Samuel G. Finlayson

Curriculum Vitae

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Education

2014–present **Harvard Medical School and Massachusetts Institute of Technology**, *Cambridge, MA*, MD-PhD Candidate.
Harvard-MIT Division of Health Sciences and Technology (MD)
Harvard Department of Systems Biology (PhD)

2012–2014 **Stanford University**, *Stanford, CA*,
Master of Science.
Biomedical Informatics

2007–2013 **Stanford University**, *Stanford, CA*,
Bachelor of Arts.
Human Biology - Biomedical Computation

Research Positions

2016–Present **Isaac Kohane Biomedical Informatics Group**, *Harvard Department of Biomedical Informatics*, Boston, MA.
PhD Student. Applying deep learning methods to medical images, medical text, transcriptomics, and chemical structure data.

2013–2014 **Nigam Shah Lab of Clinical Informatics**, *Stanford University*, Stanford, CA.
Research Assistant. Analyzed millions of electronic medical records, including clinical text, for temporal associations between drugs, diseases, devices, and procedures. Applications included off-label drug use profiling, adverse drug event detection, and comparative effectiveness research. Supervisor: Dr. Paea LePendu

2013–2014 **Daniel Rubin Lab of Imaging Informatics**, *Stanford University*, Stanford, CA.
Research Assistant. Designed and implemented the Melanoma Rapid Learning Utility (MRLU), an analytical engine for near real-time analysis of clinical and genetic data from the Stanford and Vanderbilt Cancer Centers.

Publications and Preprints

SG Finlayson, I. S. Kohane, A. L. Beam. Adversarial Attacks Against Medical Deep Learning Systems. *arXiv preprint arXiv:1804.05296* **2018**.

J. Wiens, G. M. Snyder, **SG Finlayson**, M. V. Mahoney, L. A. Celi, *Potential Adverse Effects of Broad-Spectrum Antimicrobial Exposure in the Intensive Care Unit* in *Open Forum Infectious Diseases*.

X. Tu, M. Xie, J. Gao, Z. Ma, D. Chen, Q. Wang, **SG Finlayson**, Y. Ou, J.-Z. Cheng. Automatic Categorization and Scoring of Solid, Part-Solid and Non-Solid Pulmonary Nodules in CT Images with Convolutional Neural Network. *Scientific Reports* **2017**, *7*.

SG Finlayson, M. Levy, S. Reddy, Rubin. Toward rapid learning in cancer treatment selection: an analytical engine for practice-based clinical data. *Journal of Biomedical Informatics* **2016**.

S. Tamang, M. Patel, D. Blayney, J. Kuznetsov, **SG Finlayson**, N. H. Shah. Detecting Unplanned Care from Unstructured Text in Electronic Health Records. *Journal of Oncology Practice* **2015**.

SG Finlayson, P. LePendu, N. H. Shah. Building the graph of medicine from millions of clinical narratives. *Scientific Data* **2014**, *1*.

R. Harpaz, A. Callahan, S. Tamang, Y. Low, D. Odgers, **SG Finlayson**, K. Jung, P. LePendu, N. H. Shah. Text Mining for Adverse Drug Events: the Promise, Challenges, and State of the Art. *Drug Safety* **2014**, *37*, 777–790.

Peer-Reviewed Conferences/Abstracts

Tamang S, **Finlayson S**, Chen X, Kuznetsov JL, Blayney D, Patel M, Shah NG. Assessing the true nature of unplanned cancer care. *Journal of Clinical Oncology (Meeting Abstracts)*, Boston, MA. 2014.

Finlayson S, Sochat V, Szabo L, Yancy L. A Rapid Learning System for Personalized Glioblastoma Treatment Planning. *AMIA Annual Symposium*, Washington, D.C.. 2013.

Book Chapters

Pollard T, Dernoncourt F, **Finlayson S**, Velasquez A. "Data Preparation". *Secondary Analysis of Electronic Health Records*. Springer International Publishing, 2016. 101–114.

Teaching

2015 **Teaching Assistant**, *Harvard-MIT Health Sciences, and Technology*, Boston, MA.
HST 190: Intoduction to Biostatistics (Prof. Rebecca Betensky) and HST 015: Matlab for Medicine (Prof. Matthew Frosch). Taught discussion sessions, review sessions, and office hours. Graded assignments and exams. Taught HST 190 in both winter and summer offerings. Additionally, developed a new programming project assignment for HST 030: Pathology.

2012–2013 **Teaching Assistant**, *Department of Computer Science*, Stanford University, Stanford, CA.
CS 181: Ethics in computer science (Prof. Stephen Cooper) and CS 103: Mathematical Foundations of Computing (Profs. Ma and Colgrove). Taught discussion sessions, review sessions, and office hours. Graded projects, assignments, and exams.

2013 **Teaching Assistant**, *Department of Biology*, Stanford University, Stanford, CA.
BIO 112/212 Human Physiology (Prof. Daniel Garza). Taught discussion sessions, review sessions, and office hours. Graded assignments and exams.

2012–2013 **Private Tutor**, *Mathematics, English, and Physics*.
Tutored middle and high school students on a weekly basis.

Committee Membership

2013–Present Invited Member, Research Advisory Committee, Hydrocephalus Association

Honors

2014 Medical Scientist Training Program, NIH Predoctoral Fellowship

2011 Academic All-American Honors, NCAA Division I Men's Water Polo

2011 Mountain Pacific Sports Federation All-Academic Honors

2007-2008, 2010–2012 Thomas Ford Family Endowed Scholarship, Stanford University Athletic Department

2007–2012 National Scholar, Coca-Cola Scholars Foundation

2007 Finalist, National Merit Scholar

2007 California State Scholar-Athlete of the Year, California Interscholastic Sports Federation

2007 National Winner, Wendy's High School Heisman Award

2004 2nd, American Physiological Society, Intel International Science and Engineering

2004 Eagle Scout with Gold Palm, Boy Scouts of America

Volunteer Work

2008–Present **Co-Founder and Chief Scientific Officer**, *Team Hydro*.
Co-Founded non-profit organization to raise funds and awareness for Hydrocephalus research through open water swims throughout nation, including from Alcatraz Island to SF. Have raised more than $600,000+ to date. Research, author, and produce informational materials and website articles for lay public. Develop and maintain relationships with sponsors, donors, researchers, and swimmers. www.teamhydro.org

2012–2014 **Program Director and Counselor**, *Camp Kesem*, Stanford, CA.
As program director (2014), developed, planned, and oversaw all camp activities for week-long, sleep-away program for 140+ children of cancer patients. Worked with team of student and community volunteers to select and train a team of 50+ counselors and staff, raise funding through private and corporate donations, and execute camp program. As counselor (2012-2014), oversaw group of 14 campers throughout week.

2011–2013 **Medical Interpreter**, *Pacific Free Clinic*, Stanford, CA.
Selected via application and interview process to interpret for Spanish-speaking patients at free community clinic. Assisted and followed patients from triage. Completed 40-hour certification program.

Miscellaneous Experience

2007, 2010–2011 **Member**, *Varsity Water Polo Team*, Stanford University, Stanford, CA.
Trained 20+ hours per week, approx. 46 weeks per year. Competed in matches at venues throughout nation. Team consistently ranked in top four nationally.

2007, 2010–2011 **Member and Soloist**, *The Mendicants A Capella*, Stanford University.
Represented Stanford at concerts on campus and throughout nation. Featured as soloist on professionally produced album.

Programming Languages

Advanced R, Python,SQL

Intermediate Unix Scripting (awk, etc.), MATLAB, Java, C, C++, Julia

Basic Web Development

Languages

English Native

Spanish Full working proficiency