

Druv Pai

MACHINE LEARNING · DATA SCIENCE · SOFTWARE ENGINEERING

Bay Area, California, United States

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Education

University of California, Berkeley

Berkeley, CA

BACHELOR'S DEGREE IN COMPUTER SCIENCE, GPA: 4.0/4.0

Fall 2018 – Expected Spring 2022

- **Select EECS Coursework:** Computer Security (CS 161), Operating Systems and Systems Programming (CS 162), Efficient Algorithms and Intractable Problems (CS 170), Machine Learning (CS 189), Combinatorial Algorithms and Data Structures (CS 270), Computational Learning Theory (CS 294-220), Probability and Random Processes (EECS 126), Convex Optimization (EECS 127), Stochastic Systems (EE 223), Random Processes in Systems (EE 226A), Information Theory (EE 229A), High-Dimensional Data Analysis with Low Dimensional Models (EE 290-002)
- **Select EECS Class Contest Results:** Placed 4/ \approx 300 in CS 170 contest (approximately solving a NP-hard problem), 1/ \approx 20 in EECS 126 contest (building wireless communication systems), \approx 25/700 or better several times in CS 189 Kaggle contests (machine learning from scratch).
- **Select Mathematics/Statistics Coursework:** Introduction to Topology and Analysis (Math. 202A/Math. 202B), Stochastic Partial Differential Equations (Math. 279), Probability Theory (Stat. C205A/Stat. C205B), Theoretical Statistics (Stat. 210A/Stat. 210B)

Work Experience

Amazon

Manager: Kumar Sohony

SOFTWARE DEVELOPER ENGINEER INTERN, INTERNATIONAL SELLER GROWTH GROUP

Summer 2020, Summer 2021

- **Optimized registration workflow** for a new customer service program; sped up workflow pipeline from several hours to a few minutes.
- **Developed several serverless applications** on AWS Lambda, interfacing with AWS DynamoDB, S3, SQS, EC2, and Amazon-internal services.
- **Optimized critical team infrastructure** on AWS, porting it to all development stages/regions and increasing error tolerance/efficiency.

SymphonyAI

Manager: Dr. Jennifer Kloke

MACHINE LEARNING ENGINEER INTERN, SYMPHONY AYASDAI

Summer 2019

- **Created state-of-the-art recommendation system** using a combination of traditional machine learning techniques, natural language processing via deep learning, and topological data analysis. It achieved best-in-class performance and was used as a benchmark for future models.
- **Optimized internal machine learning suite** via stress-testing, debugging, and providing actionable feedback (particularly with respect to model choice and handling complex data), in collaboration with software developers and QA team.

Research Experience

UC Berkeley Artificial Intelligence Research Lab (BAIR)

Mentor: Prof. Yi Ma

UNDERGRADUATE RESEARCHER

Fall 2020 - Present

- **Developed a novel information-theoretic anomaly detection algorithm** using the principle of maximal coding rate reduction. Created efficient open-source implementation. Obtained theoretical justifications and achieved good qualitative and quantitative performance.
- **Developed extensions for, and improved scalability of, novel forward-propagation-only neural network (ReduNet).** Used variational and non-convex optimization to theoretically simplify models; ran ablation studies and experiments to develop ad-hoc engineering improvements.

UC Berkeley Development and Impact Lab

Mentor: Prof. Ashok Gadgil

UNDERGRADUATE RESEARCHER, GADGIL LAB FOR ENERGY AND WATER RESEARCH

Spring 2019

- **Developed simulation of novel arsenic-removal technologies (ECAR/ACAIE)** using chemical kinetics models and statistical methods to predict technological efficacy given environmental parameters. Also created data pipeline and visualization engine.

Teaching Experience

UC Berkeley EECS Department

Classes: EE 16B, EE 127, CS 170

UNDERGRADUATE STUDENT INSTRUCTOR

Spring 2020 - Present

- Held weekly office hours, discussion sections, and “homework parties”; held occasional exam review sessions; created supplementary material, such as discussion/review worksheets, slides, and problem sets; created exams and grading rubrics; graded problem sets and exams.

Skills

Languages Python, Java, C++, C, Go, Kotlin, Ruby, R, SQL, Bash

Machine Learning Pytorch, Tensorflow, Keras, Scikit-Learn, Numpy, Pandas, CUDA

Other AWS, GCP, Unix, \LaTeX