AKSHAY BALSUBRAMANI

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I am a researcher interested in solving functional genomics problems of impact by devising robust learning algorithms. Please see my research statement (link) for more details.

CURRENT

Postdoctoral Research Fellow *(Stanford University)* *Palo Alto, CA* – 2017-present

· Predicting transcription regulation in the human genome, in the group of Prof. Anshul Kundaje. Also developing algorithms for semi-supervised, representation, and sequential learning.

EDUCATION

U.C. San Diego – PhD, Computer Science (Advisor: Yoav Freund) 2013-2016
U.C. San Diego – M.S., Computer Science (GPA: 3.9/4) 2010-2013
U.C. Berkeley – B.S., High Honors, EE/CS (Semiconductors); Minor: Physics 2005-2008

RECENT PROJECTS

Semi-Supervised Aggregation of Feature Ensembles

· As part of my thesis work, designed the first algorithm that uses unlabeled data in a completely generic assumption-free fashion to strictly, provably improve upon fully supervised classification (COLT '15). Experiments show that it provides significant, scalable performance improvements, achieved by adding unlabeled data (NIPS '15 and ongoing). Open-source code released. Consequences also include a unique, principled characterization of artificial neurons for learning (NIPS '16, ICLR '17), among many others.

Sequential Algorithms: Concentration and Stopping

· Optimally characterized the concentration behavior of sequential random processes, as used everywhere in sequential statistical tests and learning algorithms.
· More applications to general sequential testing, as commonly used on large data for decades (UAI '16).

RESEARCH EXPERIENCE

Microsoft Research *(Intern)* *New York, New York* – Jun.-Sept. 2015

· Devised principled algorithms for learning how to act from limited pairwise feedback. Appeared at COLT 2016. *Host: Robert Schapire.*

Google Research *(Intern)* *Mountain View, California* – Jun.-Sept. 2013

· Worked with a Google Research team embedded in YouTube to classify videos by their text annotations, a highly multiclass (>100k) problem. Appeared at a NIPS 2013 workshop. *Host: Omid Madani.*

Microsoft Research *(Intern, Interaction & Intent Group)* *Mountain View, CA* – Jun.-Sept. 2012

· Implemented active learning techniques for training an entity matching classifier and devised an adaptive sampling scheme for evaluating it with minimal labeled data. *Host: Benjamin Rubinstein.*

Outbrain, Inc. *(R&D Intern)* *Cambridge, Massachusetts* – Jun.-Aug. 2011

· Revamped the core text classification algorithms of this market leader in content recommendation using ensemble methods. Lowered error rates by >50% during my internship.

Strand Genomics *(Associate (R&D))* *Bangalore, India* – Mar. 2009-Jun. 2010

· Scoped, researched, and helped develop a computational genomics platform for pharmaceutical and academic clients, including R&D divisions of a majority of the top 10 global pharma corporations.
· Directly liaised with clients and ensured that their individual requirements were addressed using the latest statistical genomics methods.

Quantum Tunneling Transistor *Berkeley, CA* – Jul.-Oct. 2008

· Modeled quantum tunneling transistors (TFETs) as part of Prof. Chenming Hu's research group.

PUBLICATIONS

Please see website for an updated list: http://web.stanford.edu/∼abalsubr/#papers

PROFESSIONAL SERVICE AND SKILLS

Reviewer for: ICML (Outstanding Reviewer Award '15, '16); NIPS; JMLR; COLT; AAAI; AISTATS; ALT; IEEE Trans. on Signal Processing; IEEE Trans. on Pattern Analysis and Machine Intelligence

Teaching Assistant:
Stanford University – GENE 245 (Statistical and Machine Learning Methods for Genomics)
UC San Diego – CSE 103 (Probability and Statistics), CSE 151 (Intro. to AI)

Programming Languages: Python, C, MATLAB, Java