

EDUCATION

Stanford University Palo Alto, CA 2007 – 2012

Ph.D in Applied Physics in Mark Schnitzer Lab. M.S. conferred 2009.

- Employed signal detection theory and estimation theory to establish the fundamental limits of optical technologies for monitoring cellular activity in the brain.
- Assembled a statistical framework for quantifying the performance of the lab's fluorescence microscopes.
- Explored new candidates for neural activity readout, including voltage sensors and optoacoustic approaches.
- Implemented optimal filtering strategies for neuronal spike detection in bulk cellular optical recordings.
- Awarded Bio-X Graduate Student Fellowship.
- Coursework: Computational Neural Networks, Large-Scale Neural Modeling, Modern Applied Statistics: Learning, Engineering Optics, Advanced Imaging Lab in Biophysics.

Massachusetts Institute of Technology Cambridge, MA 2003 – 2007

B.S. in Physics. Minor in Mathematics. Minor in Management from the Sloan School. GPA: 4.7/5.

- Coursework: Numerical Analysis, Linear Partial Differential Equations, Applied Statistics, Optimization.
- Activities: Sigma Chi Fraternity (President), MIT Tour Guide, certified high school educator.
- Organized Sigma Chis 125th Anniversary Reunion; 25% of alumni attended (350 guests).

EXPERIENCE

Decisive Analytics Corporation Arlington, VA 2007

Intern. Implemented novel solution to multiple-target tracking problem using metropolis sampling and Kalman filtering in Java with Swing visualization and multi-threading.

- Presented algorithm and results in hour long colloquium to division, including a live demo of the software.

European Organization for Nuclear Research (CERN) Geneva, Switzerland 2005 – 2007

Paul E. Gray Research Fellow.

- Performed feasibility study for a method of measuring the charged multiplicity of p+p events in CMS.
- Designed and administered hardware testing application for CMS Data Acquisition group; paced hundreds of electrical components through multi-stage tests, reported weekly progress to group.

Trifecta Technologies, Incorporated Allentown, PA 2000 – 2004

Intern. Mastered many developing web technologies to help customers implement IT solutions.

- Spearheaded database development for a redesign of major RNC campaign donation website.
- Assembled crucial Oracle database reporting elements for a major US pharmaceutical company to improve their drug distribution reporting system.

TECHNICAL SKILLS

- *Specialties.* Matlab, statistics, SQL, scripting languages (Perl, Python), web technologies (PHP, HTML, CSS), Java, Adobe CS5, L^AT_EX.
- *Exposure.* Linux, Database Administration (Oracle, MySql), C++, Mathematica, image processing (OpenCV), machine learning techniques.

ACTIVITIES / HONORS

Bio-X Fellowship (2008 – 2011), Eton College Annenberg Fellowship Finalist (2007), Paul E. Gray Fellowship (2006).

PUBLICATIONS

- **Brian A. Wilt**, James E. Fitzgerald, and Mark J. Schnitzer. Photon shot noise limits on optical detection of neuronal spikes and estimation of spike timing. Submitted to *Biophys. J.* (2011).
- **Brian A. Wilt** and Mark J. Schnitzer. Limits of neuronal spike detection in optical imaging due to photon shot noise. Poster presented at *Fluorescent Proteins and Biological Sensors II* (2009). Howard Hughes Medical Institute – Janelia Farm.
- **Brian A. Wilt**, Laurie D. Burns, Eric T.W. Ho, Kunal K. Ghosh, Eran A. Mukamel, and Mark J. Schnitzer. Advances in light microscopy for neuroscience. *Ann. Rev. Neurosci.* (2009). 32:435–506. (32 citations)

PERSONAL

Coaches volleyball with his wife (5th ranked 12U team in USA in 2011), guitar and piano, Dvorak keyboard enthusiast.