Sharad Vikram

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Education

University of California San Diego
2014 - 2019 (expected): Ph.D. in Computer Science (Machine Learning)
Advisor: Sanjoy Dasgupta
Relevant Coursework: Graphical Models, Topics in Learning Theory, Machine Learning, Convex Optimization

University of California Berkeley
2011 - 2014: B.S. in Electrical Engineering and Computer Science
Regents Scholar

Publications

The LORACs Prior for VAEs: Letting the Trees Speak for the Data. Sharad Vikram, Matthew D Hoffman, Matthew J Johnson. *AISTATS 2019*. (link)

SOLAR: Deep Structured Latent Representations for Model-Based Reinforcement Learning. Marvin Zhang*, Sharad Vikram*, Laura Smith, Pieter Abbeel, Matthew Johnson, Sergey Levine. *Preprint 2018*. (link)

Estimating reactions and recommending products with generative models of reviews. Jianmo Ni, Zachary Lipton, Sharad Vikram, Julian McAuley. *International Joint Conference on Natural Language Processing (IJCNLP) 2017*. (link)

Interactive Bayesian Hierarchical Clustering. Sharad Vikram, Sanjoy Dasgupta. *International Conference on Machine Learning 2016*. (link)

Capturing Meaning in Product Reviews with Character-Level Generative Text Models. Zachary Lipton, Sharad Vikram, Julian McAuley. *Preprint 2015* (link)

Interactive Hierarchical Clustering using Bayesian Nonparametrics. Sharad Vikram, Sanjoy Dasgupta. *NIPS 2015 Workshop - Bayesian Nonparametrics: The next generation*

SSCM: A method to analyze and predict the pathogenicity of sequence variants. Sharad Vikram, Matthew D Rasmussen, Eric A Evans, Imran S Haque. *Preprint 2014* (link)

Writing and sketching in the air, recognizing and controlling on the fly. Sharad Vikram, Lei Li, Stuart J. Russell. *CHI Extended Abstracts 2013: 1179-1184*

Experience

Research Intern - Google (Summer 2018)
- Worked on incorporating Bayesian nonparametric tree priors with VAEs. Paper accepted into AISTATS 2019 (The LORACs prior for VAEs: Letting the Trees Speak for the Data). Mentored by Matthew Hoffman and Matthew Johnson.

Machine Learning Intern - Amazon (Summer 2016)
- Designed and implemented an interactive machine learning algorithm for classification of low-frequency events in Amazon's marketplace. Built a UI using ReactJS
- Built a Go data pipeline for deep causal inference modeling Amazon customer behavior
- Built a deep representation learning model for consumer activity
- Upgraded prototype search engine from gradient boosting machines to a deep learning model

Software Engineering Intern - Counsyl (Summer 2014)
- Designed and implemented an algorithm to predict the pathogenicity mutations in the genome. Used a generative statistical clustering model to model mutations and used EM for inference

Software Engineering Intern - Facebook (Summer 2013)
- Worked on Facebook Messenger for Android
- Worked on various logging services on Facebook Chat backend
- Wrote a data pipeline (Hive) to aggregate impression data
- Ported a backend service from one machine learning model to a more accurate model
- Used genetic algorithms and simulated annealing to optimize evaluation speed (+30%) of machine learning algorithms used in various services in Facebook

Software Engineering Intern - RewardMe (Summer 2012)
- Worked on Android Bluetooth Serial communication with an Android app
- Worked with Google Maps API to create a realtime monitoring tool
- Integrated Cardspring API with a JBoss/MySQL backend
- Wrote an iOS credit card reader app

Software Engineering Intern - Cubic Transportation Systems (Summer 2011)
- Designed and implemented a UI in GWT and ExtGWT for a Java application monitoring tool
- Used DAO to access and manipulate a Derby database
- Implemented a mobile version of the UI in ExtJS

Software Engineering Intern - San Diego Supercomputer Center (Summer 2010)
- Worked in the San Diego Supercomputer Center under Dr. Amarnath Gupta; used GWT to design a search interface that would query a large neuroscience database; interface was unique in that it would back-check queries for contextual errors

Research

University of California at San Diego - Professor Sanjoy Dasgupta (advisor)
2014 - present: Currently working on deep unsupervised learning and probabilistic algorithms for sensor calibration. Also working on other various [deep learning projects](). Currently author and maintainer of open source functional programming-based deep learning library ([deepx]()).

University of California at Berkeley - Professor Stuart Russell
2012 - 2013: Worked with Lei Li on gesture recognition using the dynamic time warping algorithm. Extended existing SOTA dynamic time warping similarity search techniques to multiple dimensions, designed and implemented a gesture recognition system. Extended abstract accepted into CHI 2013.

2013 - 2014: Worked with [Dave Moore]() on Gaussian process regression for earthquake and nuclear test detection. Working on adding non-Gaussian noise models to the existing observation model. Used various approximate inference techniques such as Laplace approximation and expectation propagation

Teaching

University of California San Diego
CSE 250B - Machine Learning
- *Spring 2016* (Sanjoy Dasgupta) - Teaching assistant; held weekly discussion and office hours. Wrote discussion worksheets and grade exams/homework. (See www.sharadvikram.com/#/teaching for details.)

University of California Berkeley
CS 189 - Machine Learning
- *Spring 2014* (Jitendra Malik and Alyosha Efros) - Undergraduate Student Instructor; lead and taught two discussion sections; contributed to weekly discussion worksheets; helped write a midterm; held weekly office hours

CS 61A - Structure and Interpretation of Computer Programming
- *Fall 2012* (John Denero) - Reader: Graded homework, projects, tests; organized and helped develop a code review systems for students
- *Spring 2013* (Amir Kamil) - Undergraduate Student Instructor: led and taught two discussion sections and two labs. Wrote worksheets for students and held weekly office hours; proctored and graded tests
- *Fall 2013* (John Denero) - Undergraduate Student Instructor: led and taught two discussion sections and two labs. Wrote worksheets for students and held weekly office hours; proctored and graded tests

Activities/Projects

- Member of **HKN** (EECS Honors Society)
- **Won Greylock Hackfest (7/2012)** with toaster.js, a platform for controlling electronic devices wirelessly (internet)
- **Top 5 SDHacks (10/2015)** with tunemap, a music graph in the browser built using Latent Dirichlet Allocation.
- **Won Big Hack (4/2014)** - built a Chrome extension that enables biometric login for websites using iris recognition machine learning algorithms
- **Placed 3rd at Greylock Hackfest (7/2014)** - built a file system that stores files redundantly and securely across social media services (Dropbox, Facebook, Soundcloud, etc.)
- **Won Big Hack II (5/2012)** - used accelerometer data from Android phone to remotely control a blimp
- **Won Big Hack I (4/2012)** with Orange Cube, a capacitive sensing tool using arduinos, paper, and foil that can remotely control computers with gestures and control the mouse with trackpad functionality (Node.js, Python)
- **Won the Code4Cal Hackathon (3/2012)** with BroBooks, a social textbook exchange website. HTML, Javascript, and CSS front-end with Node.js/MySQL backend, also utilized Facebook integration.
- **Placed 2nd in Facebook Battle of the Bay Hackathon (10/2011)** - controlled a mouse and wrote words (handwriting recognition) on a computer by moving fingers in the air with IR detection using a Wii Remote
- **Placed 3rd in Facebook Battle of the Bay Hackathon II (10/2012)** - built augmented reality glasses with hand gesture recognition using Raspberry Pi
- An ex-officer and co-founder of **Hackers At Berkeley** (http://www.hackersatberkeley.com)