

Education

PhD Student, August 2012 to Feb 2018 (expected defense date)
Johns Hopkins University Baltimore, MD
Thesis: *The Saliency of Faint Objects*
Advisor: Ernst Niebur

B.S. in Biomedical Engineering; Summa Cum Laude, May 2009
North Carolina State University Raleigh, NC
Bioinstrumentation Concentration
GPA: 3.96 / 4.00

Publications/Presentations

Jeck, D.M., (2017, Nov) “Uniqueness drives visual saliency independently of local contrast”. *Spatial and Feature-Based Attention*. Symposium conducted at the annual meeting of the Society for Neuroscience, Washington, D.C.

Jeck, D. M., Qin, M., Egeth, H., & Niebur, E. (2017). Attentive pointing in natural scenes correlates with other measures of attention. *Vision Research*, 135, 54–64.
<http://doi.org/10.1016/j.visres.2017.04.001>

Jeck, D.; Niebur, E., "Neuronal common input strength is unidentifiable from average firing rates and synchrony," *Information Sciences and Systems (CISS), 2015 49th Annual Conference on* , pp.1,3, March 2015

Jeck, D.; Niebur, E., "Closed form jitter methods for neuronal spike train analysis," *Information Sciences and Systems (CISS), 2015 49th Annual Conference on* , pp.1,3, March 2015

Jeck, D.; Niebur, E., “Closed form jitter analysis of neuronal spike trains,” Zanvyl Krieger Mind/Brain Institute, Johns Hopkins University, Tech. Rep. DJEN-2015.1, 2015, arXiv:1502.07907 [q-bio.NC].

Honors And Awards

- Society for Neuroscience (SfN) annual meeting nanosymposium presenter (Nov 2017)
- Modeling Neural Activity Conference (MONA2) Travel award (2016)
- MIT Brains Minds and Machines (BMM) summer course Travel award (2016)
- Visual Science Training Program Fellowship (2015-2016)
- Neural Engineering Training Initiative Fellowship (2012-2013)
- Various Business plan awards for my senior design project totalling \$18,000 (2009)
- Featured on the front page of the Raleigh News & Observer, Charlotte Observer, NCSU News Services, Daily Tarheel, Spring 2009
- Dean’s List 2005-2009

Work Experience

Johns Hopkins University, Baltimore, MD

PhD Student, August 2012 to present (expected defense Feb 2018)

- Created an image-computable model of inter-object comparisons to explain how unique visual objects attract attention
- Showed that only the inter-object comparison model predicts the visual salience of unique objects
- Developed a psychophysical experiment to test underlying assumptions of visual saliency models in research participants without task training
- Awarded a two-year fellowship from the Visual Science Training Program
- Implemented an accelerated jitter algorithm for the detection of synchrony at fine time scales in neural recordings
- Built a Spiking Neuronal Models to analyze the inference of changes in shared input due to changes in synchrony measures

3 Phoenix Inc, Wake Forest, NC

Systems Engineer: June 2009 to June 2012

- Developed the towed array design for the passive detection portion of the Torpedo Warning System (TWS), deployed on USS George H.W. Bush (6/13/2013)
- Analyzed and modeled sparsely populated broadband sonar arrays for the purposes of range estimation. Analysis informed array design and performance predictions of the TWS
- Designed a towed sensor array shape estimation algorithm based on heading sensors and MEMS gyroscopes implemented on the TWS
- Sonar array algorithm design, including beamforming, the MUSIC algorithm, and Kalman filtering
- Developed a set of spectral features and a classifier to label range estimates as low-quality
- Studied convex optimization, simulated annealing and other stochastic optimization methods
- Developed a lake test plan for a sonar array and low-level processing implemented in November 2011
- Developed an improvement in passive torpedo processing based on using a spatial window for the beamspace MUSIC algorithm

Engineering Entrepreneurs Program, *NC State University*, Raleigh, NC

medCount eTeam Leader: August 2008 to May 2009

- Developed a low-cost tuberculosis diagnostic device for use in third world countries
- Managed eight eTeam members in developing image processing software for the device

Engineering Entrepreneurs Program (Cont'd)

- Wrote a business plan for launching the device
- Received \$3000 in grant funding
- Team received \$10,000 in prize money from the NC state eGames

Daniel M. Jeck

Statistical Signal Processing Applied to Cochlear Implants and Subsurface Sensing (SSPACISS) Laboratory, Duke University, Durham, NC

Cochlear Implant Research Assistant: May 2007 to August 2007

- Initiated a project to better train cochlear implant subjects to hear music
- Edited assembly code for a cochlear implant research device
- Wrote accompanying Visual Basic and MATLAB code
- Resynthesized implant signals into simulated audio

Brain Imaging and Analysis Center, Duke University, Durham, NC

Research Assistant: June 2006 to August 2006

- Programmed Stimuli for fMRI research using MATLAB
- Ran subjects for fMRI experiments

Radiation Oncology Lab, University of North Carolina, Chapel Hill, NC

Lab Technician: June 2005 to August 2005

- Worked under a sterile hood
- Prepared Bacto-agar plates
- Cleaned glassware using an autoclave
- Monitored water levels in incubators and water baths and liquid nitrogen levels for long term cell storage

Activities

- Mentor for high school and undergraduate students in the Niebur lab, 2015 - 2018
- TA for Introduction to Scientific Computing in BME, Spring 2016
- Reviewer for *Neural Computation* (2016)
- TA for Systems Bioengineering Lab I, Fall 2014
- Graduate Representative Organization member for the BME department, 2013 - 2015
- Triangle Flying Disc Association Winter & Summer League, 2002 - 2012
- Universities Study Abroad Consortium Summer Program, Chengdu, China; Summer 2008
 - Classes in intermediate conversation, reading and writing Mandarin Chinese
 - Travel to Beijing and surrounding areas
- NCSU Ultimate Frisbee, 2005-2008

Skills

Computer: MATLAB, Assembly, Visual basic, JAVA, basic HTML, and JavaScript

Business: Grant writing, team management, business plan writing, and market research

Language: Intermediate Mandarin Chinese and Spanish

Laboratory: Competent in a wet lab environment