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EXPERIENCE	CARNEGIE MELLON UNIVERSITY / VA PITTSBURGH	Pittsburgh, PA
2011-Present	Senior Systems Scientist at Carnegie Mellon University	
2013-2020	Research Biomedical Engineer at VA Pittsburgh Healthcare System	
2003-2011	Visiting Scientist at MIT; Research Health Scientist at VA Boston Healthcare System	
	I am developing technologies for medical devices, including (1) a retinal prosthesis for the blind, (2) a high-density EEG / brain signal recording system, (3) hermetic enclosures for small, high-density implanted devices. I lead several small research teams, primarily developing and testing electronic circuits and systems, and I work with vendors to build prototypes and improve manufacturability.	
2019-Present	PRECISION NEUROSCOPICS – Chief Executive Officer	Pittsburgh, PA
	I lead a small startup company developing high-density EEG systems and EEG technologies.	
2006-Present	SHAWN KELLY CONSULTING – Principal	Pittsburgh, PA
	Circuit design and consulting for several clients developing novel medical devices.	
2015-2019	BIONIC EYE TECHNOLOGIES – Director of Electrical Systems	Ithaca, NY
	Designed and tested electronic circuits and systems for a retinal prosthesis startup company, including neurostimulation circuits and inductively coupled power and data telemetry systems. Miniaturized the device electronics, developing small circuit boards and hermetic packages.	
	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	Cambridge, MA
1999-2003	Graduate Research Assistant – PhD Project	
	Designed an analog IC to stimulate neural tissue using 53% less power than the most aggressive traditional design, 66% less than commonly-used designs. Designed coupled coils and class E amplifier to deliver power wirelessly. Received patent #7,295,872 for novel low-power stimulator.	
1997-1999	Graduate Research Assistant – MEng Project	
	Designed and built a portable, battery-powered, 100-channel retinal stimulation system. Operated the system in six human surgical trials.	
1996	Advanced Undergraduate Project	
	Designed a mechanical ink ejection system to mark faulty assembly line parts.	
1992-1995	Undergraduate Research	
	Determined the mechanical properties of cartilage under static and dynamic compression.	
1996	M/A-COM, INC. – Test Design Engineer	Lowell, MA
	Designed a 50 GHz system to test S parameters for microwave and millimeter wave chips.	
	UNIVERSITY OF PITTSBURGH	Pittsburgh, PA
1995	Research Assistant – Department of Neurosurgery	
	Developed analog circuits to measure impedance of brain tissue and cerebrospinal fluid. Wrote Matlab models of current density near multiple resistivity boundaries.	
1994	Research Assistant – Musculoskeletal Research Center	
	Developed experimental hardware and software system for hydrostatic cartilage testing.	
TEACHING	CARNEGIE MELLON UNIVERSITY	Pittsburgh, PA
2018-Present	ECE Design Experience	
2014-Present	Electronic Devices and Analog Circuits	
2012-Present	Neural Technology, Sensing, and Stimulation	
EDUCATION	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	Cambridge, MA
2003	PhD in Electrical Engineering	
	Thesis: “A System for Efficient Neural Stimulation with Energy Recovery” Advisor: Professor John L. Wyatt	
1998	MEng in Electrical Engineering	
	Thesis: “A System for Electrical Retinal Stimulation for Human Trials” Advisor: Professor John L. Wyatt	
1996	SB in Electrical Engineering	
	Minors in Biology, Biomedical Engineering	

Shawn K. Kelly – Page 2

HONORS / AWARDS / MEMBERSHIPS	IEEE Best Paper Award, ISABEL Conference VA Career Development Award IEEE Senior Member Catalyst Foundation Fellowship Richard P. Simmons '53 Scholarship Bell of Pennsylvania Scholarship United States Presidential Scholar	2009 2008-2011 M 2003; SM 2014 1998-2003 1992-1996 1992-1996 1992
LEADERSHIP / ACTIVITIES	MIT Educational Counselor; Regional Chair (2015-present) Treasurer, Board of Directors, Pittsburgh Entrepreneurs Forum Advisory Board, CCNY-GaTech Man Motor Machine Control for the Blind Board of Directors, Science for the Public Alumni Advisory Board, MIT Tech Catholic Community (Co-chair) Science Advisor to students writing retinal implant business plans	2013-present 2012-2019 2012-2016 2010-2013 2005-2011 2004-2007
TECHNICAL SKILLS	Analog and digital circuit design and debugging equipment; Cadence layout and simulation software; Altium PCB layout; test and measurement equipment. Experience with LATEX, Postscript, Matlab, Perl.	
SELECTED PATENTS / PUBLICATIONS	“System and Method for Hierarchical Referencing for Biopotential Measurements” P. Grover, S.K. Kelly, J. Weldon. United States Patent # 10,682,068, Issued 2020. “System for and Method of Power Efficient Electrical Tissue Stimulation” S.K. Kelly, J.L. Wyatt, J.F. Rizzo. United States Patent # 7,295,872, Issued 2007. “The Boston Retinal Implant,” S.K. Kelly and J.F. Rizzo, chapter in <i>Artificial Vision: A Practical Guide</i> , P. Gabel (ed.), Springer New York, 2017. “Adiabatic Electrode Stimulator,” S.K. Kelly, chapter in <i>Handbook of Biochips: Integrated Circuits and Systems for Biology and Medicine</i> , M. Sawan (ed.), Springer New York, 2015. "Cell-type Selective Stimulation of Neurons Based on Single Neuron Models." M. Gopakumar, J. Cao, S.K. Kelly, P. Grover. Proc. IEEE EMBS Conf. on Neural Engineering, pp. 411-414, 2019. “Redundant Safety Features in a High-Channel-Count Retinal Neurostimulator.” S.K. Kelly, et al. Trans. IEEE BioCAS Conf., pp. 216-219, 2014. “A Hermetic Wireless Subretinal Neurostimulator for Vision Prostheses.” S.K. Kelly, et al. IEEE Trans. on Biomed. Eng., Vol. 58, No. 11, pp. 3197-3205, 2011. “A Power-Efficient Neural Tissue Stimulator with Energy Recovery.” S.K. Kelly, J.L. Wyatt. IEEE Trans. on Biomedical Circuits and Systems, Vol. 5, No. 1, pp. 20-29, 2011. “Optimal Primary Coil Size for Wireless Power Telemetry to Medical Implants.” S.K. Kelly, et al. IEEE ISABEL Int’l Symposium on Applied Sci. in Biomed. and Comm. Tech. 2010. “The Boston Retinal Prosthesis: A 15-Channel Hermetic Wireless Neural Stimulator.” S.K. Kelly, et al. IEEE ISABEL Int’l Symposium on Applied Sci. in Biomed. and Comm. Tech. 2009. “Development and Implantation of a Minimally-Invasive, Wireless Subretinal Neurostimulator.” D.B. Shire, S.K. Kelly, et al. IEEE Trans. Biomed. Eng., Vol. 56, No. 10, pp. 2502-2511, 2009. “Minimally Invasive Retinal Prosthesis.” L. Theogarajan, J. Wyatt, J. Rizzo, B. Drohan, M. Markova, S. Kelly, G. Swider, M. Raj, D. Shire, M. Gingerich, J. Loewenstein, B. Yomtov. IEEE Int’l Solid-State Circuits Conf., 2006. “A Power-Efficient, Voltage-Based Neural Tissue Stimulator with Energy Recovery.” S.K. Kelly, J.L. Wyatt, IEEE Int’l Solid-State Circuits Conf., 2004. “Methods for Acute Electrical Stimulation of Retina with Microelectrode Arrays and Measurement of Perceptual Thresholds in Humans.” J.F. Rizzo, J.L. Wyatt, J. Loewenstein, S.K. Kelly, D.B. Shire. Invest. Ophth. and Vis. Sci., 44: 5555-5361, 2003. “Perceptual Efficacy of Electrical Stimulation of Human Retina with a Microelectrode Array During Acute Surgical Trials.” J.F. Rizzo, J.L. Wyatt, J. Loewenstein, S.K. Kelly, D.B. Shire. Invest. Ophth, and Vis. Sci., 44: 5361-5369, 2003.	