiting Professor from Xiamen University, China, Sep. 2017 – Sep. 2018
11. Adam Robert Updegrave, Visiting Ph.D. Student from University of California, Berkeley, May 2017 – June 2017
12. Hugo Casquero Penelas, Visiting Ph.D. student from Prof. Hector Gomez's group in University of A Coruna, Spain. March 21 – April 1, 2016
13. Xinge Li, Visiting Ph.D. student from Prof. Guoliang Xu's group in Chinese Academy of Science, March 1 – July 31, 2016
14. Hugo Casquero Penelas, Visiting Ph.D. student from Prof. Hector Gomez's group in University of A Coruna, Spain. Sept. 1, 2014-Jan. 9, 2015
15. Onofre Marco Alacid, Visiting Ph.D. student from Prof. Juan José Ródenas García's group in University Polytechnic of Valencia, Spain. Sept.-Nov., 2014
16. Xinge Li, Visiting Ph.D. student from Prof. Guoliang Xu's group in Chinese Academy of Science, Sep-Nov, 2014
17. Yue Jia, Visiting Ph.D. student from Prof. Timon Rabczuk's group in Bauhaus-University Weimar, Germany. Apr. 17, 2013 – March 23, 2014 (Now at Northwestern Polytechnic University, Xi'an, China)
18. Onofre Marco Alacid, Visiting Ph.D. student from Prof. Juan José Ródenas García's group in University Polytechnic of Valencia, Spain. Sept.-Nov., 2013
19. Juelin Leng, visiting Ph.D. student from Prof. Guoliang Xu's group in Chinese Academy of Science, August – October, 2011
20. Rui Zhang, Ph.D. student in Architecture, May 2008 – July 2008, Summer intern (now at IBM, New York)

**THESIS COMMITTEES:**

1. Hongrui Chen, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chais: Burak Kara, Fall 2023 – present
2. Jorge Vasquez Albornoz, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chais: Kenji Shimada, Fall 2023 – present
3. Dule Shu, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chais: Amir Barati Farimani, Fall 2023 – present
4. Brian Davis Coffin, PhD student in Materials Science and Engineering, Carnegie Mellon University, Chair: Adam Feinberg, 2018 – 2023
5. Mahsa Tajdari, Ph.D. student in Mechanical Engineering, Northwestern University, Chair: Wing Kam Liu, 2021-2022
6. Baolin Wang, Ph.D. student in Mechanical Engineering, Georgia Tech, Chair: Ting Zhu, 2020 – 2022
7. Hao Sun, Ph.D. student in Mechanical & Aerospace Engineering, George Washington University, Chair: James Lee, 2021
8. Esteban Zegpi, Ph.D. student in Civil and Environmental Engineering, Carnegie Mellon University, Chair: Amit Acharya, Fall 2019 – 2020
9. Ye Han, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chais: Burak Kara, Summer 2019 – 2020
10. Xiaoqi Chai, Ph.D. student in Biomedical Engineering, Carnegie Mellon University, Chair: Ge Yang, Spring 2018 – 2019
11. Deanna Easley, Ph.D. student in Bioengineering, University of Pittsburgh, Chairs: Steven Abramowitch and Pamela Moalli, 2016 – 2021
12. Nurcan Ulu, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chairs: Burak Kara, Fall 2017 – 2018
13. Qinle Ba, Ph.D. student in Biomedical Engineering, Carnegie Mellon University, Chairs: Ge Yang, Spring 2017 – 2018
14. Mark Whiting, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chairs: Jon Cagan and Phil Leduc, Fall 2016 – Summer 2017
15. Wei Sin Ang, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chair: Hartmut Geyer, 2015 – 2017

16. Fotis Drakopoulos, Ph.D. student in Computer Sciences, Old Dominion University, Chair: Nikos Chrisochoides, Fall 2015
17. Kristin Warren, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chairs: Philip LeDuc and Fred Higgs, 2015 – 2016
18. Theodore Roman, Ph.D. student in Lane Center for Computational Biology, Carnegie Mellon University, Chair: Russel Schwartz, Fall 2014 – Spring 2017
19. Guo Zhan Lum, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chair: Metin Sitti, 2014 – 2016
20. Chandrajit Thakkar, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chair: Yoed Rabin, 2013 – 2016
21. Erhan Ari, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chair: Burak Kara, Spring 2014 – 2015
22. Anjali Sheharwat, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chair: Kenji Shimada and Yoed Rabin, 2013 – 2015
23. Robert Keelan, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chair: Kenji Shimada and Yoed Rabin, 2013 – 2015
24. Jia Wu, Ph.D. student in Civil Engineering, University of Pittsburgh, Chair: John Brigham, 2012 – 2013
25. Prahlad G. Menon, Ph.D. student in Biomedical Engineering, Carnegie Mellon University, Chair: Jim Antaki, Summer 2012 – Spring 2013
26. Gunay Orbay, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chair: Burak Kara, Summer 2012 – Spring 2013
27. Luoting Fu, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chair: Burak Kara, Summer 2012 – Spring 2013
28. Shin Hyung Song, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chair: Burak Ozdoganlar, Fall 2011 – Summer 2012
29. Robert Steward, Ph.D. student in Mechanical Engineering, Carnegie Mellon University, Chair: Philip LeDuc, Summer 2010 – Summer 2011
30. Matthew Fisher, Ph.D. student in BioEngineering, University of Pittsburgh, Chair: Savio Woo, Fall 2009 – Summer 2010
31. Rui Zhang, Ph.D. student in Architecture Engineering, Carnegie Mellon University, Chair: Khee Poh Lam, Spring 2008 – Fall 2011
32. Matthew L. Staten, Ph.D. student in Civil & Environmental Engineering, Carnegie Mellon University, Chair: Kenji Shimada, Jacobo Bielak, Spring 2008 – Spring 2010
33. John Porterfield, Ph.D. student in Electrical Engineering, The University of Texas at Austin, Chair: Jonathan Valvano, Fall 2007 – 2011  
“Admittance Measurement for Early Detection of Congestive Heart Failure”

#### MASTER THESIS COMMITTEES/REVIEWER:

1. Shixuan Gu, MS-P student in Biomedical Engineering, Carnegie Mellon University, Advisor: Yongjie Jessica Zhang, Summer 2023
2. Mangalam Sahai, MS-P student in Biomedical Engineering, Carnegie Mellon University, Advisor: Jon Cagan and Phil LeDuc, Summer 2023
3. Yang Gao, MS-P student in Biomedical Engineering, Carnegie Mellon University, Advisor: Yongjie Jessica Zhang, Summer 2015
4. Harsh Saxena, MS-P student in Biomedical Engineering, Carnegie Mellon University, Advisor: Ge Yang, Summer 2015
5. Peng Liu, MS-P student in Biomedical Engineering, Carnegie Mellon University, Chair: Ender Finol, Spring – Summer 2010

#### OTHER PRESENTATIONS:

1. Lisha White, Xuan Liang, Guanglu Zhang, Jonathan Cagan, Yongjie Jessica Zhang. **Coupling Simulated Annealing and Homogenization to Design Thermally Conductive Hybrid Lattice Support Structures for LPBF.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 3, 2023. Poster

2. Ashlee S. Liao, Victoria A. Webster-Wood, Yongjie J. Zhang. **Microcontact Printing and PNIPAM towards Custom Neuronal Circuit Fabrication.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 3, 2023. Poster
3. Kuanren Qian, Aishwarya Pawar, Ashlee S. Liao, Cosmin Anitescu, Victoria A. Webster-Wood, Adam W. Feinberg, Timon Rabczuk, Yongjie Jessica Zhang. **Modeling Neuron Growth Using Isogeometric Collocation Based Phase Field Method.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 4, 2022. Poster
4. Lisha White, Yongjie Jessica Zhang, Jonathan Cagan. **Generation of 3D lattice Support Structures Using Shape Annealing.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 4, 2022. Poster
5. Ashlee S. Liao, Wenxin (Jenna) Cui, Victoria A. Webster-Wood, Yongjie J. Zhang. **Quantitative Evaluation of Multi-Stage Morphogenesis of Rat Hippocampal Neurons *in Vitro*.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 4, 2022. Poster
6. Ashlee S. Liao, Victoria A. Webster-Wood, Yongjie J. Zhang. **Quantification of Neuron Morphological Development Using the Change-Point Test.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 5, 2021. Poster
7. Yuxuan Yu, Xiaodong Wei, Angran Li, Jialei Ginny Liu, Jeffrey He, Yongjie Jessica Zhang. **HexGen and Hex2Spline: Polycube-based Hexahedral Mesh Generation and Spline Modeling for Isogeometric Analysis Applications in LS-DYNA.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 5, 2021. Poster
8. Angran Li, Yongjie Jessica Zhang. **A PDE-Constrained Optimization Model for the Material Transport Control in Neurons.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 5, 2021. Poster
9. Aishwarya Pawar, Yongjie Jessica Zhang, Cosmin Anitescu, Timon Rabczuk. **Joint Image Segmentation and Registration Based on a Dynamic Level Set Approach Using Hierarchical B-splines.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 6, 2020. **Poster**
10. Yuxuan Yu, Humphrey Yang, Haolin Liu, Kuanren Qian, Jianzhe Gu, Lining Yao, Yongjie Jessica Zhang. **SimuLearn: Combining Finite Element Simulation with Machine Learning for Inverse Design and Manufacture of Self-Assembling Viscoelastic Materials.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 6, 2020. **Poster**
11. Humphrey Yang, Yuxuan Yu, Haolin Liu, Kuanren Qian, Jianzhe Gu, Lining Yao, Yongjie Jessica Zhang. **SimuLearn: Combining Finite Element Simulation with Machine Learning for Inverse Design and Manufacture of Self-Assembling Viscoelastic Materials.** *NextManufacturing Center Membership Meeting, Carnegie Mellon University, Pittsburgh, PA.* Jan 30, 2020. **Poster**
12. Humphrey Yang, Yuxuan Yu, Haolin Liu, Kuanren Qian, Jianzhe Gu, Lining Yao, Yongjie Jessica Zhang. **SimuLearn: Combining Finite Element Simulation with Machine Learning for Inverse Design and Manufacture of Self-Assembling Viscoelastic Materials.** *Manufacturing Futures Initiative, Carnegie Mellon University, Pittsburgh, PA.* April 25, 2019. **Talk**
13. Humphrey Yang, Yuxuan Yu, Haolin Liu, Kuanren Qian, Jianzhe Gu, Lining Yao, Yongjie Jessica Zhang. **SimuLearn: Combining Finite Element Simulation with Machine Learning for Inverse Design and Manufacture of Self-Assembling Viscoelastic Materials.** *Manufacturing Futures Forum, Carnegie Mellon University, Pittsburgh, PA.* April 29, 2019. **Poster**
14. Aishwarya Pawar, Yongjie Jessica Zhang, Cosmin Anitescu, Timon Rabczuk. **Joint Image Segmentation and Registration Based on a Dynamic Level Set Approach Using Hierarchical B-splines.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 1, 2019. **Poster**
15. Yuxuan Yu, Humphrey Yang, Haolin Liu, Kuanren Qian, Jianzhe Gu, Lining Yao, Yongjie Jessica Zhang. **SimuLearn: Combining Finite Element Simulation with Machine Learning for Inverse Design and Manufacture of Self-Assembling Viscoelastic Materials.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 1, 2019. **Poster**
16. Angran Li, Xiaoqi Chai, Ge Yang, Yongjie Jessica Zhang. **Material Transport Simulation in Complex Geometry of Neurons Using Isogeometric Analysis.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 1, 2019. **Poster**
17. Aishwarya Pawar, Yongjie Jessica Zhang, Cosmin Anitescu, Timon Rabczuk. **Joint Image Segmentation and Registration Based on a Dynamic Level Set Approach Using Hierarchical B-splines.** *CMU BME Forum, Sep. 21, 2018.* **Poster**



18. Aishwarya Pawar, Yongjie Jessica Zhang, Cosmin Anitescu, Timon Rabczuk. **Joint Image Segmentation and Registration Based on a Dynamic Level Set Approach Using Hierarchical B-splines.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 2, 2018. **Poster**
19. Angran Li, Xiaoqi Chai, Ge Yang, Yongjie Jessica Zhang. **Simulation of Material Transport in Complex Geometry of Neurons Using Isogeometric Analysis.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 2, 2018. **Poster**
20. Yuxuan Yu, Yongjie Jessica Zhang, Xiaodong Wei, Xiang Ren, Jim Lua. **Generalized Centroidal Voronoi Tessellation-Based Volumetric Spline Construction for Isogeometric Analysis.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 2, 2018. **Poster**
21. Yuxuan Yu, Yongjie Jessica Zhang, Xiaodong Wei, Xiang Ren, Jim Lua. **Generalized Centroidal Voronoi Tessellation-Based Volumetric Spline Construction for Isogeometric Analysis.** *NextManufacturing Membership Meeting, Carnegie Mellon University, Pittsburgh, PA.* January 31, 2018. **Poster**
22. Zhonggui Chen, Wen Chen, Jianzhi Guo, Juan Cao, Yongjie Jessica Zhang. **Orientation Field Guided Line Abstraction for 3D Printing.** *NextManufacturing Membership Meeting, Carnegie Mellon University, Pittsburgh, PA.* January 31, 2018. **Poster**
23. Angran Li, Yongjie Jessica Zhang, Ge Yang. **Investigating How Shapes of Neurons Mediate Functions Using Finite Element Based Modeling and Simulation.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 31, 2017. **Poster**
24. Aishwarya Pawar, Yongjie Jessica Zhang, Cosmin Anitescu, Yue Jia, Timon Rabczuk. **3D Non-Rigid Image Registration Using Truncated Hierarchical B-splines.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 31, 2017. **Poster**
25. Xiaodong Wei, Yongjie Zhang, Thomas J.R. Hughes. **Volumetric Truncated Hierarchical Splines (TH-spline3D) Construction on Unstructured Hexahedral Meshes for Isogeometric Analysis Applications.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 31, 2017. **Poster**
26. Xiaodong Wei, Yongjie Jessica Zhang. **Integrating CAD with Abaqus: A Design-Through-Analysis Platform for 3D Printing.** *NextManufacturing Mid-Year Membership Meeting, Carnegie Mellon University, Pittsburgh, PA.* Feb. 15, 2017. **Poster**
27. Yicong Lai, Yongjie Jessica Zhang, Xiaodong Wei, Eugene Fang, Jim Lua. **Integrating CAD with Abaqus: A Design-Through-Analysis Platform for 3D Printing.** *3D Printing Summit, Carnegie Mellon University, Pittsburgh, PA.* Jan. 10-11, 2017. **Poster**
28. Kangkang Hu and Yongjie Jessica Zhang. **Adaptive Superpixel Generation based on Local Harmonic Edge-Weighted Centroidal Voronoi Tessellation.** *21st Meeting of the Minds, Carnegie Mellon University, Pittsburgh, PA.* May 4, 2016. **Poster.**
29. Aishwarya Pawar, Yongjie Zhang, Yue Jia, Xiaodong Wei, Timon Rabczuk, Chiu Ling Chan, Cosmin Anitescu. **Adaptive FEM-Based Non-Rigid Image Registration Using Truncated Hierarchical B-splines.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 18, 2016. **Poster.**
30. Yicong Lai, Yongjie Zhang, Eugene Fang, Jim Lua. **Integrating CAD and CAE: An Enhanced T-spline Based Isogeometric Analysis Software Solution.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 18, 2016. **Poster.**
31. Kangkang Hu, Yongjie Zhang. **Feature Based Surface Parameterization Using Secondary Laplace Operator Based on Loop Subdivision.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 18, 2016. **Poster.**
32. Xiaodong Wei, Yongjie Zhang, Lei Liu, Thomas J.R. Hughes. **Truncated T-splines: Fundamentals and Methods.** *Graduate Research Symposium in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 18, 2016. **Poster.**
33. Kangkang Hu and Yongjie Jessica Zhang. **Adaptive Superpixel Generation based on Local Harmonic Edge-Weighted Centroidal Voronoi Tessellation.** *20th Meeting of the Minds, Carnegie Mellon University, Pittsburgh, PA.* May 5, 2015. **Poster.**
34. Tao Liao, Xinge Li, Guoliang Xu and Yongjie Jessica Zhang. **Shape Analysis Based on Eigenfunctions from the Second Fundamental Form of the Surface.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 20, 2015. **Poster.**

35. Lei Liu, Jessica Zhang and Xiaodong Wei. **Weighted T-spline and Its Application in Reparameterizing Trimmed NURBS Surfaces.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 20, 2015. **Poster.**
36. Xiaodong Wei, Yongjie Zhang. **Extended Truncated Hierarchical Catmull-Clark Subdivision with Local Refinement.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 20, 2015. **Poster.**
37. Kangkang Hu and Yongjie Jessica Zhang. **Centroidal Voronoi Tessellation based Polycube Construction and Adaptive All-Hexahedral Mesh Generation.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 20, 2015. **Poster.**
38. Arjun Kumar, Yongjie Zhang and Shawn Litster. **Spatiotemporal X-ray CT Image Reconstruction using Probabilistic Registration.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 20, 2015. **Poster.**
39. Joshua Chen, Yicong Lai, Lei Liu and Yongjie Jessica Zhang. **Rhino 3D to Abaqus Design-Through-Analysis: A T-spline Isogeometric Analysis Software Solution.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 20, 2015. **Poster.**
40. Yang Gao, Yongjie Jessica Zhang and Prahlad G. Menon. **3D Shape Comparison Using a Laplace Spectral Shape Matching Approach.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* March 20, 2015. **Poster.**
41. Yang Gao, Tao Liao, Jessica Zhang and Prahlad G Menon. **Development of Active Shape Models for Left Ventricular Function in Ischemic Cardiomyopathy.** *CompIMAGE (Computer Modeling of Objects Presented in Images: Fundamentals, Methods, and Applications).* Pittsburgh, PA. Sept. 3-5, 2014. **Poster.**
42. Kangkang Hu and Yongjie Jessica Zhang. **Adaptive Superpixel Generation based on Local Harmonic Edge-Weighted Centroidal Voronoi Tessellation.** *CompIMAGE (Computer Modeling of Objects Presented in Images: Fundamentals, Methods, and Applications).* Pittsburgh, PA. Sept. 3-5, 2014. **Poster.**
43. Tao Liao, Guoliang Xu and Yongjie Jessica Zhang. **Structure-aligned Guidance Estimation in Surface Parameterization Using Eigenfunction-based Cross Field.** *CompIMAGE (Computer Modeling of Objects Presented in Images: Fundamentals, Methods, and Applications).* Pittsburgh, PA. Sept. 3-5, 2014. **Poster.**
44. Lei Liu, Jessica Zhang and Xiaodong Wei. **Trimmed NURBS Surface Reparameterization Using Truncated T-spline.** *CompIMAGE (Computer Modeling of Objects Presented in Images: Fundamentals, Methods, and Applications).* Pittsburgh, PA. Sept. 3-5, 2014. **Poster.**
45. Xiaodong Wei, Yongjie Zhang, Thomas J.R. Hughes and Michael A. Scott. **Truncated Hierarchical Catmull-Clark Subdivision with Local Refinement.** *CompIMAGE (Computer Modeling of Objects Presented in Images: Fundamentals, Methods, and Applications).* Pittsburgh, PA. Sept. 3-5, 2014. **Poster.**
46. Arjun Kumar, Pratiti Mandal, Yongjie Zhang, Shawn Litster. **Image Restoration of Artifact-free Phase Contrast Nano Scale X-ray CT Images for Segmentation.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 25, 2014. **Poster.**
47. Xiaodong Wei, Yongjie Zhang. **Truncated Hierarchical Catmull-Clark Subdivision with Local Refinement for Arbitrary Topology.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 25, 2014. **Poster.**
48. Kangkang Hu, Yongjie Zhang. **Extended Edge-Weighted Centroidal Voronoi Tessellation for Image Segmentation.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 25, 2014. **Poster.**
49. Tao Liao, Guoliang Xu, Yongjie Zhan. **Structure-Aligned Guidance Estimation in Surface Parameterization Using Eigenfunction-based Cross Field.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 25, 2014. **Poster.**
50. Lei Liu, Yongjie Zhang, Yang Liu, Wenping Wang. **Feature-Preserving T-mesh Construction Using Skelton-based Polycubes.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 25, 2014. **Poster.**
51. Lei Liu, Yongjie Zhang. **Trivariate Solid T-spline Construction Using Boolean Operations.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 19, 2013. **Poster.**
52. Tao Liao, Yongjie Zhang. **Multi-core CPU and GPU-accelerated Multiscale Modeling for Biomolecular Complexes.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 19, 2013. **Poster.**

53. Xiaoyi Fu, Yongjie Zhang. **An Image Based Geometric Modeling Pipeline for Vascular Isogeometric Analysis.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 19, 2013. **Poster.**
54. Jun Ma, Yongjie Zhang. **Cubic Hermite Model Construction for the Human Heart.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 15, 2011. **Talk.**
55. Yiming, Yongjie Zhang. **Dynamic Lung Modeling and Tumor Tracking using Deformable Image Registration.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 15, 2011. **Poster.**
56. Jin Qian, Yongjie Zhang. **Manifold Dual Contouring for Domains with Topology Ambiguity.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 15, 2011. **Poster.**
57. Xinghua Liang, Yongjie Zhang. **Hexahedral Mesh Generation Based on Rhombic Dodecahedron Tree Structure.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 15, 2011. **Poster.**
58. Wenyan Wang, Yongjie Zhang. **Converting a Quadrilateral/Hexahedral Mesh to a T-spline.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 15, 2011. **Poster.**
59. Yongjie Zhang. **From Unstructured Quadrilateral Mesh to T-Spline.** *Institute for Computational Engineering and Sciences, The University of Texas at Austin, Prof. Tom Hughes' group.* Aug. 16-17, 2010.
60. Wenyan Wang, Yongjie Zhang. **Solid T-Spline Construction for Isogeometric Analysis.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 16, 2010. **Poster.**
61. Xinghua Liang, Mohamed Ebeida, Yongjie Zhang. **Hexagon-Based All-Quadrilateral Mesh Generation with Guaranteed Quality.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 16, 2010. **Poster.**
62. Jin Qian, Yongjie Zhang. **Automatic and Robust All-Hexahedral Mesh Generation for CAD Models with Sharp Feature Preservation.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 16, 2010. **Poster.**
63. **High Fidelity Geometric Modeling and Mesh Generation from Volumetric Imaging Data with Applications in Mechanics.** 24-718, Prof. Fred Higgs's class, Computational Fluid Mechanics. April 13, 2010. **Guest Lecture.**
64. **High Fidelity Geometric Modeling and Mesh Generation from Volumetric Imaging Data with Applications in Mechanics.** 42-709, Prof. Kerem Pekkan's class, Biofluid Mechanics. March 1, 2010. **Guest Lecture.**
65. **High Fidelity Geometric Modeling and Mesh Generation from Volumetric Imaging Data with Applications in Mechanics.** Prof. Bob Suter's group meeting. Department of Physics, Carnegie Mellon University. April 16, 2009. Host: Prof. Bob Suter.
66. **Boundary/Finite Element Meshing from Imaging Data with Applications.** 24-311, Prof. Fred Higgs' class, Computational Fluid Mechanics. Mar. 6, 2008. **Guest Lecture.**
67. Wenyan Wang, Yongjie Zhang. **Wavelets-Based NURBS Simplification, Fairing and Offsetting.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 17, 2009. **Poster.**
68. Xinghua Liang, Mohamed Ebeida, Yongjie Zhang. **Guaranteed-Quality All-Quadrilateral Mesh Generation with Feature Preservation.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 17, 2009. **Poster.**
69. Jin Qian, Yongjie Zhang. **Automatic Hexahedral Mesh Generation and Quality Improvement for Microstructure Materials.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 17, 2009. **Poster.**
70. Wenyan Wang, Yongjie Zhang. **Wavelets-Based NURBS Simplification, Fairing and Offsetting.** *Innovation with Impact Posters, Carnegie Mellon University, Pittsburgh, PA.* April 3, 2009. **Poster.**
71. Xinghua Liang, Mohamed Ebeida, Yongjie Zhang. **Guaranteed-Quality All-Quadrilateral Mesh Generation with Feature Preservation.** *Innovation with Impact Posters, Carnegie Mellon University, Pittsburgh, PA.* April 3, 2009. **Poster.**
72. Jin Qian, Yongjie Zhang. **Automatic Hexahedral Mesh Generation and Quality Improvement for Microstructure Materials.** *Innovation with Impact Posters, Carnegie Mellon University, Pittsburgh, PA.* April 3, 2009. **Poster.**
73. Wenyan Wang, Yongjie Zhang. **Compression and Fairing of NURBS Surfaces using Wavelets.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 18, 2008. **Poster.**
74. Rong Li, Yongjie Zhang, David Archer. **Computation of Air Flow in CMU's Intelligent Workplace and Its Effect on Occupant Comfort and Health.** *Bennett Conference in Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.* April 18, 2008. **Talk.**

75. Rong Li, Yongjie Zhang, David Archer. **Computation of Air Flow in CMU's Intelligent Workplace and Its Effect on Occupant Comfort and Health.** *Innovation with Impact Posters, Carnegie Mellon University, Pittsburgh, PA.* April 4, 2008. **Poster.**

#### STUDENT AWARDS:

1. Hua Tong, Student Travel Award, US National Congress for Computational Mechanics, 2023
2. Lisha White, Ph.D. student, CMU-MechE Graduate Research Symposium Milton Shaw PhD Student Traveling Award, \$1,000, 2023
3. Kuanren Qian, Bradford and Diane Smith Graduate Fellowship in Engineering, \$2,500, 2023
4. Ashlee Liao, SfN Trainee Professional Development Award, 2022
5. Ashlee Liao, Mechanical Engineering Outreach Stars (MEOS) Award, CMU, 2021-2022
6. Remington Frank-Marquiez, undergraduate student, SURG (Small Undergraduate Research Grant) \$500, Fall 2022. Advisor: Yongjie Zhang and Sneha Narra  
Title: Developing a Machine Learning Model for Optimizing the Additive Manufacturing of AlSi<sub>10</sub>Mg
7. Ashlee Liao, Jean-Francois and Catherine Heitz Scholarship, CMU-MechE, \$10,000, 2021-2022
8. Margaret Chen, undergraduate student in Mathematics, SURF (Summer Undergraduate Research Fellowship), \$3500, Summer 2022. Advisor: Jessica Zhang  
Title: Automatic Vertebra Detection Using Convolutional Neural Networks for Adolescent Idiopathic Scoliosis Analysis and Prediction
9. Kuanren Qian, Student Travel Award, World Congress for Computational Mechanics, 2022
10. Lisha White, Rising Stars in Computational and Data Sciences on April 20-21, Albuquerque, NM, 2022
11. Angran Li, Ph.D. student, Liang Ji-Dian Graduate Fellowship, \$7,000, 2022
12. Lisha White, PhD student, GEM Fellow, 2018-2023
13. Hyunji Kim, Undergraduate student in MechE and BME, CIT Honored Research 2021-2022
14. Ashlee Liao, NSF Graduate Research Fellowship, 2019-2022.
15. Xuan Liang, NSF Fellowship to participate MMLDT-CSET 2021 Conference, 2021
16. Kuanren Qian, NSF Fellowship to participate MMLDT-CSET 2021 Conference, 2021
17. Ashlee Liao, SB3C Diversity Participation Award, 2021
18. Angran Li, Student Travel Award, US National Congress for Computational Mechanics, 2021
19. Yuxuan Yu, Student Travel Award, US National Congress for Computational Mechanics, 2021
20. Marvin Bennett, Undergraduate student, GEM Fellow, 2021
21. Ashlee Liao, MechE Graduate Research Symposium Milton Shaw PhD Student Traveling Award, \$1,000, 2021
22. Kuanren Qian, Ph.D. student, CIT Ronald F. and Janice A. Zollo Fellowship, \$2,500, 2021
23. Marvin Bennett, Undergraduate student, MechE Honors Research, 2020-2021
24. Marvin Bennett, Undergraduate student, MechE TechSpark Design Expo, 2020
25. Lisha White, PhD student, Mary Jane and Milton C. Shaw Fellowship, \$5,000, 2019-2020
26. Brian Kang, MS-P student, MechE Summer Fellowship, \$1,500, 2020
27. Ginny Liu, Undergraduate student, MechE Summer Fellowship, \$1,500, 2020
28. Marione Aluoch, Undergraduate student, Summer Scholarship from Scarlett Family Foundation, 2020
29. Yuxuan Yu, Ph.D. student, Bradford and Diane Smith Graduate Fellowship, \$2,500, 2019
30. Angran Li, Ph.D. student, Best Poster Award, US National Congress for Computational Mechanics, 2019
31. Angran Li, Ph.D. student, Student Travel Award to attend Annual Data Science Forum Featuring Machine Learning in Science and Engineering in Georgia Institute of Technology, \$900, 2019
32. Aishwarya Pawar, Ph.D. student, The G. Sundback Graduate Fellowship, \$10,000, 2019
33. Aishwarya Pawar, Ph.D. student, SIAM Student Travel Award to attend the SIAM Conference on Computational Geometric Design (GD19), \$700, 2019
34. Aishwarya Pawar, Ph.D. student, The Rising Stars in Mechanical Engineering Workshop at the Massachusetts Institute of Technology, October 25-26, 2018
35. Aishwarya Pawar, Ph.D. student, Student Best Poster Award 2<sup>nd</sup> Place in IGA2018: Integrating Design and Analysis Conference, \$500, 2018
36. Angran Li, Ph.D. student, CMU Graduate Student Assembly/Provost Conference Funds, \$500, 2018
37. Aishwarya Pawar, Ph.D. student, WCCM 2018 Conference Student Travel Award, 2018
38. Angran Li and Yuxuan Yu together with Jianzhe Gu and Humphrey Yang, Siemens FutureMakers Hack-a-thon Challenge 2<sup>nd</sup> Place, 2018
39. Aishwarya Pawar, Ph.D. student, The G. Sundback Graduate Fellowship, \$10,000, 2018



40. Aishwarya Pawar, Ph.D. student, SIAM Student Travel Award to attend the 2018 SIAM Conference on Imaging Science (IS18) at the University of Bologna, Italy. \$850, June 5-8, 2018
41. Hugo Casquero, Postdoctoral Fellow, USNCCM 2017 Conference Student Travel Award, \$1,000, 2017
42. Aishwarya Pawar, Ph.D. student, SPM 2017 Conference Student Travel Award, \$1,500, 2017
43. Aishwarya Pawar, M-CRIT Scholarship for Trainees, Frankel Cardiovascular Center, Univ of Michigan, 2017
44. Xiaodong Wei, M-CRIT Scholarship for Trainees, Frankel Cardiovascular Center, University of Michigan, 2017
45. Xiaodong Wei, Ph.D. student, Bertucci Graduate Fellowship, \$22,000, 2016
46. Aishwarya Pawar, Ph.D. student, CMU-MechE Graduate Research Symposium Milton Shaw PhD Student Traveling Award, \$1,000, 2016 & 2017
47. Aishwarya Pawar, Ph.D. student, Bradford and Diane Smith Graduate Fellowship, \$2,000, 2016
48. Xiaodong Wei, Ph.D. student, Liang Ji-Dian Graduate Fellowship, \$10,000, 2016
49. Arjun Kumar, Neil and Jo Bushnell Fellowship in Engineering, \$5,000, 2016
50. Lei Liu, Ph.D. student, IMR student travel award, 2015
51. Kangkang Hu, Ph.D. student, IMR student travel award, 2015
52. Kangkang Hu, Ph.D. student, CMU Graduate Student Assembly/Provost Conference Funds, \$500, 2015.
53. Tao Liao, Ph.D. student, SIAM student travel award to attend the SIAM Conference on Geometric and Physical Modeling (GD/SPM15), \$650, 2015
54. Xiaodong Wei, Ph.D. student, SIAM student travel award to attend the SIAM Conference on Geometric and Physical Modeling (GD/SPM15), \$650, 2015
55. Lei Liu, Ph.D. student, SIAM student travel award to attend the SIAM Conference on Geometric and Physical Modeling (GD/SPM15), \$650, 2015
56. Lei Liu, Ph.D. student, 13th USNCCM (US National Congress on Computational Mechanics) student travel award, \$1000, 2015
57. Lei Liu, Ph.D. student, CMU-MechE Bennett Conference Milton Shaw PhD Student Traveling Award, \$1,000, 2015
58. Kangkang Hu, Ph.D. student, CMU Graduate Student Assembly/Provost Conference Funds, \$500, 2014.
59. Lei Liu, Ph.D. student, CMU-MechE Bennett best poster award, 2014
60. Lei Liu, Ph.D. student, IMR student travel award, 2013
61. Kangkang Hu, Ph.D. student, IMR student travel award, 2013
62. Xinghua Liang, Ph.D. student, IMR student travel award, 2012
63. Tao Liao, Ph.D. student, UCSD NBCR student fellowship, 2012
64. Kyung Jae Lee, undergraduate student, SURF (Summer Undergraduate Research Fellowship), \$3500, Summer 2012. Advisor: Yongjie Zhang  
Title: Automatic 3-D Hexahedral Meshing for Extruded Geometry
65. Kibaek Lee, MS-P student, CMU Vlahak Fellowship, \$10,000, 2012
66. Wenyan Wang, Ph.D. student, Chinese Government Award for Outstanding Self-Financed Students Abroad, \$6000, 2011
67. Jin Qian, Ph.D. student, IMR student travel award, \$1900, 2011
68. Xinghua Liang, Ph.D. student, Liang Ji-Dian Graduate Fellowship, \$5000, 2011
69. Wenyan Wang, Ph.D. student, USNCTAM student travel award, \$500, 2010
70. Xinghua Liang, Ph.D. student, 19<sup>th</sup> International Meshing Roundtable student travel award, \$800, 2010
71. Jin Qian, Ph.D. student, 19<sup>th</sup> International Meshing Roundtable student travel award, \$800, 2010
72. Wenyan Wang, Ph.D. student, Liang Ji-Dian Graduate Fellowship, \$5000, 2010
73. Jin Qian, Ph.D. student, 10th USNCCM (US National Congress on Computational Mechanics) student travel award, \$650, 2009
74. Changho Oh, undergraduate student, SURF (Summer Undergraduate Research Fellowship), \$3500, Summer 2008. Advisor: Yongjie Zhang  
Title: Dynamic Neural Foramina Cross Section Measurement and Kinematic Analysis of Lumbar Spine Undergoing Extension
75. Mikhail Lara, undergraduate student, SURG (Small Undergraduate Research Grant) \$500, Spring 2009.  
Advisor: Yongjie Zhang and Kerem Pekkan  
Title: Cavopulmonary Connection Modeling Through Virtual Mesh Generation and Rapid-Prototyping Techniques

**THESES:**

- ❖ Ph.D. Thesis: “Boundary/Finite Element Meshing from Volumetric Data with Applications”, 2005.  
Advisor: Chandrajit L. Bajaj, Professor in the Institute for Computational Engineering and Sciences and Dept. of Computer Sciences, the University of Texas at Austin.
- ❖ M.E. Thesis: “Dynamic Analysis of Underwater-fired Shuttle”, 1999.  
Advisor: Zhaochang Zheng, Professor in Dept. of Engineering Mechanics, Tsinghua University.
- ❖ B.E. Thesis: “Experimental Modal Analysis of Tire Structure Dynamic Characteristics”, 1996.  
Advisor: Dihua Guan, Professor in Dept. of Automotive Engineering, Tsinghua University.

#### SPONSORED PROJECTS:

1. User-friendly residual deformation computation tool for design risk assessment and machine learning-based prediction for extruded thin-wall geometry. ARL Program Year 4 Effort, 01/01/2024-06/30/2024, \$50,000 (PI: Jessica Zhang; Co-PIs: Tony Rollett, Amir Barati Farimani)
2. Advanced IGA Solid Modeling System: Preserving Original Geometry and Improving Automation Using Machine Learning Techniques, Honda, 10/1/2023- 03/15/2024, \$65,000 (PI: Jessica Zhang)
3. Project 1.2: Bioengineered Booster Liver Towards Bridge to Transplant and Destination Therapy. Mayo Clinic, 9/1/2022-8/31/2025, \$199,503 (PI: Adam Feinberg; Co-PIs: Jessica Zhang, Charlie Ren, Liz Wayne, Shennen Mao, Takahisa Kanekyo)
4. Tackling Brain Diseases with Mechanics: A Data-Driven Approach to Merge Advanced Neuroimaging and Multi-Physics Modeling, NSF-LEAP HI, 07/01/2020-06/30/2025, \$2,048,000 (PI: Mehmet Kurt, Co-PIs: Jessica Zhang, Priti Balchandani, Johannes Weickenmeier)
5. Collaborative Research: Investigating Knee Joint Biomechanics Using Multiscale Modeling and Machine Learning, CMU-MechE one Ph.D. student support, 09/01/2022-08/31/2024 (Co-PIs: Jessica Zhang and Eni Halilaj)
6. BiRM – Biomechanics in Regenerative Medicine Training Program, NIH-NIBIB. PIs: Savio L-Y. Woo, Keith Cook, David Vorp. Role: Supporting Faculty. 2015-present. Executive Committee, 2024-present
7. BRIDGE – Boosting Research-Experiences for Increasing Doctorate Graduates in Engineering Program, DoD. PIs: Douglas Weber, Gelsy Torres-Oviedo. Role: Supporting Faculty. 2022-present
8. Residual Deformation Learning and Mitigation for Metal Component Printability Enhancement. ARL Program Year 3 Effort, 07/01/2022-11/30/2023, \$150,000 (PI: Jessica Zhang; Co-PI: Tony Rollett)
9. Understanding Material Transport Regulation and Traffic Jam in Neurons for Biological Neural Circuits Design, CMU-PITA, \$76,000, 08/15/2022-08/14/2023 (PI: Jessica Zhang, Co-PI: Victoria Webster-Wood)
10. Manufacturing Optimization of Bioprinted Muscle Based on B-Spline Mediated Tissue Reconstruction for Simulation, PA Manufacturing Fellows Initiative, 5/1/2022-5/14/2023, \$60,756 (PI: Jessica Zhang, co-PI: Victoria Webster-Wood)
11. Advanced IGA Solid Modeling System for Automobile Casting Parts, Honda, 07/31/2022- 03/15/2023, \$53,000 (PI: Jessica Zhang)
12. Collaborative Research: Predictive Design and Fabrication of Biological Neural Circuits, CMU-MechE one Ph.D. student support, 09/01/2020-08/31/2022 (Co-PIs: Jessica Zhang and Victoria Webster-Wood)
13. Multiphysics Topological Design and Printability Optimization for Metal Additive Manufacturing Based on Isogeometric Analysis and Machine Learning. ARL Program Year 2 Effort, 07/01/2021-06/30/2022, \$130,233 (PI: Jessica Zhang; Co-PI: Tony Rollett)
14. Advanced IGA Solid Modeling System for Automobile Applications, Honda, 07/1/2021- 03/15/2022, \$89,000 (PI: Jessica Zhang)
15. An Explicit Topology Optimization Software Toolkit for Heat Exchanger Design Based on Isogeometric Analysis and Machine Learning. ARL Program Year 1 Effort, 07/01/2020-06/30/2021, \$122,696 (PI: Jessica Zhang)
16. Modeling and Analysis of Material Transport in Complex Geometry of Neurons, NSF. PI: Yongjie Zhang. 07/01/2018-06/30/2021, \$416,000
17. Advanced Isogeometric Analysis Solid Modeling System for Honda Applications, Honda, 10/12/2020-03/12/2021, \$89,000 (PI: Jessica Zhang)
18. Hexahedral Dominant Auto-Mesh Generator, NAVAIR Phase I STTR, 05/13/2020-10/26/2020, \$140,000 (PI: Jessica Zhang; Program Manager: Jim Lua, Global Engineering Materials, Inc.)
19. Modeling, Simulating Residual Stress in LPBF Printed Parts: Is the Residual Stress Just the Sum of the Parts? Honeywell Federal Manufacturing & Technologies LLC, 12/01/2019-11/30/2020, \$152,820 (PI: Anthony Rollett, Co-PI: Jessica Zhang)

20. Novel Isogeometric Analysis Based Automation of High-fidelity Finite Element Geometric Model Creation from Computer Aided Design, NAVAIR-SBIR/STTR (Phase I and Phase II), 09/01/2015-11/30/2020, \$1,150,000 (PI: Jim Lua, Global Engineering and Materials, Inc.; Jessica Zhang: CMU Subcontract PI)
21. Biofabrication of an Embryonic-Stage Human Heart Based on ECM Structure and Mechanics in the Native Myocardium, Biohybrid Organ Center Seed Grant, CMU-MSE one Ph.D. student support, 09/01/2018-08/31/2020 (Co-PIs: Adam Feinberg and Jessica Zhang)
22. Draping Simulation Using Isogeometric Shell Structure, NAVAIR-SBIR/STTR - A Subcontract from Global Engineering and Materials, Inc., 01/01/2019-06/19/2020, \$50,000
23. Investigating Neurite Morphological Growth Using Advanced Finite Element and Biofabrication Techniques, CMU-PITA, \$71,000, 01/01/2019-05/31/2020 (PI: Jessica Zhang, Co-PI: Adam Feinberg)
24. IGA Solid and Shell Modeling System for Automobile Simulations, Honda, 08/01/2019-03/15/2020, \$89,000
25. Analysis-Suitable Trivariate T-spline Construction for Isogeometric Analysis, **PECASE Award** through ONR, 02/14/2014-01/31/2020, \$1,000,000
26. 4D Printing of Self-Folding Thermoplastic Structures for Honda Applications, Honda. PI: Lining Yao. Co-PI: Jessica Zhang. 12/01/2018-03/15/2019, \$44,000
27. Advanced Isogeometric Analysis Solid and Shell Modeling System for Honda Applications, Honda, 08/01/2018-03/15/2019, \$89,000
28. SimuLearn: Combining Machine Learning, Mechanical and Geometrical Simulation for the Inverse Design and Manufacture of Self-Assembling Fiber-Reinforced Composites, CMU-MFI (Manufacturing Futures Initiative), 08/01/2018-08/31/2019, \$111,645 (PI: Jessica Zhang, co-PI: Lining Yao)
29. A Parallel Computational Framework of Multiscale Geometric Modeling and Mesh Generation for Cardiac Biomechanics Applications, **NSF CAREER Award**, 08/01/2012-07/31/2019, \$428,000
30. Isogeometric Analysis Solid Modeling System for Honda Applications, Honda, 06/01/2017-05/31/2018, \$50,000
31. Collaborative Research: Investigating How Shapes of Neurons Mediate Their Functions Using Finite Element Based Modeling and Simulation, CMU-MechE one Ph.D. student support, 08/2016-07/2018 (PI: Jessica Zhang, Co-PI: Ge Yang)
32. Advanced Geometric Characterization and Mesh Generation for Composites Failure Simulations, NAVAIR-SBIR – A Subaward from Technical Data Analysis (TDA) Inc., 03/13/2017-02/28/2018, \$50,000
33. TIRF-Enabled Microscope for Imaging Dynamic Nano-Biosystems, Dean's Equipment Grant, CIT. PI: Rebecca Taylor. Co-PIs: Robert Tilton, K. Jimmy Hsia, Mathias Losche, Jessica Zhang. 2017. \$375,000
34. Carnegie Heart Summer Research Program, American Heart Association (AHA). Five Summer Fellowships Each Year. Role: Participating Faculty. 2015-2017
35. Collaborative Research: Nano-scale 3D Imaging, Meshing, and Modeling of Fuel Cell Electrode and other Porous Materials, CMU-MechE one Ph.D. student support, 07/2013-12/2015 (Co-PIs: Shawn Litster, Jessica Zhang)
36. Bridging Computational Multi-Scale Myocyte Mechanics with Ventricle Function for Customized Heart Valve Design Tool, CMU ICES-PITA, \$56,875. PI: Kerem Pekkan, Co-PI: Yongjie Zhang. 06/01/2014-05/31/2015
37. BiRM – Biomechanics in Regenerative Medicine Training Program, NIH-NIBIB. PI: Savio L-Y. Woo, Co-PI: James Antaki. Role: Supporting Faculty. 2013-2015
38. High-Fidelity Geometric Modeling and Mesh Generation for Mechanics Characterization of Polycrystalline Materials, AFOSR, 08/01/2011-09/30/2014, \$180,000
39. Participant Support for the 20th International Mesh Roundtable, Paris, France, October 2011, NSF, 08/01/2011-07/31/2012, \$20,787
40. Improving the Physiological Fidelity of the Computational Simulation of Cerebral Aneurysms, UPMC-HTI Gift Grant, PIs: Kenji Shimada and Yongjie Zhang, 01/01/2011-12/31/2011, \$100,000
41. Virtual Reality Volumetric Explorer: An Interactive Visualization and Modeling Toolkit. Struminger Junior Faculty Fellowship, CMU-MechE, 2011-2012, \$10,000.
42. High-Fidelity Geometric Modeling and Mesh Generation for Mechanics Characterization of Polycrystalline Materials, NSF-MSREC Seed Grant, 08/01/2010-09/30/2011, \$50,000
43. Dynamic Lung Modeling and Tumor Tracking for Image-Guided Radiation Therapy, Samuel and Emma Winters Foundation – 07/01/2010-06/30/2011, \$10,000
44. Automatic and Robust All-Hexahedral Mesh Generation from B-Reps with Sharp Feature Preservation, **ONR-YIP Award**, 06/15/2010-06/14/2013, \$510,000.
45. Cardiac Hermite Model Construction from Imaging Data, one Subcontract from Univ. of California, San Diego, 05/01/2010 – 04/30/2011, \$40,000

46. I/UCRC CGI: National Center for e-Design: Annexation of Carnegie Mellon University, NSF, \$55,000. PIs: Jim Antaki and James Burgess, Participants: Jon Cagan, Burak Kara, Yongjie Zhang. 08/01/2010-07/31/2011
47. Analysis-Suitable Geometric Modeling and Mesh Generation for Applications in Naval Research, ONR (Office of Naval Research), 04/01/2008 – 03/31/2011, \$400,385.
48. Development of Flexible Geometry and Mesh Generation Software Infrastructure, NRL (Naval Research Lab), 04/01/2008 – 03/31/2010, \$227,187.
49. Biological and Medical Image Processing, Chinese NSF, 1M Chinese Yuan (\$146,415). PI: Guoliang Xu. Co-PIs: Hua Li, Weiguo Cao, Qing Pan, Dan Liu, Chandrajit Bajaj, Qin Zhang, Yongjie Zhang. 01/01/2008-12/31/2012
50. Dynamic Modeling and Bioheat Transfer Analysis of Laser Therapy for Lung Cancer Treatment Planning, Berkman Faculty Development Fund, 01/01/2008 – 12/31/2008, \$6,000.
51. Geometric Modeling and Finite Element Meshing for Blood Flow Simulation of Aneurysms, Gift Fund from SINTEF in Norway. Phase I: 11/12/2007 – 04/31/2008, \$15,000; Phase II: 02/1/2009 – 05/31/2009, \$22,000.