Sharad Vikram

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Education

University of California San Diego — San Diego, CA
Ph.D. in Computer Science (Machine Learning) — *Oct. 2014 – May 2019 (expected)*

University of California Berkeley — Berkeley, CA
B.S. in Electrical Engineering and Computer Science — *Aug. 2011 – May. 2014*

Publications

Marvin Zhang*, **Sharad Vikram***, Laura Smith, Pieter Abbeel, Matthew Johnson, Sergey Levine. *SOLAR: Deep Structured Latent Representations for Model-Based Reinforcement Learning.* ICML 2019. (link)

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

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

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

Zachary Lipton, **Sharad Vikram**, Julian McAuley. *Generative concatenative nets jointly learn to write and classify reviews.* Preprint 2015. (link)

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

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

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

Experience

Google — San Francisco, CA
Machine Learning Research Intern — *Summer 2018*

- Worked on incorporating Bayesian nonparametric tree priors with VAEs. Paper accepted into AISTATS 2019 (link). Mentored by Matthew Hoffman and Matthew Johnson

Amazon — Seattle, CA
Machine Learning Intern — *Summer 2016*

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

Counsyl — San Francisco, CA
Software Engineering Intern — *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. Paper can be read on bioRxiv.

Facebook Menlo Park, CA
Software Engineering Intern *Summer 2013*

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

RewardMe Mountain View, CA
Software Engineering Intern *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

Cubic Transportation Systems San Diego, CA
Software Engineering Intern *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

San Diego Supercomputer Center San Diego, CA
Software Engineering Intern *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 San Diego San Diego, CA
Advisor - Sanjoy Dasgupta *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 Berkeley Berkeley, CA
Advisor - Stuart Russell *2012 – 2014*

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

2014 – present: 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.

University of California Berkeley
CSE 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
- *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

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)