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Erik C. Johnson

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**Education**

**University of Illinois** Urbana-Champaign, IL

**Doctor of Philosophy, Electrical Engineering** 2016, Advisor: Douglas L. Jones

Thesis: Minimum-Error, Energy-Constrained Source Coding by Sensory Neurons

**Master of Science, Electrical Engineering** 2013, Advisor: Douglas L. Jones

Thesis: Recovery of Sparse Signals and Parameter Perturbations from Parametrized Signal Models

**Bachelor of Science, Electrical Engineering** 2008 Minor: Physics

**Research, Work and Teaching Experience**

**Sprite Robotics (Champaign, IL): Research Engineer** May 2016-Present

Investigated stochastic, predictive control algorithms for wheeled mobile robots in the home and office environment as part of a NSF SBIR grant; Developed dynamic models in MATLAB and Python which were then implemented on ARM microprocessors

**University of Illinois: Teaching Assistant, Computer Systems and Programming** Jan 2015-May 2016

Taught weekly programming laboratory; Designed assignments in C/C++ and LC-3 Assembly for class of over three hundred; Worked collaboratively with team of instructors

**Research Assistant and Graduate Fellow** Aug 2009-Dec 2014, Summer 2015, Summer 2016

Designed, conducted, and prepared research projects for peer-reviewed publication; Collaborated with teams spanning universities; Projects included the development of novel sparse recovery algorithms, optimal encoding of signals by neurons, and detection algorithms for brain computer interfaces

**Research Assistant and Graduate Teaching Assistant, ECE 110** Aug2008-May 2009

Organized peer-led team learning program in Introduction to Electrical and Computer Engineering, coordinating a team of instructors; Prepared publications on impact of program on students and assistants

**National Center for Supercomputing Applications (Urbana, IL): Automated Learning Group, Graduate Research Intern** May 2008-Jan. 2009

Developed Java webservices for SEASR/Meandre, a data-driven flow execution engine; Conducted data-mining research projects on TERAGRID usage

**Northrop Grumman Corporation (Rolling Meadows, IL): DSP Algorithm Development Intern and Systems Engineering Intern** Summer 2007, Summer 2009

Worked with team to specify system requirements for electronic warfare upgrade projects for B-52 Upgrade Project; Developed preliminary algorithms for electronic countermeasures in MATLAB and designed a new module for electronic warfare simulation in FORTRAN

**Argonne National Laboratory (Argonne, IL): Research Intern** Summer 2005, Summer 2006

**Selected Papers**

**Kaloti, A. S., Johnson, E. C., Bresee, C. S., Naufel, S. N., Perich, M. G., Jones, D. L., Hartmann, M. J. Z.** Representation of Stimulus Speed and Direction in Vibrissal-Sensitive Regions of the Trigeminal Nuclei: A Comparison of Single Unit and Population Responses. *PLoS One* 11.7, 2016, e0158399

**Johnson, E. C., Jones, D. L., Ratnam, R.** A minimum-error, energy-constrained neural code is an instantaneous-rate code. *Journal of Computational Neuroscience*, 40(2), 2016, 193-206

**Johnson E. C., Jones D. L., Ratnam R.** Minimum squared-error, energy-constrained encoding by adaptive threshold models of neurons. In *Proc. of IEEE ISIT, 2015*, pp. 1337-1341

**Jones D. L., Johnson E. C., Ratnam R.** A stimulus-dependent spike threshold is an optimal neural coder. *Frontiers in Computational Neuroscience*, 2015, 9:61

**Johnson, E. C., Norton, J. S., Jun, D. M., Bretl, T., Jones, D. L.** Sequential Selection of Window Length for Improved SSVEP-Based BCI Classification. In *Proc of IEEE EMBC, 2013*, pp. 7060-7063

**Johnson, E. C., Jones, D. L.** Joint Recovery of Sparse Signals and Parameter Perturbations with Parameterized Measurement Models. In *Proc. of IEEE ICASSP, 2013*, pp. 5900-5904

**Extracurricular Activities and Outreach**

Student Coordinator for Graduate College Focal Point Grants 2012-2014- Co-wrote two proposals for grants focused on fostering interdisciplinary research projects and international collaborations

Student Organizer for Neuroengineering Symposium 2010-2011

**Recognitions, Grants, Fellowships, and Awards**

Burroughs Wellcome Fund Collaborative Travel Grant Recipient, 2012; NSF Neuroengineering IGERT Fellow, 2009-2011; Bronze Tablet Award, 2008; Timothy N. Trick Leadership Award, 2008