Guy Haskin Fernald, Ph.D.

Interests

Data science, biomedical informatics, drug repositioning, and drug discovery.

Professional Experience

Vium *San Mateo, California*
Data Scientist, Researcher, Developer **2016 – present**
Designing and developing novel metrics, algorithms, and statistical methods for a cloud-based software system. Writing production software and tools to analyze pre-clinical data from drug studies using large data sets generated from high-volume, continuously monitored sensors.

Tech and Biotech Entrepreneur *San Francisco, California*
Data Scientist, Researcher, Developer **2015**
Entrepreneur in data science, biomedical research, and software development. Developing software using R, Python, and AWS to analyze biological and chemical data sets and create pipelines to enable and support drug discovery.

Stanford University *Stanford, California*
Researcher, Instructor **2007 – 2014**

- Conceived and conducted original research ideas, developed software in R and Python on a cluster and using AWS.
- Analyzed and investigated hypotheses on large scale biomedical, genetic, and chemical datasets.
- Taught and mentored students in bioinformatics and data analysis.
- Coordinated and collaborated with external research groups.
- Generated results for print publication and web interfaces using HTML5 and CSS3.

University of California, San Francisco *San Francisco, California*
Research Associate **2004 – 2007**
Investigated the role of genetic linkage and gene expression in multiple sclerosis and experimental autoimmune encephalomyelitis through statistical methods, network analysis, and computer modeling.

Instituto Nacional de Salud Pública *Cuernavaca, México*
(National Public Health Institute)
Technical Consultant **2001 – 2003**
Developed direction and managed the implementation of internal and external computer resources for the health economics group. Worked in Spanish and English.

Ariba (acquired by SAP) *Sunnyvale, California*
Manager and Engineer **1996 – 2001**
Member of original technical team that developed patented purchasing system. Worked on first six versions of released software. Managed team of programmers that implemented internationalization, management tools, and web applications.

Netmarket (acquired by Trilegiant) *Cambridge, Massachusetts*
Founder and Chief Programmer **1993 – 1996**
Co-founded software startup, hired engineers, and led software development efforts. Wrote software for first music CD store on the web, as featured in the New York Times.

Patents

Adams N, Brown M, Carlstrom B, Elkin B, Hegarty P, Haskin G, Putanec B. Operating resource management system. US Patent no. 7,117,165, October 3, 2006. Tatonetti N, Altman R, Fernald Guy Haskin. Signal Detection Algorithms to Identify Drug Effects and Drug Interactions. Patent pending. US Patent Application July 28, 2016

Education

Stanford University, *Stanford, CA* **2007 – 2014**

- **Ph.D. and M.S. in Biomedical Informatics**. Dissertation: *Connecting chemical features of drugs to molecular, cellular, and organismal phenotypes.* Funded by NIH LM07033 and R24GM61374. Coursework included translational medicine, genetics, pharmacogenomics, and biostatisics.
- **M.S. in Medicine**. Howard Hughes Medical Institute training program for translational medicine. Coursework covered the first two years of a Medical Degree including anatomy, physiology, immunology, pathology, and human health and disease.

Swarthmore College, *Swarthmore, PA* **1990 – 1994**

- **B.A. in Mathematics and Computer Science**. Additional courses at the University of Edinburgh.

Publications

Karczewski, KJ, Fernald, GH, et al. STORMSeq: an open-source, user-friendly pipeline for processing personal genomics data in the cloud. PLoS One 2014, 9(1):e84860.

Fernald GH and Altman RB. Using molecular features of xenobiotics to predict hepatic gene expression response. J Chem Inf Model. Sep 6. 2013 Oct 28;53(10):2765-73).

Tatonetti NP, Fernald GH, and Altman RB. A novel signal detection algorithm for identifying hidden drug-drug interactions in adverse event reports. J Am Med Inform Assoc. 2012 Jun 14.

Fernald GH, Capriotti E, Daneshjou R, Karczewski KJ, Altman RB. Bioinformatics Challenges for Personalized Medicine. Bioinformatics (2011) 27 (13): 1741-1748.

Tatonetti NP, Denny JC, Murphy SN, Fernald GH, Krishnan G, Castro V, Yue P, Tsau PS, Kohane I, Roden DM, and Altman RB. Detecting drug interactions from adverse-event reports: interaction between paroxetine and pravastatin increases blood glucose levels. Clinical Pharmacology and Therapeutics (2011) 90 1, 133-142.

Han MH, Hwang SI, Roy DB, Lundgren DH, Price JV, Ousman SS, Fernald GH, Gerlitz B, Robinson WH, Baranzini SE, Grinnell BW, Raine CS, Sobel RA, Han DK, Steinman L. Proteomic analysis of active multiple sclerosis lesions reveals therapeutic targets. Nature. 2008 Feb 28;451(7182):1076-81.

Fernald GH, Pachner A, Caillier S, Narayan K, Oksenberg JR, Baranzini SE. Genome-Wide Network Analysis Reveals the Global Properties of IFN-beta Immediate Transcriptional Effects in Humans.J Immunol. 2007 Apr 15;178(8):5076-85.

Fernald GH, Yeh RF, Hauser SL, Oksenberg JR, Baranzini SE. 2005. Mapping gene activity in complex disorders: Integration of expression and genomic scans for multiple sclerosis. J Neuroimmunol 167(1-2):157-69.

Honors and Awards

- National Science Foundation GRFP Honorable Mention, 2009.
- National Library of Medicine Training Grant Recipient, 2008.
- Phi Beta Kappa, 1994.
- Bachelor of Arts awarded with Distinction, 1994.

Technical Skills

- Programming Experience: statistical computing, client/server database, web programming, distributed computing.
- Languages: Python, R, SQL, HTML5, CSS3, C, Ruby, Perl, MATLAB, LaTeX.
- Platforms: AWS, Unix (Linux, Solaris, OS X), Windows.

Interests and Skills

- Activities and skills: Spanish language, cooking (Certificate in Culinary Arts from the French Culinary Institute, New York City), classical guitar, and tennis.
- Board member: San Francisco Works (previous), Mission Learning Center (previous).