Fei Fang

Leonardo Assistant Professor
Institute for Software Research, School of Computer Science, Carnegie Mellon University

321 TCS Hall
5000 Forbes Ave, Pittsburgh, PA 15213
Email: feifang@cmu.edu
Phone: 4122685529
Homepage: `https://feifang.info/`

Last updated: September 2021

EDUCATION

- **University of Southern California**, Los Angeles, California. August 2011 – June 2016.
  Ph.D., Department of Computer Science.
  Advisor: Prof. Milind Tambe
  Thesis: Towards Addressing Spatio-Temporal Aspects in Security Games
- **Tsinghua University**, Beijing, China. August 2007 – July 2011.
  B. Eng., Department of Electronic Engineering.

EMPLOYMENT

- **Carnegie Mellon University, Pittsburgh, Pennsylvania.** August 2017 – Present.
  Assistant Professor in the Institute for Software Research in the School of Computer Science.
- **Carnegie Mellon University, Pittsburgh, Pennsylvania.** June 2016 – June 2017.
  Adjunct Assistant Professor in the Institute for Software Research in the School of Computer Science.
- **Harvard University, Cambridge, Massachusetts.** June 2016 – June 2017.
  Postdoctoral Fellow in the Center for Research on Computation and Society at the School of Engineering and Applied Sciences, working with Prof. David Parkes and Prof. Barbara Grosz.
- **University of Southern California, Los Angeles, California.** August 2011 – June 2016.
  Research Assistant in the Department of Computer Science, working with Prof. Milind Tambe.
- **IBM Thomas J. Watson Research Center, Yorktown Heights, New York.** May 2013 -– August 2013.
  Research Intern in Mathematical Sciences Department with Dr. Dharmashankar (Shankar) Subramanian and Dr. Janusz Marecki.
- **Microsoft Research Asia, Beijing, China.** December 2010 -– March 2011.
  Research Intern in Hardware Computing Group with Dr. Chunshui Zhao.

AWARDS

- **2021 IJCAI Computers and Thought Award.** "Fang is recognized for her contributions to integrating machine learning with game theory and the use of these novel techniques to tackle societal challenges such as more effective deployment of security resources, enhancing environmental sustainability, and reducing food insecurity."

- **Best Paper Runner-Up, the 35th AAAI Conference on Artificial Intelligence (AAAI). 2021.** Our paper titled "Dual-Mandate Patrols: Multi-Armed Bandits for Green Security" (authors: Lily Xu, Elizabeth Bondi, **Fei Fang**, Andrew Perrault, Kai Wang, Milind Tambe) was selected as a best paper runner-up. 3 best papers and 3 runner-ups were selected out of 9,034 submissions submissions and 1692 accepted papers.
- **"AI's 10 to Watch" for 2020.** IEEE Intelligent Systems selects 10 young rising stars in the field every year for the award. Featured in article "The Future of AI: AI's 10 To Watch", published in IEEE Intelligent Systems (Volume: 35, Issue: 6, Nov.-Dec. 1 2020).
- **Selected Speaker for IJCAI-19 Early Career Spotlight Track. 2019.** This track selects 16 faculty in their early career to give a talk at International Joint Conference on Artificial Intelligence (IJCAI). Talk title: "Integrating Learning with Game Theory for Societal Challenges."
- **Best Application System Demo, International Conference on Autonomous Agents and Multiagent Systems (AAMAS). 2019.** Demo title: "Using Game Theory in Real Time in the Real World: A Conservation Case Study" (authors: Elizabeth Bondi, Hoon Oh, **Fei Fang**, Haifeng Xu, Bistra Dilkina, Milind Tambe).
- **Distinguished Paper, International Joint Conference on Artificial Intelligence and European Conference on Artificial Intelligence (IJCAI-ECAI). 2018.** Our paper titled "What game are we playing? End-to-end learning in normal and extensive form games" (authors: Chun Kai Ling, **Fei Fang**, J. Zico Kolter) was selected as a distinguished paper. 7 papers were selected out of 3470 submissions and 710 accepted papers.
- **Certificate of Recognition from SMART Team. 2018.** The certificate of recognition is offered for our contribution in developing PAWS program which advances the mission of the Spatial Monitoring and Reporting Tool (SMART), a tool being used by more than 600 conservation sites worldwide.
- **The William F. Ballhaus, Jr. Prize for Excellence in Graduate Engineering Research. 2017.**
- **Best Dissertation Award in Computer Science at the University of Southern California. 2017.** Dissertation title: Towards Addressing Spatio-Temporal Aspects in Security Games. Advisor: Prof. Milind Tambe.
- **Runner-up for IFAAMAS-16 Victor Lesser Distinguished Dissertation Award.** Dissertation title: Towards Addressing Spatio-Temporal Aspects in Security Games. Advisor: Prof. Milind Tambe.
- **Best Paper in the First International Workshop on Teams in Multiagent Systems (TEAMAS) held at AAMAS 2017.** Zheyuan Shi, **Fei Fang**. Optimizing Peer Teaching to Enhance Team Performance.
- **Best Research Assistant, 2016, Computer Science Department, University of Southern California.**
- **Best Application of AI, Video Competition at AAAI Conference on Artificial Intelligence (AAAI), 2016.** Video title: "PAWS: Protection Assistant for Wildlife Security." Authors: **Fei Fang**, Debarun Kar, Dana Thomas, Nicole Sintov, Milind Tambe.
- **Best Student Video Award Finalist, Video Competition at AAAI Conference on Artificial Intelligence (AAAI), 2016.** Video title: "PAWS: Protection Assistant for Wildlife Security." Authors: **Fei Fang**, Debarun Kar, Dana Thomas, Nicole Sintov, Milind Tambe.

- **Innovative Application Award, Innovative Applications of Artificial Intelligence (IAAI), 2016.** The award is presented to **Fei Fang**, Thanh H. Nguyen, Rob Pickles, Wai Y. Lam, Gopalasamy R. Clements, Bo An, Amandeep Singh, Milind Tambe and Andrew Lemieux for the deployed application paper titled "Deploying PAWS: Field Optimization of the Protection Assistant for Wildlife Security."
- **Outstanding Paper Award, International Joint Conferences on Artificial Intelligence (IJCAI), Computational Sustainability Track. 2015.** The award is presented to **Fei Fang**, Peter Stone and Milind Tambe for the paper titled "When Security Games Go Green: Designing Defender Strategies to Prevent Poaching and Illegal Fishing." Only one paper is selected.
- **Selected Participant for Rising Stars in EECS: An Academic Career Workshop for Women. 2015.** This workshop brings together roughly 60 top EECS graduate and postdoctoral women for scientific interactions.
- **WiSE Merit Fellowship. 2014.** The Merit Fellowship is offered to Ph.D. students at University of Southern California who demonstrate exceptional work in their field. Two candidates will be chosen from the Viterbi School of Engineering every year.
- **Meritorious Team Commendation from Commandant of the US Coast Guard. 2013.** The commendation was awarded for "an innovative approach to optimize patrol schedules and actions for the Coast Guard Ports, Waterways and Coast Security missions" while serving the Coast Guard Port Resilience for Operational/Tactical Enforcement to Combat Terrorism (PROTECT) Team.
- **Flag Letter of Appreciation from Vice Admiral R.C. Parker, US Coast Guard. 2013.** The flag letter of appreciation was awarded for for research work "during the development and implementation of the Port Resilience Operational/Tactical Enforcement to Combat Terrorism (PROTECT) Model."
- **Poster Competition Finalist, First Conference on Validating Models of Adversary Behaviors. 2013.** Our poster on "Optimal Patrol Strategy for Protecting Moving Targets with Multiple Mobile Resources" was selected to be a finalist in the poster competition.

PUBLICATION LIST

BOOKS

[B3] Charles A Kamhoua, Christopher D Kiekintveld, **Fei Fang**, Quanyan Zhu (Editors). Game Theory and Machine Learning for Cyber Security. John Wiley & Sons, 2021.

[B2] **Fei Fang**, Milind Tambe, Bistra Dilkina, Andrew Plumptre (Editors). Artificial Intelligence and Conservation (Part of the "AI and Social Good" book series). Cambridge University Press, 2019.

[B1] Stefan Rass, Bo An, Christopher Kiekintveld, **Fei Fang**, and Stefan Schauer (Editors). Decision and Game Theory for Security: 8th International Conference, GameSec 2017, Vienna, Austria, October 23-25, 2017, Proceedings. Vol. 10575. Springer, 2017.

CHAPTERS IN BOOKS

[BC2] **Fei Fang**, Benjamin Ford, Rong Yang, Milind Tambe, Andrew Lemieux. PAWS: Game-Theory Based Protection Assistant for Wildlife Security. In *Conservation Criminology*. Edited by Meredith Gore. Chapter 10. Wiley, 2017.

[BC1] Debarun Kar, Thanh H. Nguyen, **Fei Fang**, Matthew Brown, Arunesh Sinha, Milind Tambe, Albert Xin Jiang. Trends and Applications in Stackelberg Security Games. In *Handbook on Dynamic Game Theory*. Edited by Tamar Basar and Georges Zaccour. Springer, 2017.

REFEREED JOURNAL PAPERS - PUBLISHED

[J3] Yawen Wu, Zhenge Jia, **Fei Fang**, Jingtong Hu. Cooperative Communication Between Two Transiently Powered Sensor Nodes by Reinforcement Learning. In *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, doi: 10.1109/TCAD.2021.3054329.

[J2] Debarun Kar, **Fei Fang**, Francesco M. Delle Fave, Nicole Sintov, Milind Tambe, Arnaud Lyet. Comparing Human Behavior Models in Repeated Stackelberg Security Games: An Extended Study. In *Artificial Intelligence (AIJ)*, 240:65-103, 2016.

[J1] **Fei Fang**, Albert X. Jiang, Milind Tambe. Protecting Moving Targets with Multiple Mobile Resources. In *Journal of Artificial Intelligence Research (JAIR)*, 48:583-634, 2013.

RIGOROUSLY REFEREED CONFERENCE/WORKSHOP PAPERS
Full Papers

[C51] Weizhe Chen, Zihan Zhou, Yi Wu, **Fei Fang** Temporal Induced Self-Play for Stochastic Bayesian Games. In *the 30th International Joint Conference on Artificial Intelligence (IJCAI)*, August 2021.

[C50] Lily Xu, Andrew Perrault, **Fei Fang**, Haipeng Chen, Milind Tambe Robust Reinforcement Learning Under Minimax Regret for Green Security. In *the 37th Conference on Uncertainty in Artificial Intelligence (UAI)*, July 2021.

[C49] Zhenggang Tang, Chao Yu, Boyuan Chen, Huazhe Xu, Xiaolong Wang, **Fei Fang**, Simon Shaolei Du, Yu Wang, Yi Wu. Discovering Diverse Multi-Agent Strategic Behavior via Reward Randomization. In *the Ninth International Conference on Learning Representations (ICLR)*, May 2021.

[C48] Zheyuan Ryan Shi, Leah Lizarondo, **Fei Fang**. A Recommender System for Crowdsourcing Food Rescue Platforms. In *the 30th The Web Conference (WWW)*, April 2021.

[C47] Weizhe Chen, Weinan Zhang, Duo Liu, Weiping Liu, Xiaojun Shi, **Fei Fang**. Data-Driven Multimodal Patrol Planning for Anti-poaching. In *The Thirty-Third Annual Conference on Innovative Applications of Artificial Intelligence (IAAI)*, February 2021.

[C46] Zi-Yi Dou, Anamika Barman-Adhikari, **Fei Fang**, Amulya Yadav. Harnessing Social Media to Identify Homeless Youth At-Risk of Substance Use. In *The Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI)*, February 2021.

[C45] Lily Xu, Elizabeth Bondi, **Fei Fang**, Andrew Perrault, Kai Wang, Milind Tambe. Dual-Mandate Patrols: Multi-Armed Bandits for Green Security. In *The Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI)*, February 2021. **Best Paper Runner Up**

[C44] Nicholay Topin, Stephanie Milani, **Fei Fang**, Manuela Veloso. Iterative Bounding MDPs: Learning Interpretable Policies via Non-Interpretable Methods. In *The Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI)*, February 2021.

[C43] Steven Jecmen, Hanrui Zhang, Ryan Liu, Nihar Shah, Vincent Conitzer, **Fei Fang**. Mitigating Manipulation in Peer Review via Randomized Reviewer Assignments. In *the Thirty-fourth Conference on Neural Information Processing Systems (NeurIPS)*, December 2020.

[C42] Chun Kai Ling, **Fei Fang**, Zico Kolter. Deep Archimedean Copulas. In *the Thirty-fourth Conference on Neural Information Processing Systems (NeurIPS)*, December 2020.

[C41] Zheyuan Ryan Shi, Ariel D. Procaccia, Kevin S. Chan, Sridhar Venkatesan, Noam Ben-Asher, Nandi O. Leslie, Charles Kamhoua, **Fei Fang**. Learning and Planning in the Feature Deception Problem. In *the 11th Conference on Decision and Game Theory for Security (GameSec)*, October 2020.

[C40] Stephanie Milani, Weiran Shen, Kevin S. Chan, Sridhar Venkatesan, Nandi O. Leslie, Charles Kamhoua, **Fei Fang**. Harnessing the Power of Deception in Attack Graph-Based Security Games. In *the 11th Conference on Decision and Game Theory for Security (GameSec)*, October 2020.

[C39] Weiran Shen, Weizhe Chen, Taoan Huang, Rohit Singh, **Fei Fang**. When to Follow the Tip: Security Games with Strategic Informants. In *the International Joint Conference on Artificial Intelligence – Pacific Rim International Conference on Artificial Intelligence (IJCAI-PCAI)*, July 2020.

[C38] Taoan Huang, Weiran Shen, Tianyu Gu, Rohit Singh, **Fei Fang**. Green Security Game with Community Engagement. In *the 19th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2020.

[C37] Qian Long*, Zihan Zhou*, Abhinav Gupta, **Fei Fang**, Yi Wu†, Xiaolong Wang†. Evolutionary Population Curriculum for Scaling Multi-Agent Reinforcement Learning. In *the Eighth International Conference on Learning Representations (ICLR)*, April 2020.

[C36] Elizabeth Bondi, Hoon Oh, Haifeng Xu, **Fei Fang**, Bistra Dilkina, Milind Tambe. To Signal or Not To Signal: Exploiting Uncertain Real-Time Information in Signaling Games for Security and Sustainability. In *The Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI)*, February 2020.

[C35] Zheyuan Ryan Shi, Aaron Schlenker, Brian Hay, Daniel Bittleston, Siyu Gao, Emily Peterson, John Trezza, **Fei Fang**. Draining the Water Hole: Mitigating Social Engineering Attacks with CyberTWEAK. In *the Thirty-Second Annual Conference on Innovative Applications of Artificial Intelligence (IAAI)*, February 2020.

[C34] Zheyuan Ryan Shi*, Yiwen Yuan*, Kimberly Lo, Leah Lizarondo, **Fei Fang**. Improving Efficiency of Volunteer-Based Food Rescue Operations. In *The Thirty-Second Annual Conference on Innovative Applications of Artificial Intelligence (IAAI)*, February 2020.

[C33] Gabriele Farina, Chun Kai Ling, **Fei Fang**, Tuomas Sandholm. Correlation in Extensive-Form Games: Saddle-Point Formulation and Benchmarks. In *The Thirty-third Conference on Neural Information Processing Systems (NeurIPS)*, December 2019.

[C32] Gabriele Farina, Chun Kai Ling, **Fei Fang**, Tuomas Sandholm. Efficient Regret Minimization Algorithm for Extensive-Form Correlated Equilibrium. In *The Thirty-third Conference on Neural Information Processing Systems (NeurIPS)*, December 2019. Spotlight presentation (2.5% of submissions).

[C31] Daria Roithmayr, Justin Chin, **Fei Fang**, Bruce Levin. The Cat-and-Mouse Dynamics of Getting Around the Law. In *The Computational Social Science Society of the Americas 10th Anniversary International Conference (CSS)*, October 2019.

[C30] Cody Kinneer, Ryan Wagner, **Fei Fang**, Claire Le Goues and David Garlan. Modeling Observability in Adaptive Systems to Defend Against Advanced Persistent Threats. In *The 17th ACM-IEEE International Conference on Formal Methods and Models for System Design (MEMOCODE)*, October 2019.

[C29] Nitin Kamra, Umang Gupta, Kai Wang, **Fei Fang**, Yan Liu, Milind Tambe. DeepFP for Finding Nash Equilibrium in Continuous Action Spaces. In *The 10th Conference on Decision and Game Theory for Security (GameSec)*, October 2019.

[C28] Omkar Thakoor, Milind Tambe, Phebe Vayanos, Haifeng Xu, Christopher Kiekintveld, **Fei Fang**. Cyber Camouflage Games for Strategic Deception. In *The 10th Conference on Decision and Game Theory for Security (GameSec)*, October 2019.

[C27] Aaron M. Roth, Samantha Reig, Umang Bhatt, Jonathan Shulgach, Tamara Amin, Afsaneh Doryab, **Fei Fang**, Manuela Veloso. A Robot's Expressive Language Affects Human Strategy and Perceptions in a Competitive Game. In *The 28th IEEE International Conference on Robot & Human Interactive Communication (RO-MAN)*, October 2019.

[C26] Taoan Huang, Bohui Fang, Xiaohui Bei, **Fei Fang**. Dynamic Trip-Vehicle Dispatch with Scheduled and On-Demand Requests. In *The Conference on Uncertainty in Artificial Intelligence (UAI), July 2019.*

[C25] Hongyao Ma, **Fei Fang**, David C. Parkes. Spatio-Temporal Pricing for Ridesharing Platforms. In *The 20th ACM Conference on Economics and Computation (EC), June 2019.*

[C24] Yufei Wang, Zheyuan Ryan Shi, Lantao Yu, Yi Wu, Rohit Singh, Lucas Joppa, **Fei Fang**. Deep Reinforcement Learning for Green Security Games with Real-Time Information. In *The Thirty-Third AAAI Conference on Artificial Intelligence (AAAI)*, January 2019. [16.2% acceptance rate]

[C23] Shihui Li, Yi Wu, Xinyue Cui, Honghua Dong, **Fei Fang**, Stuart Russell. Robust Multi-Agent Reinforcement Learning via Minimax Deep Deterministic Policy Gradient. In *The Thirty-Third AAAI Conference on Artificial Intelligence (AAAI)*, January 2019. [16.2% acceptance rate]

[C22] Qingyu Guo, Jiarui Gan, **Fei Fang**, Long Tran-Thanh, Milind Tambe, Bo An. On the Inducibility of Stackelberg Equilibrium in Security Games. In *The Thirty-Third AAAI Conference on Artificial Intelligence (AAAI)*, January 2019. [16.2% acceptance rate]

[C21] Chun Kai Ling, **Fei Fang**, J. Zico Kolter. Large Scale Learning of Agent Rationality in Two-Player Zero-Sum Games. In *The Thirty-Third AAAI Conference on Artificial Intelligence (AAAI)*, January 2019. [16.2% acceptance rate]

[C20] Chun Kai Ling, **Fei Fang**, J. Zico Kolter. What game are we playing? End-to-end learning in normal and extensive form games. In *the 27th International Joint Conference on Artificial Intelligence and the 23rd European Conference on Artificial Intelligence (IJCAI-ECAI)*, **Distinguished Paper Award**, July 2018. [20.5% acceptance rate]

[C19] Zheyuan Ryan Shi, Ziye Tang, Long Tran-Thanh, Rohit Singh, **Fei Fang**. Designing the Game to Play: Optimizing Payoff Structure in Security Games. In *the 27th International Joint Conference on Artificial Intelligence and the 23rd European Conference on Artificial Intelligence (IJCAI-ECAI)*, July 2018. [20.5% acceptance rate]

[C18] Elizabeth Bondi, Debadeepta Dey, Ashish Kapoor, Jim Piavis, Shital Shah, **Fei Fang**, Bistra Dilkina, Robert Hannaford, Arvind Iyer, Lucas Joppa, Milind Tambe. AirSim-W: A Simulation Environment for Wildlife Conservation with UAVs. In *First Conference on Computing and Sustainable Societies (ACM COMPASS)*, June 2018. [34.3% acceptance rate]

[C17] Swaminathan Gurumurthy, Lantao Yu, Chenyan Zhang, Yongchao Jin, Weiping Li, Xiaodong Zhang, **Fei Fang**. Exploiting Real-World Data and Human Knowledge for Predicting Wildlife Poaching. In *First Conference on Computing and Sustainable Societies (ACM COMPASS)*, June 2018. [34.3% acceptance rate]

[C16] Aaron Schlenker, Milind Tambe, Long Tran-Thanh, Phebe Vayanos, Yevgeniy Vorobeychik, Omkar Thakoor, Haifeng Xu, **Fei Fang**. Deceiving Cyber Adversaries: A Game Theoretic Approach. In *the 17th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, July 2018. [25.3% acceptance rate]

[C15] Nitin Kamra, Umang Gupta, **Fei Fang**, Yan Liu, Milind Tambe. Policy Learning for Continuous Space Security Games using Neural Networks. In *the Thirty-Second AAAI Conference on Artificial Intelligence (AAAI)*, February 2018. [24.6% acceptance rate]

[C14] Elizabeth Bondi, **Fei Fang**, Mark Hamilton, Debarun Kar, Donnabell Dmello, Jongmoo Choi, Robert Hannaford, Arvind Iyer, Lucas Joppa, Milind Tambe, Ram Nevatia. SPOT Poachers in Action: Augmenting Conservation Drones with Automatic Detection in Near Real Time. In *the Thirtieth Conference on Innovative Applications of Artificial Intelligence*, February 2018.

[C13] Haifeng Xu, Benjamin Ford, **Fei Fang**, Bistra Dilkina, Andrew Plumptre, Milind Tambe, Margaret Driciru, Fred Wanyama, Aggrey Rwetsiba, Mustapha Nsubaga, Joshua Mabonga. Optimal Patrol Planning for Green Security Games with Black-Box Attackers. In *the 8th Conference on Decision and Game Theory for Security (GameSec), Special Track on Data-Centric Models and Applications*, September 2017. [39.4% acceptance rate]

[C12] Elizabeth Bondi, **Fei Fang**, Debarun Kar, Venil Noronha, Donnabell Dmello, Milind Tambe, Arvind Iyer, Robert Hannaford. VIOLA: Video Labeling Application for Security Domains. In *the 8th Conference on Decision and Game Theory for Security (GameSec), Special Track on Data-Centric Models and Applications*, September 2017. [39.4% acceptance rate]

[C11] Shahrzad Gholami, Benjamin Ford, **Fei Fang**, Andrew Plumptre, Milind Tambe, Margaret Driciru, Fred Wanyama, Aggrey Rwetsiba, Mustapha Nsubaga, Joshua Mabonga. Taking it for a Test Drive: A Hybrid Spatio-temporal Model for Wildlife Poaching Prediction Evaluated through a Controlled Field Test. In *Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD)*, September 2017

[C10] Debarun Kar, Benjamin Ford, Shahrzad Gholami, **Fei Fang**, Andrew Plumptre, Milind Tambe, Margaret Driciru, Fred Wanyama, Aggrey Rwetsiba. Cloudy with a Chance of Poaching: Adversary Behavior Modeling and Forecasting with Real-World Poaching Data. In *Proceedings of the 16th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2017. [26.1% acceptance rate]

[C9] Anjon Basak, **Fei Fang**, Thanh Nguyen and Christopher Kiekintveld. Combining Graph Contraction and Strategy Generation for Green Security Games. In *Proceedings of the 7th International Conference on Decision and Game Theory for Security (GameSec)*, November 2016. [45.0% acceptance rate]

[C8] Nika Haghtalab, **Fei Fang**, Thanh H. Nguyen, Arunesh Sinha, Ariel Procaccia, Milind Tambe. Three Strategies to Success: Learning Adversary Models in Security Games. In *Proceedings of the 25th International Joint Conference on Artificial Intelligence (IJCAI)*, July 2016. [24% acceptance rate]

[C7] **Fei Fang**, Thanh H. Nguyen, Rob Pickles, Wai Y. Lam, Gopalasamy R. Clements, Bo An, Amandeep Singh, Milind Tambe, Andrew Lemieux. Deploying PAWS: Field Optimization of the Protection Assistant for Wildlife Security. In *Proceedings of the Innovative Applications of Artificial Intelligence (IAAI)*, **Innovative Application Award**, February 2016 (Deployed Application track).

[C6] **Fei Fang**, Peter Stone, Milind Tambe. When Security Games Go Green: Designing Defender Strategies to Prevent Poaching and Illegal Fishing. In *Proceedings of the 24th International Joint Conference on Artificial Intelligence (IJCAI)*, **Outstanding Paper Award in Computational Sustainability Track**, July 2015 (Computational Sustainability Track). [28.7% acceptance rate]

[C5] Debarun Kar, **Fei Fang**, Francesco M. Delle Fave, Nicole Sintov, Milind Tambe. "A Game of Thrones": When Human Behavior Models Compete in Repeated Stackelberg Security Games. In *Proceedings of the Fourteenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2015. [27% acceptance rate]

[C4] Haifeng Xu, **Fei Fang**, Albert X. Jiang, Vincent Conitzer, Shaddin Dughmi, Milind Tambe. Solving Zero-Sum Security Games in Discretized Spatio-Temporal Domains. In *Proceedings of the Twenty-Eighth Conference on Artificial Intelligence (AAAI), July 2014.* [28% acceptance rate]

[C3] William Haskell, Debarun Kar, **Fei Fang**, Milind Tambe, Sam Cheung, Elizabeth Denicola. Robust protection of fisheries with COmPASS. In *Proceedings of the Twenty-Sixth Annual Conference on Innovative Applications of Artificial Intelligence (IAAI)*, July 2014. [28% acceptance rate]

[C2] **Fei Fang**, Albert X. Jiang, Milind Tambe. Optimal Patrol Strategy for Protecting Moving Targets with Multiple Mobile Resources. In *Proceedings of the Twelfth International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2013. [23% acceptance rate]

[C1] Matthew P. Johnson, **Fei Fang**, Milind Tambe, Heidi J. Albers. Patrol Strategies to Maximize Pristine Forest Area. In *Proceedings of the Twenty-Sixth Conference on Artificial Intelligence (AAAI)*, July 2012 (Computational Sustainability Track). [26% acceptance rate]

Short Papers

[SP6] Taoan Huang, Bohui Fang, Hoon Oh, Xiaohui Bei, **Fei Fang** Optimal Trip-Vehicle Dispatch with Multi-Type Requests. In *Proceedings of the Eighteenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2019. (*Extended Abstract*)

[SP5] Elizabeth Bondi, Hoon Oh, Haifeng Xu, **Fei Fang**, Bistra Dilkina, Milind Tambe Broken Signals in Security Games: Coordinating Patrollers and Sensors in the Real World. In *Proceedings of the Eighteenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2019. (*Extended Abstract*)

[SP4] Nitin Kamra, Umang Gupta, Kai Wang, **Fei Fang**, Yan Liu, Milind Tambe Deep Fictitious Play for Games with Continuous Action Spaces. In *Proceedings of the Eighteenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2019. (*Extended Abstract*)

[SP3] Qingyu Guo, Jiarui Gan, **Fei Fang**, Long Tran-Thanh, Milind Tambe, Bo An Inducible Equilibrium for Security Games. In *Proceedings of the Seventeenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, July 2018. (*Extended Abstract*)

[SP2] **Fei Fang**, Peter Stone, Milind Tambe. Planning Defender Strategies Against Attackers In Domains Involving Frequent Adversary Interaction. In *Proceedings of the Fourteenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2015. (*Extended Abstract*)

[SP1] Rong Yang, Albert X. Jiang, **Fei Fang**, Rajiv Maheswaran, Milind Tambe. Designing Better Strategies against Human Adversaries in Graph-Based Security Games. In *Proceedings of the Eleventh International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, June 2012. (*Extended Abstract*)

OTHER CONFERENCE/WORKSHOP PAPERS
Invited Papers

[I1] **Fei Fang**. Integrating Learning with Game Theory for Societal Challenges. In *The 28th International Joint Conference on Artificial Intelligence (IJCAI)* Early Career Spotlight Track.

Refereed Symposium Papers

[S4] Chun Kai Ling, J. Zico Kolter, **Fei Fang**. What game are we playing? Differentiably learning games from incomplete observations. In *Deep Reinforcement Learning Symposium held at the Conference on Neural Information Processing Systems (NIPS), December 2017.*

[S3] Nicole Sintov, Debarun Kar, Thanh H. Nguyen, **Fei Fang**, Kevin Hoffman, Arnaud Lyet, Milind Tambe. From the Lab to the Classroom and Beyond: Extending a Game-Based Research Platform for Teaching AI to Diverse Audiences. In *The Sixth Symposium on Educational Advances in Artificial Intelligence (EAAI), February 2016.*

[S2] **Fei Fang**, Peter Stone, Milind Tambe. Defender Strategies In Domains Involving Frequent Adversary Interaction. In *AAAI Spring Symposium on Applied Computational Game Theory, March 2015.*

[S1] Matthew P. Johnson, **Fei Fang**, Rong Yang, Milind Tambe, Heidi J. Albers. Challenges in Patrolling to Maximize Pristine Forest Area. In *AAAI Spring Symposium on Game Theory for Security, Sustainability and Health, March 2012.*

Refereed Workshop Papers

[W40] Rex Chen, **Fei Fang**, Thomas Norton, Aleecia M. McDonald and Norman Sadeh Fighting the Fog: Evaluating the Clarity of Privacy Disclosures in the Age of CCPA. In *the 20th Workshop on Privacy in the Electronic Society (held at CCS-21)*, December, 2020.

[W39] Zheyuan Ryan Shi, Zhiwei Steven Wu, Rayid Ghani, **Fei Fang**. Bandit Data-driven Optimization: AI for Social Good and Beyond. In *NeurIPS-20 workshop on Machine Learning for the Developing World*, December, 2020.

[W38] Zheyuan Ryan Shi, Zhiwei Steven Wu, Rayid Ghani, **Fei Fang**. Bandit Data-driven Optimization: AI for Social Good and Beyond. In *NeurIPS-20 workshop on Machine Learning for Economic Policy*, December, 2020.

[W37] Zheyuan Ryan Shi, Zhiwei Steven Wu, Rayid Ghani, **Fei Fang**. Bandit Data-driven Optimization: AI for Social Good and Beyond. In *NeurIPS-20 workshop on Consequential Decisions in Dynamic Environments*, December, 2020.

[W36] Stephanie Milani, Amulya Yadav, **Fei Fang**, Thanh Nguyen, Zhou Fan and Saurabh Gulati. Intelligent Tutoring Strategies for Students with Autism Spectrum Disorder: A Reinforcement Learning Approach. In *the Artificial Intelligence for Education Workshop at the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI)*, February, 2020.

[W35] Zheyuan Ryan Shi, Aaron Schlenker, Brian Hay, Daniel Bittleston, Siyu Gao, Emily Peterson, John Trezza, **Fei Fang**. Draining the Water Hole: Mitigating Social Engineering Attacks with CyberTWEAK. In *the Artificial Intelligence for Cyber Security Workshop at the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI)*, February, 2020.

[W34] Gabriele Farina, Chun Kai Ling, **Fei Fang**, Tuomas Sandholm. Correlation in Extensive-Form Games: Saddle-Point Formulation and Benchmarks. In *the Reinforcement Learning in Games Workshop at the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI)*, February, 2020.

[W33] Gabriele Farina, Chun Kai Ling, **Fei Fang**, Tuomas Sandholm. Efficient Regret Minimization Algorithm for Extensive-Form Correlated Equilibrium.. In *the Reinforcement Learning in Games Workshop at the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI)*, February, 2020.

[W32] Zihan Zhou, Zheyuan Ryan Shi, Yi Wu, **Fei Fang**. Approximated Temporal-Induced Neural Self-Play for Finitely Repeated Bayesian Games. In *the Reinforcement Learning in Games Workshop at the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI)*, February, 2020.

[W31] Taoan Huang, David Zeng, Tianyu Gu, Rohit Singh, **Fei Fang**. Green Security Game with Community Engagement. In *the Workshop on Data Mining and Artificial Intelligence for Wildlife Conservation at the 25th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, July, 2019.

[W30] Elizabeth Bondi, Hoon Oh, Haifeng Xu, **Fei Fang**, Bistra Dilkina, Milind Tambe Biodiversity Conservation with Drones: Using Uncertain Real-Time Information in Signaling Games to Prevent Poaching. In *the Workshop on AI and the United Nations SDGs at the 28th International Joint Conference on Artificial Intelligence (IJCAI)*, July, 2019.

[W29] Yiwen Yuan, Kimberly Lo, Zheyuan Ryan Shi, Leah Lizarondo, **Fei Fang**. Efficiency and Fairness of Food Rescue Platforms: An Initial Study. In *the AI for Social Good Workshop at the 28th International Joint Conference on Artificial Intelligence (IJCAI)*, July, 2019.

[W28] Zheyuan Ryan Shi, Ariel D. Procaccia, Kevin S. Chan, Sridhar Venkatesan, Noam Ben-Asher, Nandi O. Leslie, Charles Kamhoua, **Fei Fang**. Feature Deception Games. In *the Strategic Reasoning Workshop at the 28th International Joint Conference on Artificial Intelligence (IJCAI)*, July, 2019.

[W27] Zheyuan Ryan Shi, Ariel D. Procaccia, Kevin S. Chan, Sridhar Venkatesan, Noam Ben-Asher, Nandi O. Leslie, Charles Kamhoua, **Fei Fang**. Learning and Planning in Feature Deception Games. In *the Machine Learning in the Presence of Strategic Behavior Workshop at the Twentieth ACM Conference on Economics and Computation (EC)*, June, 2019.

[W26] Zheyuan Ryan Shi, Aaron Schlenker, Brian Hay, **Fei Fang**. Draining the Waterhole: Mitigating Social Engineering Attacks. In *the Reinforcement Learning in Games Workshop at the Thirty-Third AAAI Conference on Artificial Intelligence (AAAI)*, January, 2019.

[W25] Yufei Wang, Zheyuan Ryan Shi, Lantao Yu, Yi Wu, Rohit Singh, Lucas Joppa, **Fei Fang**. Deep Reinforcement Learning for Green Security Games with Real-Time Information. In *the Reinforcement Learning in Games Workshop at Thirty-Third AAAI Conference on Artificial Intelligence (AAAI)*, January, 2019.

[W24] Swaminathan Gurumurthy, Lantao Yu, Chenyan Zhang, Yongchao Jin, Weiping Li, Xiaodong Zhang, **Fei Fang**. Exploiting Data and Human Knowledge for Predicting Wildlife Poaching. In *AI for Social Good Workshop at Thirty-Second Conference on Neural Information Processing Systems (NeurIPS)*, December, 2018.

[W23] Elizabeth Bondi, Debadeepta Dey, Ashish Kapoor, Jim Piavis, Shital Shah, **Fei Fang**, Bistra Dilkina, Robert Hannaford, Arvind Iyer, Lucas Joppa and Milind Tambe. Simulation for Wildlife Conservation with UAVs. In *AI for Wildlife Conservation (AIWC) Workshop held at Federated Artificial Intelligence Meeting (FAIM)*, July, 2018.

[W22] Taoan Huang, Rohit Singh and **Fei Fang**. Green Security Game with Community Engagement. In *AI for Wildlife Conservation (AIWC) Workshop held at Federated Artificial Intelligence Meeting (FAIM)*, July, 2018.

[W21] Zheyuan Ryan Shi, Ziye Tang, Long Tran-Thanh, Rohit Singh and **Fei Fang**. Designing the Game to Play: Optimizing Payoff Structure in Security Games. In *AI for Wildlife Conservation (AIWC) Workshop held at Federated Artificial Intelligence Meeting (FAIM)*, July, 2018.

[W20] Lantao Yu, Yi Wu, Zheyuan Ryan Shi, Rohit Singh, Lucas Joppa and **Fei Fang**. Deep Reinforcement Learning for Green Security Game with Online Information. In *AI for Wildlife Conservation (AIWC) Workshop held at Federated Artificial Intelligence Meeting (FAIM)*, July, 2018.

[W19] Swaminathan Gurumurthy, Lantao Yu, Chenyan Zhang, Yongchao Jin, Weiping Li, Xiaodong Zhang, **Fei Fang**. Exploiting Data and Human Knowledge for Predicting Wildlife Poaching. In *AI for Wildlife Conservation (AIWC) Workshop held at Federated Artificial Intelligence Meeting (FAIM)*, July, 2018.

[W18] Zheyuan Ryan Shi, Ziye Tang, Long Tran-Thanh, Rohit Singh and **Fei Fang**. Designing the Game to Play: Optimizing Payoff Structure in Security Games. In *International Workshop on Optimization in Multiagent Systems (OptMAS) held at the Federated Artificial Intelligence Meeting (FAIM)*, July, 2018.

[W17] Chun Kai Ling, **Fei Fang** and J. Zico Kolter. What Game Are We Playing? End-to-End Learning in Normal and Extensive Form Games. In *The AAMAS-IJCAI Workshop on Agents and Incentives in Artificial Intelligence (AI3) held at the Federated Artificial Intelligence Meeting (FAIM)*, July, 2018.

[W16] Hongyao Ma, **Fei Fang** and David C. Parkes. Spatio-Temporal Pricing for Ridesharing Platforms. In *The AAMAS-IJCAI Workshop on Agents and Incentives in Artificial Intelligence (AI3) held at the Federated Artificial Intelligence Meeting (FAIM)*, July, 2018.

[W15] Lantao Yu, Yi Wu, Rohit Singh, Lucas Joppa, **Fei Fang**. Deep Reinforcement Learning for Green Security Game with Online Information. In *Workshop on AI for Imperfect-Information Games (AIII) held at the Thirty-Second AAAI Conference on Artificial Intelligence (AAAI-18)*, February, 2018.

[W14] Nitin Kamra, **Fei Fang**, Debarun Kar, Yan Liu, Milind Tambe. Handling Continuous Space Security Games with Neural Networks. In *1st International Workshop on A.I. in Security held at the International Joint Conference on Artificial Intelligence (IJCAI-17)*, August 2017.

[W13] Zheyuan Shi, **Fei Fang**. Optimizing Peer Teaching to Enhance Team Performance. In *First International Workshop on Teams in Multiagent Systems held at International Conference on Autonomous Agents and Multiagent Systems (AAMAS) 2017.*, May 2017. In *AAMAS 2017 Workshops Best Papers volume, Springer*.

[W12] **Fei Fang**, Thanh H. Nguyen, Rob Pickles, Wai Y. Lam, Gopalasamy R. Clements, Bo An, Amandeep Singh, Milind Tambe, Andrew Lemieux. Deploying PAWS in the Field: Designing Efficient Patrols to Combat Poaching. In *Workshop on Computer Poker and Imperfect Information Games* held at *the Thirtieth AAAI Conference on Artificial Intelligence (AAAI-16)*, February 2016.

[W11] **Fei Fang**, Thanh H. Nguyen, Benjamin Ford, Nicole Sintov, Milind Tambe. Introduction to green security games (extended abstract). In *Workshop on Cognitive Knowledge Acquisition and Applications* held at *International Joint Conferences on Artificial Intelligence (IJCAI)*, July 2015.

[W10] **Fei Fang**, Thanh H. Nguyen, Bo An, Milind Tambe, Rob Pickles, Wai Y. Lam, Gopalasamy R. Clements. Towards Addressing Challenges in Green Security Games in the Wild (extended abstract). In *Workshop of Behavioral, Economic and Computational Intelligence for Security (BECIS)* held at *International Joint Conferences on Artificial Intelligence (IJCAI)*, July 2015.

[W9] Debarun Kar, **Fei Fang**, Francesco M. Delle Fave, Nicole Sintov, Arunesh Sinha, Aram Galstyan, Bo An, Milind Tambe. Learning Bounded Rationality Models of the Adversary in Repeated Stackelberg Security Games. In *ALA Adaptive and Learning Agents Workshop* held at *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2015.

[W8] Debarun Kar, **Fei Fang**, Francesco M. Delle Fave, Nicole Sintov, Milind Tambe. Conducting Longitudinal Experiments with Behavioral Models in Repeated Stackelberg Security Games on Amazon Mechanical Turk. In *Fourth International Workshop on Human-Agent Interaction Design and Models (HAIDM)* held at *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2015.

[W7] **Fei Fang**, Thanh H. Nguyen, Rob Pickles, Wai Y. Lam, Milind Tambe. Challenges of Green Security Games in the Wild. In *International Workshop on Issues with Deployment of Emerging Agent-based Systems (IDEAS)* held at *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2015.

[W6] **Fei Fang**, Peter Stone, Milind Tambe. Designing Defender Strategies Against Frequent Adversary Interaction. In *International Workshop on Optimisation in Multi-Agent Systems (OPTMAS)* held at *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2015.

[W5] Debarun Kar, **Fei Fang**, Francesco M. Delle Fave, Nicole Sintov, Milind Tambe, Arlette van Wissen. Effectiveness of Probability Perception Modeling and Defender Strategy Generation Algorithms in Repeated Stackelberg Games. In *Workshop on Computational Sustainability* held at *the Twenty-Ninth AAAI Conference on Artificial Intelligence (AAAI-15)*, January 2015.

[W4] Haifeng Xu, **Fei Fang**, Albert X. Jiang, Vincent Conitzer, Shaddin Dughmi, Milind Tambe. Computing Minimax Strategy for Discretized Spatio-Temporal Zero-Sum Security Games. In *International Joint Workshop on Optimisation in Multi-Agent Systems and Distributed Constraint Reasoning (OPTMAS-DCR)* held at *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2014.

[W3] **Fei Fang**, Albert X. Jiang, Milind Tambe. Designing Optimal Patrol Strategy for Protecting Moving Targets with Multiple Mobile Resources. In *Workshop on Optimisation in Multi-Agent Systems (OPTMAS)* held at *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2013.

[W2] Matthew P. Johnson, **Fei Fang**, Milind Tambe, Heidi J. Albers. Designing Patrol Strategies to Maximize Pristine Forest Area. In *Workshop on Optimisation in Multi-Agent Systems (OPTMAS)* held at *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, June 2012.

[W1] Rong Yang, **Fei Fang**, Albert X. Jiang, Karthik Rajagopal, Milind Tambe, Rajiv Maheswaran. Modeling Human Bounded Rationality to Improve Defender Strategies in Network Security Games. In *Workshop on Human-Agent Interaction Design and Models (HAIDM)* held at *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, June 2012.

OTHER PUBLICATIONS

Editorials

[E1] **Fei Fang.** AGNT SI: agents and multiagent systems for social good. In *Autonomous Agents and Multi-Agent Systems*, Vol 35, No. 43, 2021

Refereed Technical Magazine Articles

[M5] Andrew Perrault, **Fei Fang**, Arunesh Sinha, Milind Tambe. AI for Social Impact: Learning and Planning in the Data-to-Deployment Pipeline. In *AI Magazine*, Vol. 41 No. 4: Winter 2020. **Featured on the cover.**

[M4] **Fei Fang**, Thanh H. Nguyen, Arunesh Sinha, Shahrzad Gholami, Andrew Plumptre, Lucas Joppa, Milind Tambe, Margaret Driciru, Fred Wanyama, Aggrey Rwetsiba, Rob Critchlow, Colin Beale. Predicting Poaching for Wildlife Protection. In *IBM Journal of Research and Development*, 61(6):1-12, 2017). DOI: 10.1147/JRD.2017.2713584

[M3] Jeannette Bohg, Xavier Boix, Nancy Chang, Vivian Chu, Elizabeth F. Churchill, **Fei Fang**, Jerome Feldman et al. Reports on the 2017 AAAI Spring Symposium Series. In *AI Magazine*, 38(4):99-106, 2017.

[M2] Nicole Sintov, Debarun Kar, Thanh Nguyen, **Fei Fang**, Kevin Hoffman, Arnaud Lyet, Milind Tambe. Keeping it Real: Using Real-World Problems to Teach AI to Diverse Audiences. In *AI Magazine*, 38(2):35-47, 2017.

[M1] **Fei Fang**, Thanh H. Nguyen, Rob Pickles, Wai Y. Lam, Gopalasamy R. Clements, Bo An, Amandeep Singh, Brian C. Schwedock, Milind Tambe, Andrew Lemieux. PAWS – A Deployed Game-Theoretic Application to Combat Poaching. In *AI Magazine*, 38(1):23-36, 2017.

Newsletter Publications

[N2] Carla Gomes, Thomas Dietterich, Christopher Barrett, Jon Conrad, Bistra Dilkina, Stefano Ermon, **Fei Fang**, Andrew Farnsworth, Alan Fern, Xiaoli Fern, Daniel Fink, Douglas Fisher, Alexander Flecker, Daniel Freund, Angela Fuller, John Gregoire, John Hopcroft, Steve Kelling, Zico Kolter, Warren Powell, Nicole Sintov, John Selker, Bart Selman, Daniel Sheldon, David Shmoys, Milind Tambe, Weng-Keen Wong, Christopher Wood, Xiaojian Wu, Yexiang Xue, Amulya Yadav, Abdul-Aziz Yakubu, Mary Lou Zeeman. Computational Sustainability: Computing for a Better World and a Sustainable Future. In *Communications of the ACM*, September 2019, Vol. 62 No. 9, Pages 56-65 10.1145/3339399. **Cover Article of the September 2019 Issue of CACM.**

[N1] **Fei Fang**, Thanh H. Nguyen. Green Security Games: Apply Game Theory to Addressing Green Security Challenges. In *In ACM SIGecom exchanges: 15.1*, Pages 78-83, July 2016.

Demos

[D2] Elizabeth Bondi, Hoon Oh, Haifeng Xu, **Fei Fang**, Bistra Dilkina, Milind Tambe. Using Game Theory in Real Time in the Real World: A Conservation Case Study. In *System Demos* at the *18th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2019. **Winner of Best Application System Demo**

[D1] **Fei Fang**, Thanh H. Nguyen, Rob Pickles, Wai Y. Lam, Gopalasamy R. Clements, Bo An, Milind Tambe. Deploying PAWS to Combat Poaching: Game-theoretic Patrolling in Areas with Complex Terrain. In *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*, February 2016.

Videos

[V1] **Fei Fang**, Debarun Kar, Dana Thomas, Nicole Sintov, Milind Tambe. PAWS: Protection Assistant for Wildlife Security. In *AAAI Conference on Artificial Intelligence (AAAI)*, February 2016. **Winner of Best Application of AI and Finalist of Best Student Video Award**

Posters

[P2] **Fei Fang**, Albert X. Jiang, Milind Tambe. Optimal Patrol Strategy for Protecting Moving Targets with Multiple Mobile Resources. In *the 9th Conference on Web and Internet Economics (WINE)*, December 2013.

[P1] **Fei Fang**. Optimal Patrol Strategy for Protecting Moving Targets with Multiple Mobile Resources (Poster Competition Finalist). In *the First Conference on Validating Models of Adversary Behaviors*, June 2013.

FIELDED AND DEPLOYED RESEARCH

- **SmartFoodRescue**. This work predicts food rescue requests that are in-risk and designs volunteer notification scheme. Our new notification scheme has been in use by 412 Food Rescue platform since February 2020.
- **PROTECT-Ferry**. This work designs optimal patrol strategy for protecting ferry system. Our algorithms have been in continued use by the US Coast Guard to schedule the escort boats to protect Staten Island Ferry since April 2013.

- **PAWS (Protection Assistant for Wildlife Security)**. This work focuses on learning poacher behavior, predicting poaching activities, and generating randomized patrols to combat poaching. The work has been tested or deployed in the field for protecting wildlife Uganda, Malaysia, China and South Africa.

PATENTS FILED

- Patent "Optimal Patrol Strategy for Protecting Moving Targets with Multiple Mobile Resources" (co-inventors: Fei Fang, Albert Jiang, Milind Tambe), 2014 (US Patent Application No. 20150273341)

INVITED TALKS AND COLLOQUIA

Invited Talks

- August 2021. "Integrating Machine Learning with Game Theory for Societal Challenges". Award session of IJCAI-21 as the recipient of the IJCAI-21 Computers and Thought award.
- August 2021. "Game Theory and Machine Learning in Multiagent Communication and Coordination". Seminar talk at the RLChina Summer School.
- July 2021. "Machine Learning and Game Theory for Social Good". Seminar talk at AI4All @ Carnegie Mellon summer program.
- June 2021. "Game Theory + Machine Learning = ?", invited talk Yixi talk series.
- April 2021. "Game Theory and Machine Learning for Multiagent Communication and Coordination". Invited talk at Young Researcher Salon Keynote series run by Beijing Academy of Artificial Intelligence.
- April 2021. "Game Theory and Machine Learning for Multiagent Communication and Coordination". Invited talk at Tsinghua AI International Governance forum
- February 2021. "Machine Learning and Game Theory for Social Good". Invited talk at Youth AI seminar.
- February 2021. "Game Theory and Machine Learning for Multiagent Communication and Coordination". Invited talk at Harvard AI for Economics seminar series.
- December 2020. "Integrating Machine Learning and Game Theory for Social Good." Invited talk at Tsinghua-Berkeley Shenzhen Institute.
- December 2020. "Machine Learning and Game Theory for Communication and Coordination in Multi-Agent Interaction." Invited talk at Lockheed Martin Advanced Technology Laboratories.
- December 2020. "Integrating Machine Learning and Game Theory for Social Good." Invited talk at the 1st Renmin University of China Workshop on AI for Social Good.
- October 2020. "Integrating Machine Learning with Game Theory for Societal Challenges." Invited talk at Leonardo DRS.
- August 2020. "Multi-agent System-based Tools to Address Societal Challenges". Invited talk at the 7th symposium on autonomous agents and multi-agent systems.
- May 2020. "Saving Wildlife through AI'. Invited talk at the CMU Faculty Dialogue webinars.
- February 2020. "Integrating Machine Learning with Game Theory for Societal Challenges." Invited talk at the Politecnico di Milano.

- February 2020. "Integrating Machine Learning with Game Theory for Societal Challenges." Invited talk at the Department of Computer Science in the University of Illinois at Urbana-Champaign (UIUC).
- December 2019. "Integrating Machine Learning with Game Theory for Societal Challenges." Invited talk at the Facebook AI Research.
- December 2019. "Integrating Machine Learning with Game Theory for Societal Challenges." Invited talk at the Bridging Game Theory and Deep Learning workshop at Thirty-third Conference on Neural Information Processing Systems (NeurIPS'19).
- December 2019. "Integrating Machine Learning with Game Theory for Societal Challenges." Invited talk at Tsinghua University.
- November 2019. "Efficiency and Fairness in Ride-sharing." Invited Talk at Smart Mobility Connection Session.
- October 2019. "AI for Social Good: Integrating Learning with Game Theory for Societal Challenges." Invited Talk at Confluence talk series (for students and Pittsburgh technology community).
- September 2019. "Practical Implementations of AI & ML in Conservation Contexts." NetHope Webinar.
- July 2019. "Integrating Learning with Game Theory for Societal Challenges." Seminar talk at AI4ALL Program (AI Education for K-12) hosted at Carnegie Mellon University.
- July 2019. "Integrating Learning with Game Theory for Societal Challenges." Invited talk at Macao University.
- July 2019. "Integrating Learning with Game Theory for Societal Challenges." Early Career Spotlight Talk at the 28th International Joint Conference on Artificial Intelligence (IJCAI).
- June 2019. "Integrating Learning with Game Theory for Societal Challenges." Invited talk at Shanghai Jiao Tong University.
- May 2019. "Integrating Learning with Game Theory for Societal Challenges." Seminar talk at Quebec AI Institute (MILA).
- April 2019. "Integrating Learning with Game Theory for Societal Challenges." Invited talk at Texas A&M University – Corpus Christi.
- March 2019. "Integrating Learning with Game Theory for Societal Challenges." Invited talk at Pennsylvania State University.
- February 2019. "Integrating Learning with Game Theory for Societal Challenges." Invited talk at the Hume Center for National Security and Technology at Virginia Tech.
- November 2018. "Incentivizing Participation in Peer-to-Peer Ride-Sharing Platform." Smart Mobility Connection Seminar Talk at Carnegie Mellon University.
- October 2018. "Integrating Learning with Game Theory for Societal Challenges." AI Seminar at the University of Alberta.
- September 2018. "Integrating Learning with Game Theory for Societal Challenges." EconCS Seminar at Harvard University.

- September 2018. "AI for Societal Challenges." EmTech 2018 at Massachusetts Institute of Technology.
- June 2018. "Integrating Learning with Game Theory for Societal Challenges." Seminar at Google Pittsburgh Campus.
- May 2018. "Integrating Learning with Game Theory for Societal Challenges." Departmental seminar in the Department of Mathematics at the University of Pittsburgh.
- April 2018. "Machine Learning and Game Theory for Biodiversity Conservation." Featured presentation at 2018 Center for Genome Research and Biocomputing Spring Conference at Oregon State University.
- March 2018. "Integrating Learning with Game Theory for Societal Challenges." Seminar in Heinz College of Information Systems and Public Policy at Carnegie Mellon University.
- March 2018. "Integrating Machine Learning with Game Theory for Societal Challenges." Machine Learning Seminar at Carnegie Mellon University.
- February 2018. "Integrating Machine Learning with Game Theory for Security." CyLab Distinguished Seminar at Carnegie Mellon University.
- February 2018. "Integrating Machine Learning with Game Theory for Security." Army Research Lab, Adelphi.
- December 2017. "Integrating Machine Learning with Game Theory and Mechanism Design for Security, Sustainability, and Mobility." Departmental seminar series in the Department of Industrial and Systems Engineering in the State University of New York at Buffalo.
- November 2017. "Data-Aware Game Theory for Security." Privacy Seminar at Carnegie Mellon University.
- October 2017. "Data-Aware Game Theory and Mechanism Design for Security, Sustainability, and Mobility." Peking University, China.
- October 2017. "Data-Aware Game Theory and Mechanism Design for Security, Sustainability, and Mobility." Tsinghua University, China.
- May 2017. "Game-Theoretic Approaches for Sustainability Challenges." Computational Sustainability Virtual Seminar Series.
- April 2017. "Game-Theoretic Approaches for Real-World Security and Sustainability Challenges." Invited Talk at the University of New Hampshire.
- February 2017. "Win a Game to Build a Better World." Women Engineers Code (WECode) Conference.
- December 2016. "Game-Theoretic Approaches for Real-World Security and Sustainability Challenges." EconCS Seminar at Harvard University.
- September 2016. "Empower the Defender with Unpredictability: Game-Theoretic Approaches for Real-World Security and Sustainability Challenges." Center for Research on Computation and Society (CRCS) Seminar Series at Harvard University.
- June 2016. "Win a Game to Build a Safer World: Towards a Science of Security Games." The USA Computing Olympiad Summer Camp.

- April 2016. "Empower the Defender with Unpredictability: Game-Theoretic Approaches for Real-World Security and Sustainability Challenges." Multiagent Systems Professional Group (MSPG) Online Seminar Series.
- October 2015. "Towards Addressing Spatio-Temporal Aspects in Security Games." Computer Science Colloquium Lecture Series at the University of Southern California.
- July 2013. "Dealing With Spatio-Temporal Continuity in Stackelberg Games." IBM Thomas J. Watson Research Center.
- December 2012. "Patrol Strategies to Maximize Pristine Forest Area" (jointly with Prof. Milind Tambe). World Bank.

Other Talks

- May 2021. Panelist at the AAMAS Doctoral Consortium Career Panel.
- October 2020. Panelist on Machine Learning and Artificial Intelligence in Games at GameSec 2020.
- February 2020. Panelist at the Try AI event at Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI).
- December 2019. Panelist at the NeurIPS-19 Joint Workshop on AI for Social Good.
- October 2019. "Learning and Deception for Cybersecurity." CMU CyLab Partners Conference.
- October 2019. "Introduction to Computational Sustainability." CompSust Doctoral Consortium 2019.
- September 2019. "Recent Advances in Learning and Computational Game Theory for Conservation." SMART AI/PAWS Integration Workshop at Harvard University.
- August 2019. "Cyber Deception Games." Cyber Deception Workshop at Carnegie Mellon University.
- August 2019. Panelist of the Career Panel at the Doctoral Consortium at the 28th International Joint Conference on Artificial Intelligence (IJCAI).
- May 2019. "Examine second case study to deconstruct an AI application from how the problem was defined through to deployment." NetHope Workshop on Learning how to apply AI to solve some of society's biggest challenges at AI for Good Global Summit 2019.
- May 2019. "The Past and The Future of Artificial Intelligence." AI Education and Learning session at AI for Good Global Summit 2019.
- October 2018. "Integrating Machine Learning with Game Theory for Security." CMU CyLab Partners Conference.
- August 2018. "Integrating Machine Learning with Game Theory for Security." Cyber Deception Workshop at the University of Maryland.
- July 2018. "Designing the Game to Play: Optimizing Payoff Structure in Security Games." International Colloquium on Automata, Languages and Programming (ICALP) workshop Game Solving: Theory and Practice.
- July 2018. "Designing the Game to Play: Optimizing Payoff Structure in Security Games." International Symposium on Mathematical Programming (ISMP).
- May 2018. Panelist at AI for Earth Summit at Microsoft Research.

- April 2018. Panelist at the 7th CMU Summit on US-China Innovation and Entrepreneurship.
- February 2018. "Machine Learning for Sustainability." CMU-Portugal workshop on Machine Learning and Natural Language Processing.
- October 2017. "Game Theoretic Approaches for Wildlife Conservation." World Wild Fund for Nature (WWF) Law Enforcement and Research Workshop, Cambodia.
- July 2017. "Game Theory for Protecting Natural Resources." 2017 Doctoral Consortium on Computational Sustainability.
- November 2015. "When Security Games Go Green: Designing Defender Strategies to Prevent Poaching and Illegal Fishing." INFORMS Annual Meeting 2015.

CONFERENCE AND WORKSHOP COMMITTEES

- **Co-chair** of *the Competitions and Challenges at the International Joint Conference on Artificial Intelligence*, August 2021.
- **Co-chair** of *the JAAMAS track of the 20th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2021.
- **track chair** of *AI for Social Impact track at the ACM SIGCAS Conference on Computing and Sustainable Societies (COMPASS), June 2021*
- **Co-chair** of *the Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI) Special Track on AI for Social Impact*, February 2022.
- **Area chair** of *the Conference on Neural Information Processing Systems (NeurIPS)*, December 2021.
- **Co-organizer** of 2021 Symposium on Artificial Intelligence for Social Good. April 2021.
- **Co-chair** of *the Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI) Special Track on AI for Social Impact*, February 2021.
- **PC member** of *the International Joint Conference on Artificial Intelligence – Pacific Rim International Conference on Artificial Intelligence (IJCAI-PCAI)*, July 2020.
- **Co-chair and PC member** of *the Doctoral Consortium at the 19th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2020.
- **Co-chair** of *the 2020 CMU AI and Social Good Symposium*, April 2020.
- **PC member** of *the Try AI event at Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI)*, February 2020.
- **Co-chair** of *the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI) Special Track on AI for Social Impact*, February 2020.
- **Co-chair** of *the NeurIPS-19 Joint Workshop on AI for Social Good "Producing Good Outcomes" track*, December 2019.
- **PC member** of *the Conference on Neural Information Processing Systems (NeurIPS)*, December 2019.
- **Steering Committee Member** of *the CompSust Doctoral Consortium*, October 2019.

- **Senior PC member** of *the 28th International Joint Conference on Artificial Intelligence (IJCAI)*, August 2019.
- **PC member** of *the second annual ACM SIGCAS Conference on Computing and Sustainable Societies (COMPASS 2019)*, July 2019.
- **PC member** of *the 20th ACM Conference on Economics and Computation (EC 2019)*, June 2019.
- **PC member** of *the 36th International Conference on Machine Learning (ICML)*, June 2019.
- **Senior PC member** of *the 18th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2019.
- **PC member** of *AIDR 2019: Artificial Intelligence for Data Discovery and Reuse*, May 2019.
- **PC member** of Main Track and **Senior PC member** of Emerging Track on Artificial Intelligence for Social Impact of *the Thirty-Third AAAI Conference on Artificial Intelligence (AAAI)*, January 2019.
- **PC member** of *the AAAIACM Conference on AI, Ethics, and Society (AIES)*, January 2019.
- **PC member** of *the Conference on Neural Information Processing Systems (NeurIPS)*, December 2018.
- **PC member** of *the 35th International Conference on Machine Learning (ICML)*, July 2018.
- **PC member** of *the 17th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, July 2018.
- **Organizing committee member** of *the AI for Wildlife Conservation (AIWC) Workshop at the Federated Artificial Intelligence Meeting (FAIM)*, July 2018.
- **PC member** of *the 27th International Joint Conference on Artificial Intelligence and the 23rd European Conference on Artificial Intelligence (IJCAI-ECAI)*, July 2018.
- **PC member** of *the First Conference on Computing and Sustainable Societies (ACM COMPASS)*, June 2018.
- **PC member** of *the Thirty-Second AAAI Conference on Artificial Intelligence (AAAI)*, February 2018.
- **Chair** of *Special Track on "Data-Centric Models and Approaches at the 8th Conference on Decision and Game Theory for Security (GameSec 2017)*, October 2017.
- **PC member** of *the 18th ACM Conference on Economics and Computation (EC)*, June 2017.
- **Reviewer** of *the 49th ACM Symposium on Theory of Computing (STOC)*, June 2017.
- **Reviewer** of *Artificial Intelligence (AIJ)*, May 2017.
- **Co-chair** of *the AAAI 2017 Spring Symposium on AI for Social Good (AISOC)*, March 2017.
- **Reviewer** of *Journal of Artificial Intelligence Research (JAIR)*, March 2017.
- **PC member** of *the Sixteenth International Joint Conference on Antonomous Agents and Multiagent Sytems (AAMAS) Doctoral Consortium Program*, May 2017.
- **PC member** of *the Sixteenth International Joint Conference on Antonomous Agents and Multiagent Sytems (AAMAS)*, May 2017.

- **PC member** of *the Thirty-First AAAI Conference on Artificial Intelligence (AAAI) - Computational Sustainability (CompSust) Track*, February 2017.
- **PC member** of *the Thirty-First AAAI Conference on Artificial Intelligence (AAAI)*, February 2017.
- **Reviewer** of *Autonomous Agents and Multi-Agent Systems (JAAMAS)*, December 2016.
- **Coach** of *Hour of Code at the Meadowbrook School, teaching students in 6–8 grades*, December 2016.
- **Reviewer** of *Journal of Artificial Intelligence Research (JAIR)*, November 2016.
- **PC member** of *IEEE International Conference on Agents (IEEE ICA 2016)*, September 2016.
- **Co-organizer** of *4th International Conference on Computational Sustainability (CompSust)*, July 2016.
- **Reviewer** of *The Conference on Uncertainty in Artificial Intelligence (UAI)*, June 2016.
- **Coach** of *the USA Computing Olympiad Summer Camp*, June 2016.
- **Reviewer** of *the Conference on Conservation, Computation, & Criminology (C4)*, June 2016.
- **PC member** of *the 25th International Joint Conference on Artificial Intelligence (IJCAI)*, July 2016.
- **PC member** of *the Workshop on Security and Multi-agent Systems (SecMAS)* held at *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2016.
- **PC member** of *the International Workshop on Optimisation in Multi-Agent Systems (OPTMAS)* held at *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2016.
- **PC member** of *the 2015 IEEE/WIC/ACM International Conference on Intelligent Agent Technology (IAT)*, December 2015.
- **PC member** of *the 24th International Joint Conference on Artificial Intelligence (IJCAI) - Computational Sustainability (CompSust) Track*, July 2015.
- **PC member** of *the 24th International Joint Conference on Artificial Intelligence (IJCAI)*, July 2015.
- **PC member** of *Workshop of Behavioral, Economic and Computational Intelligence for Security (BECIS)* held at *International Joint Conferences on Artificial Intelligence (IJCAI)*, July 2015.
- **Co-organizer** of *USC Conference on Conservation, Computation, & Criminology (C4)*, June 2015.
- **PC member** of *2015 International Workshop on Optimisation in Multi-Agent Systems (OPTMAS)* held at *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2015.
- **Chair** of *AAAI 2015 Spring Symposium on Applied Computational Game Theory*, March 2015.
- **Reviewer** of *Simulation: Transactions of the Society for Modeling and Simulation International*, February, 2015.
- **Reviewer** of *the Twenty-Ninth AAAI Conference on Artificial Intelligence (AAAI)*, January 2015.
- **PC member** of *2014 International Joint Workshop on Optimisation in Multi-Agent Systems and Distributed Constraint Reasoning (OPTMAS-DCR)* held at *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2014.

- **Reviewer** of *the 13th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2014.
- **Reviewer** of *the 9th Conference on Web and Internet Economics (WINE)*, December 2013.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- Association for Computing Machinery (ACM)
- Association for Advancement of Artificial Intelligence (AAAI)
- Institute for Operations Research and the Management Sciences (INFORMS)
- American Association for the Advancement of Science (AAAS)

EDITORIAL BOARD MEMBERSHIPS

- **Editor** of *AGNT (Autonomous Agents and Multi-Agent Systems journal) Special Issue on "Agents and Multiagent Systems for Social Good"*. October 2018.
- **Subject-matter editor** of *Emerging Technologies track in Ecosphere Journal*. April 2017-September 2019.

COURSES TAUGHT AT CARNEGIE MELLON

Courses

- Fall 2021. 17599 / 17759: Advanced Topics in Machine Learning and Game Theory
- Spring 2021. 17537 / 17737: Artificial Intelligence Methods for Social Good
- Fall 2020. 17599 / 17759: Advanced Topics in Machine Learning and Game Theory
- Spring 2020. 17537 / 17737: Artificial Intelligence Methods for Social Good
- Fall 2019. 15281: Artificial Intelligence: Representation and Problem Solving
- Spring 2019. 17537 / 17737: Artificial Intelligence Methods for Social Good
- Fall 2018. 15381 / 15681: Artificial Intelligence: Representation and Problem Solving
- Spring 2018. 08537 / 08737: Artificial Intelligence Methods for Social Good

Guest Lectures and Independent Study and Project Advising

- Fall 2021. Research and Innovation in Computer Science (15300 / 15400). Talk on "What is it like to do research in AI?."
- Fall 2021. Societal Computing Practicum (17994). Guest lecture on "The Evolution of PAWS."
- Spring 2021. Societal Computing Practicum (17994). Teaching the module on "Interdisciplinary Research."
- Fall 2020. Research and Innovation in Computer Science (15300 / 15400). Talk on "What is it like to do research in AI?."
- Fall 2020. Societal Computing Practicum (17994). Guest lecture on "The Evolution of PAWS."

- Spring 2020. Societal Computing Practicum (17994). Teaching the module on "Interdisciplinary Research."
- Fall 2019. Freshman Immigration Course (07128). Talk on "Artificial Intelligence for Good."
- Fall 2019. AI for Public Policy (90769). Guest lecture on "AI for Social Good."
- Fall 2019. Research and Innovation in Computer Science (15300 / 15400). Talk on "What is it like to do research in AI?."
- Fall 2019. Societal Computing Practicum (17994). Guest lecture on "The Evolution of PAWS."
- Spring 2019. Sponsor and advisor of MCDS (Master in Computational Data Science) Capstone Project on "Detecting Mining Sites from Satellite Imagery".
- Spring 2019. Sponsor and advisor of MITS (Master of Information Technology Strategy) Capstone Projects on "Tools to Mitigate Cyber Social Engineering Attacks" and "An Open-Source Tool for Poaching Threat Prediction".
- Spring 2019. Societal Computing Practicum (17994). Teaching the module on "Interdisciplinary Research."
- Fall 2018. AI for Public Policy (90769). Guest lecture on "Integrating Learning with Game Theory for Societal Challenges."
- Fall 2018. Societal Computing Practicum (17994). Guest lecture on "The Evolution of PAWS."
- Fall 2018. AI, Society and Humanity (94878). Guest lecture on "Practice to Theory to Practice: AI for Social Good."
- Spring 2018. Societal Computing Practicum (08998). Guest lecture on "The Evolution of PAWS."
- Fall 2017. Special Topics in HCI – Computing for Good (05499-E). Advising a project titled "Identifying mining sites in conservation areas from satellite imagery and analyzing their dynamics." Project team members: Wen Li, Abigail McManus.
- Fall 2017. Systems Synthesis I (90739). Serve on advisory board for a project titled "Mapping Illegal Wildlife Trafficking." Project advisor: Prof. Jon Caulkins. Project team members: James Duguid, Anhvinh Doanvo, Gursmeep Hundal, Vicky Mei, Benjamin Simmons, Theresa Froehlich.

Reading Groups

- Fall 2017. Multi-agent Reinforcement Learning (MARL) Reading Group

Tutorials

- Fall 2019. Tutorial on "Learning-Powered Game-Theoretic Models for Cyber Security." Government of India Professional Training Course.

COURSES TAUGHT OUTSIDE CARNEGIE MELLON

Tutorial Talks

- January 2021. Tutorial on "Machine Learning and Game Theory" (with Andrew Perrault, Bo Li). At the 29th International Joint Conference on Artificial Intelligence (IJCAI) 2020.
- July 2019. Tutorial on "Solving Games with Complex Strategy Spaces" (with Hau Chan). At the 28th International Joint Conference on Artificial Intelligence (IJCAI) 2019.

- May 2019. Tutorial on "Solving Games with Complex Strategy Spaces" (with Hau Chan, Albert X. Jiang). At the 17th International Conference on Autonomous Agents and Multiagent Systems (AAMAS) 2019.
- September 2018. Tutorial on "Game Theory." At DHS Center of Excellence and Center for Accelerating Operational Efficiency.
- July 2018. Game Theory and Machine Learning for Security. At Federated AI Meeting (AAMAS+IJCAI+ICML) 2018.
- July 2018. Tutorial on "AI for Social Good: A multiagent systems perspective" (with Milind Tambe, Bryan Wilder, and Eugene Vorobeychik). At International Conference on Autonomous Agents and Multiagent Systems (AAMAS) 2018.
- June 2017. Tutorial on "Advances in Game Theory for Security and Privacy" (with Bo An, Yevgeniy Vorobeychik). At the Eighteenth ACM Conference on Economics and Computation (ACM EC'17).

Guest Lectures

- December 5, 2019. Tsinghua University, Introduction to Artificial Intelligence. Guest lecture on "Artificial Intelligence for Social Good."
- March 11, 2019. Pennsylvania State University, Artificial Intelligence for Humanity. Guest lecture on "Game Theory and Learning-Based Approaches for Societal Challenges."
- April 2017. Harvard University, Advanced Topics in AI (CS280r). Guest lecture on "Security Games: Theory and Applications."
- March 2016 - April 2016. University of Southern California, Security and Game Theory (ISE 599). Guest lectures on "Security Games and Applications."
- April 2015. University of Southern California, Foundations of Artificial Intelligence (CSCI 561). Guest lecture on "Win a Game to Build a Safer World: Towards a Science of Security Games."

STUDENTS

Current PhD Students

- Yinuo Du
  - Entered 2021
  - Research focus on human behavior and cyber security
- Rex Hung-Gang Chen
  - Entered 2020
  - Research focus on privacy and security.
- Stephanie Milani
  - Entered 2019
  - Research focus on explainable reinforcement learning and cyber security applications.
- Steven Jecmen
  - Entered 2019

  - Research focus on mitigating malicious behavior in peer review
  - Co-advised with Nihar Shah

- Zheyuan (Ryan) Shi
  - Entered 2018
  - Research focus on game theory and machine learning for social good.

- Chun Kai Ling
  - Entered 2017
  - Research focus on end-to-end learning in games.
  - Co-advised with J. Zico Kolter

COMPLETED PHD STUDENTS

- Pinchao Zhang
  - Entered 2014
  - Graduated in August 2019
  - Research focus on traffic management.
  - Served as Co-adviser. Primary advisor: Sean Zhen Qian
  - Thesis title: Managing Travel Demand for System Optimum in Transportation Networks

Undergraduate Senior Theses and Research Projects

- Zimeng Song (remote intern). B.S., Tsinghua University. Summer 2021. Research focus is multi-leader Stackelberg game.
- Zhicheng Zhang (remote intern). B.S., Shanghai Jiaotong University. Summer and Fall 2021. Research focus is multi-agent reinforcement learning.
- Alison Hau. B.S., Carnegie Mellon University. Fall 2020. Research focus is improving efficiency in food bank storage and delivery.
- Weizhe Chen (remote intern). B.S., Shanghai Jiaotong University. Summer and Fall 2020. Research focus is multi-agent reinforcement learning and AI methods for anti-poaching.
- Yiwen Yuan. B.S., Carnegie Mellon University. Spring 2019, Fall 2019, Spring 2020. Research focus is prediction and matching in food rescure platform and poaching threat prediction. (Joined M.S. program in Cargenie Mellon University)
- Claire Wang. B.S., Carnegie Mellon University. Fall 2019, Spring 2020. Research focus is understanding AI for Social Good.
- Zihan Zhou (visiting intern). B.S., Shanghai Jiaotong University. Summer and Fall 2019. Research focus is multi-agent reinforcement learning.
- Zhou Fan (visiting intern). B.S., Shanghai Jiaotong University. Summer and Fall 2019. Research focus is multi-agent reinforcement learning. (Joined Ph.D.program in Harvard University)

- Kimberly Lo. B.S., Carnegie Mellon University. Spring and Fall 2019. Research focus is prediction and matching in food rescue platform.
- Arvind Mahankali. B.S., Carnegie Mellon University. Spring, Summer, Fall 2019. Research focus is planning in module-based learning program.
- Ziang Chu. B.S., Carnegie Mellon University. Spring, Summer, Fall 2019. Research focus is planning in module-based learning program.
- Bonan Ni (visiting intern). B.S., Tsinghua University. Summer 2019. Research focus is community engagement in conservation. (Joined Ph.D. program in Tsinghua University)
- David Zeng. B.S., Carnegie Mellon University. Spring 2019. Research focus is community engagement in conservation.
- Zong Zhang. B.S., Carnegie Mellon University. Spring 2019. Research focus is peer-to-peer ridesharing.
- Mike Chen. B.S., Carnegie Mellon University. Spring 2019. Research focus is planning in adaptive instructional system.
- Tianyu Gu. B.S., Carnegie Mellon University. Spring 2018, Fall 2018. Research focus is machine learning for wildlife conservation. (Joined M.S. program in Cargenie Mellon University)
- Justin Jia. B.S., Carnegie Mellon University. Fall 2017, Spring 2018. Research focus is machine learning for wildlife conservation.
- Lingyu Liu. B.S., Carnegie Mellon University. Fall 2017, Spring 2018, Fall 2018. Research focus is detecting mining sites from satellite imagery.
- Taoan Huang (visiting intern). B.S., Tsinghua University. Spring 2018, Summer 2018. Research focus is efficient dispatching in ridesharing and community engagement in conservation. (Joined Ph.D. program in the University of Southern California)
- Bohui Fang (visiting intern). B.S., Shanghai Jiaotong University. Summer 2018, Fall 2018. Research focus is efficient dispatching in ridesharing. (Joined M.S. program in Cargenie Mellon University)
- Yufei Wang (visiting intern working remotely). B.S., Peking University. Summer 2018. Research focus is multi-agent reinforcement learning. (Joined M.S. program in Cargenie Mellon University)
- Lantao Yu (visiting intern). B.S., Shanghai Jiaotong University. Fall 2017, Spring 2018. Research focus is multi-agent reinforcement learning. (Joined Ph.D. program in Stanford University)
- Zheyuan (Ryan) Shi. B.S., Swarthmore College. Fall 2016, Spring 2017, Fall 2017, Spring 2018. Research focus is peer-teaching, attacker collusion and payoff design in security games. (Joined Ph.D. program at Carnegie Mellon University)
- Dana Thomas. B.S., University of Southern California. Fall 2014, Spring 2015, Fall 2015. Research focus is identifying potential patrol post locations in wildlife conservation domain.
- Brian Schwedock. B.S., University of Southern California. Fall 2015, Spring 2016. Research focus is exploration and exploitation in patrol route design in security games. (Joined Ph.D. program at Carnegie Mellon University)
- Matthew Burke. B.S., University of Southern California. Fall 2015. Research focus is analyzing the impact of potential patrol post locations in security games.

- David Liao. B.S., University of Southern California. Spring 2015. Research focus is analyzing patrol observation data in wildlife conservation domain.

M.S. or PH.D. Thesis Commitee Service

- Yiwen Yuan
  - Serve as M.S. thesis advisor
  - Thesis topic: Analyzing Impact of Economic Development on Poaching Activities
- Tianyu Gu
  - Serve as M.S. thesis advisor
  - Thesis topic: Multi-Agent Reinforcement Learning in Adversarial Setting
- Junxing Wang
  - Serve as Ph.D. thesis committee member
  - Thesis topic: Local Methods for Global Good: A Graph Theoretic Approach
- Cody Kinneer
  - Serve as Ph.D. thesis committee member
  - Thesis topic: Search-based Plan Reuse in Self-* Systems

Other

- Ziyi Dou. M.S., Carnegie Mellon University. Fall 2019. Research focus is natural language processing for social good.
- Michael Moorer. M.S., Carnegie Mellon University. Fall 2019. Research focus is machine learning for anti-poaching.
- Guoxi Zhang. M.S., Carnegie Mellon University. Spring 2019. Research focus is multi-agent reinforcement learning.
- Swaminathan Gurumurthy. M.S., Carnegie Mellon University. Fall 2017, Spring 2018. Research focus is adversarial machine learning.
- Amandeep Singh. M.S., Columbia University. Summer 2015. Research focus is speeding up patrol route design in wildlife conservation domain.
- Kevin Hoffman. Teacher from Alliance Health Services Academy High School (*now a Blended Learning Analyst in Aspire Public Schools*). NSF Research Experience for Teachers (RET) program. Summer 2014.
- Jewels Kovach. Teacher from Ellen Ochoa Middle School. NSF Research Experience for Teachers (RET) program. Summer 2014.

SELECTED MEDIA COVERAGE

- When good robots go bad – or even mean towards humans. The Irish Times. December 2019.

- Humans react poorly to trash talk, even if it's coming from a cute robot that's been programmed to insult them, researchers found. Business Insider. November 2019.
- Trash Talk Hurts, Even When It Comes From a Robot. CMU News Stories. November 2019.
- Researchers get AI help to map ecosystem, wildlife conservation. Hindustan Times. February 2019.
- How AI could help solve some of society's toughest problems. MIT Technology Review. October 2018.
- AI Helps Humans Bring Poachers To Justice. Qatar. September 2018.
- Researcher Fei Fang shows why AI doesn't have to be inherently evil. SiliconRepublic. February 2018.
- Don't be fooled by dystopian sci-fi stories: A.I. is becoming a force for good. Digital Trends. Release also appeared in Yahoo! Finance. January 2018.
- This AI Hunts Poachers. IEEE Spectrum. January 2018.
- 'Predator' Vision Drones Get AI to Spot Poachers. Discover Blog. December 2017.
- Preventing Poaching with Science. Cheddar TV. November 2017.
- HUNT THE HUNTER: A combination of machine learning and game theory is being used to fight elephant poaching in Uganda. Quartz. October 2016.
- Rangers Try Gaming Technology to Protect African Wildlife. Reuters. September 2016.
- AI springs into action in surprising places. Elsevier Connect. July 2016.
- Putting Artificial Intelligence On The Hunt For Poachers. Fast Company. June 2016
- Rangers Use Artificial Intelligence to Fight Poachers. National Geographic. June 2016.
- More than boots and bullets: This app could help turn the tide on poaching, Los Angeles Times. June 2016.
- Advanced Game Theory Goes to Work for Homeland Security. Government Computer News. June 2016. Release also appeared in the following and others:
  - Advanced Game Theory Goes to Work for Homeland Security. ACM TECHNEWS.
- Outwitting poachers with artificial intelligence. National Science Foundation Press. April 2016. Release also appeared in the following and others:
  - Artificial Intelligence Fights Wildlife Poaching: The National Science Foundation unleashes A.I. against criminals. Popular Science.
  - Artificial intelligence used to combat poaching. Times of India.
  - Artificial intelligence used to combat poaching. Economic Times.
  - Artificial intelligence being used to stop wildlife poaching in Africa. International Business Times.
  - Forest rangers now turning to advanced AI and mathematical models to help curb poaching. Daily News and Analysis.

  - How Game Theory and Artificial Intelligence Help Wildlife Conservation by Outwitting Poachers. Nature World News.
  - Scientists Outwit Poachers With The Help of Artificial Intelligence. Science World Report.

- US Coast guard Testimony at House Committee on Transportation and Infrastructure, Subcommittee on Coast Guard and Maritime Transportation mentions our research on game theory for security. Federal News Radio. July 2013.
- How the US Coast Guard uses game theory to protect New York city. Business Insider. May 2013.