JAY HENNIG

jhennig@cmu.edu
214-803-3076

github.com/mobeets
www.jehosafet.com

Education

Ph.D. student in Neural Computation (2015 – present)
Center for the Neural Basis of Cognition
Carnegie Mellon University (CMU)
Advisors: Byron Yu, Steven Chase

B.S. Pure Mathematics, with highest honors (2011)
University of Texas at Austin (UT)
Major GPA: 4.0/4.0; Overall GPA: 3.99/4.0

Graduate coursework highlights

- *Cognitive Neuroscience*, Carl Olson (CMU)
- *Statistical Machine Learning; Intermediate Statistics*, Larry Wasserman (CMU)
- *Advanced Introduction to Machine Learning*, Barnabas Poczas and Alex Smola (CMU)
- *Time Series and Dynamic Models*, Carlos Carvalho [audited] (UT)
- *Statistical Methods in Computational Neuroscience*, Jonathan Pillow (UT)

Research and Professional Experience

Research assistant (2013 – 2015)
Vision and Decision Lab, P.I. Dr. Alexander Huk (Huk Lab)
Center for Perceptual Systems
University of Texas at Austin; Austin, TX

Software developer and optimization consultant (2011 – 2013)
Biarri Optimisation, Biarri Networks
Melbourne, VIC, Australia

Research assistant (2009 – 2011)
Vision and Decision Lab, P.I. Dr. Alexander Huk

Center for Perceptual Systems
University of Texas at Austin; Austin, TX

Research assistant (2005 – 2009)
Bioinformatics Lab, P.I. Dr. Alexander Pertsemlidis
UT Southwestern Medical Center; Dallas, TX

Programming experience

Python, Matlab, C++, R, Javascript, CSS, SQL, Git

Publications

A Distinct Mechanism of Temporal Integration for Motion through Depth (Huk Lab, 2015)

Katz, L.N., Hennig, J.A., Cormack, L.K., Huk, A.C. (2015).
The Journal of Neuroscience. 35(28), 10212-10216. doi: 10.1523/JNEUROSCI.0032-15.2015. PMCID: PMC4502261 [full article]

- *Summary:* We compare the time-varying improvements in sensitivity during motion discrimination tasks in 2D and 3D, and find that the two are remarkably similar, however with a lower signal-to-noise ratio in 3D.
- *Roles:* data analysis, fitting, and visualization; manuscript writing and editing

Signal Multiplexing and Single-Neuron Computations in Lateral Intraparietal Area During Decision-Making (Huk Lab, 2010 – 2012)

Meister, M.LR. Hennig, J.A., Huk, A.C. (2013).
The Journal of Neuroscience, 33(6), 2254-2267. doi: 10.1523/JNEUROSCI.2984-12.2013. PMCID: PMC3623291 [full article]

- *Summary:* LIP cell responses simultaneously carry decision signals and decision-irrelevant sensory signals, and response types show a broader range of response motifs than previously considered.
- *Roles:* data analysis and visualization, in MATLAB; calculated time-varying choice probabilities and clustering of LIP response motifs

The aperture problem in three dimensions (Huk Lab, 2010)

Hennig, J.A. Czuba, T.B. Cormack, L.K. Huk, A.C.; Rokers, B.
Journal of Vision August 2, 2010 10(7): 809 doi:10.1167/10.7.809 [conference abstract]

- *Summary:* Subjects perceive ambiguous surface motion through depth as moving either towards or away from the subject's line of sight.
- *Roles:* full data analysis and visualization, in MATLAB; fitted psychometric functions and generated final figures

Presentations

Differential temporal integration of 2d and 3d motion [poster]

- UT Austin INS Neuroscience Symposium, 2015

Neural coding and decision making [talk]

- Melbourne Maths and Sciences Meetup, 2013

The aperture problem in three dimensions [poster]

- Workshop on Natural Environments Tasks and Intelligence (NETI), 2010
- Vision Sciences Society (VSS), 2010

Relevant Professional Projects

Software development (Biarri Optimisation, 2011 – 2013)

- *Summary:* I designed a linear programming formulation and developed a working implementation in C++ and Python to optimize the capacity of existing production facilities and the locations of new facilities.
- *Outcome*: This tool was used by Australia Post, Australia's national postal service, to plan upgrades to their existing postal network.

Database and UI development (Pertsemlidis Lab, 2008 – 2009)

- *Summary:* Using PostgreSQL and php, I designed and implemented a relational database and web interface for storing and accessing both microRNA target prediction results (miRmate) and exon/intron boundaries in human, mouse, and rat genomes (ELXR).

Academic Honors and Achievements

- Presidential Fellowship in the Life Sciences, Richard King Mellon Foundation (CMU; 2015-2016)
- Phi Beta Kappa (UT; 2011)
- York-MITACS Vision Science Summer School York University (Toronto, ON; 2010)
- Valedictorian Scholarship (UT; 2008)

- Programming Leader, Association for Computing Machinery at Tufts (Tufts University; 2008)
- Valedictorian of Booker T Washington High School (Dallas, TX; 2007)
- UT Southwestern STARS Summer Research Program (Dallas, TX; 2005)

Extracurricular Honors and Achievements

- wrote, illustrated, and designed an educational comic introduction to neurons and neural coding titled *Speak Neuron* (2011 – 2014)
- Campus Movie Fest's Best Drama for "The Usual" [written/directed 10 minute short film] (Tufts University; 2008)
- NFAA YoungArts winner in Writing/Non-fiction (2007)

Community Involvement

- Amateur radio operator, call sign KD5LXN (morse code and general license, 2000 – present)
- author and member of *Snarkmarket*, a community focused on the future of media (2012 – 2014)
- cofounder of *hahayes!*, a group dedicated to making fun things with art and code (2014)
- presenter and member at *Quantified Self*, Melbourne, Australia (2013 – 2014)
- volunteer at *Farewell Books*, Austin, TX (8 hrs/wk, 2013 – 2015)
- attendee at Darius Kazemi's *Twitter Bot Summit* (2013, 2014, 2016)