

**Daniel N. Hill**

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Objective: Data scientist position in a research-focused group at a leading web company.

**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****Senior Data Scientist, 2013-Present**

Integral Ad Science, New York, NY

Lead the “Causal Impact” project to estimate the ROI of digital ad campaigns using observational analysis when A/B tests are unavailable. Our solution involves a combination of user-modeling, survival analysis, and Bayesian nets. I managed 2 data scientists and a collaboration with a Berkeley professor. I presented the work at several conferences including the Conference on Digital Experimentation at MIT.

Developed metrics for the quality of websites for display advertising. Metrics are now reported to clients on billions of ad impressions per day.

**Post-doctoral Researcher, 2010-2012**

Technical University of Munich, Germany

Recorded and analyzed low signal, high framerate ( $\sim 200$  FPS) microscopy data to understand information processing within the dendrites of cortical neurons. Work was performed in collaboration with Nobel laureate Bert Sakmann.

**Lecturer, 2008-2012**

Marine Biological Laboratory, Woods Hole, MA

Taught filtering, signal detection, clustering, and quality metrics for processing electrophysiological data at an annual neuroinformatics course for graduate and post-doctoral neuroscientists.

**Doctoral Student, 2003-2009**

UCSD Neurophysics Lab, San Diego, CA

Recorded and analyzed large multi-channel electrophysiological and videographic data sets to investigate motor control in the rat whisker system.

Built a biomechanical simulator of the whisking apparatus based on my data.

Developed a MATLAB toolbox called UltraMegaSort2000 which is used for analyzing electrophysiological data by dozens of research labs worldwide.

**Research Assistant, 2001-2002**

Los Alamos National Laboratory, New Mexico

Implemented and parallelized clustering algorithms that I 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

**SPECIAL SKILLS****Programming**

**Proficient:** MATLAB, SQL, Python, BASH, awk, Pig, Hadoop, HBase, Git,  $\text{\LaTeX}$

**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. (2014)

**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).