Daniel N. Hill

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EDUCATION

Computational Neuroscience, PhD, 2009
University of California, San Diego

Electrical and Computer Engineering, MS, 2008
Specialization in Intelligent Systems, Robotics, and Control.
University of California, San Diego

Computer Science, BS, 2002
Concentration in Artificial Intelligence.
Rochester Institute of Technology

EXPERIENCE

Machine Learning Scientist, 2015-present
Amazon, Palo Alto, cA

Senior Data Scientist, 2013-2015
Integral Ad Science, New York, NY

Lead "Causal Impact" project to estimate ROI of digital ad campaigns using observational analysis when A/B tests are unavailable.

Post-doctoral Researcher, 2010-2012
Technical University of Munich, Germany

Recorded and analyzed high frame rate video of calcium activity in neuronal dendrites. Worked in collaboration with Nobel Laureate Bert Sakmann.

Lecturer, 2008-2012
Marine Biological Laboratory, Woods Hole, MA

Taught data analysis and signal processing to neuroscientists in annual summer course.

Doctoral Student, 2003-2009
UCSD Neurophysics Lab, San Diego, CA

Recorded neuronal and muscular data to create models of how rats explore their environments using their whiskers.

Developed a MATLAB toolbox called **UltraMegaSort2000** for performing cluster analysis on electrophysiological data. The toolbox is now used in dozens of laboratories.

Research Assistant, 2001-2002
Los Alamos National Laboratory, New Mexico

Implemented and parallelized clustering algorithms applied to DNA sequences, genome expression patterns, and lightning classification.

Coded neural network model of retina to test hypothesis about Benham's Top illusion.

FELLOWSHIPS

NRSA, National Institutes of Health, 2006-2008

IGERT, National Science Foundation, 2002-2005

SKILLS

Programming

Proficient: MATLAB, SQL, Python, BASH, awk, Pig, Hadoop, HBase, Git, LaTeX
Experienced: R, Spark, HTML, PHP, C, Java, JavaScript, API-scraping, OOP

Statistical Analysis and Machine Learning

GLMs, logistic regression, random forests, GBMs, Bayesian nets, digital signal processing, filter design, hypothesis testing, confidence intervals, non-parametric statistics, survival analysis, causal analysis, clustering, dimensionality reduction, experimental design, visualization, state-space modeling

Communication

Ability to translate work to both product and technically-oriented colleagues as well as clients. I have written for non-scholarly publications such as AdExchanger. In addition to my teaching experience, I have presented at numerous conferences in 7 countries.

SELECTED PUBLICATIONS

Contributed to 10 scholarly publications with over 500 citations.

Hill DN, Moakler R, Hubbard A, Tsemekhman K. It's about time: A longitudinal causal model of the impact of display advertising. In preparation. (2015)

Hill DN, Varga Z, Jia H, Sakmann B, Konnerth A. Multibranch activity in basal and tuft dendrites during firing of layer 5 cortical neurons in vivo. PNAS. 110(33):13618-13623 (2013)

Hill DN, Mehta SB, Kleinfeld D. Quality metrics to accompany spike sorting of extracellular signals. J. Neurosci. 31:8699-8705 (2011)

Hill DN, Curtis J, Moore JD, Kleinfeld D. Primary motor cortex reports efferent control of vibrissa position on multiple timescales. Neuron. 72(2):344-56 (2011).

Hill DN, Kleinfeld D, Mehta SB. Spike Sorting. In Observed Brain Dynamics by P. P.Mitra and H. Bokil, Oxford Press. (2007)

Eads D, **Hill D**, Davis S, Perkins S, Ma J, Porter R, Theiler J. Zeus: Genetic algorithms and support vector machines for time series classification. Proc. SPIE. 4787:74-85 (2002).