Druv Pai

Machine Learning · Data Science · Software Engineering

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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), High-Dimensional Data Analysis with Low Dimensional Models (EE 290-002)
- **Select EECS Class Contest Results**: Placed 4/≈300 in CS 170 contest (approximately solving a NP-hard problem), 1/≈20 in EECS 126 contest (building wireless communication systems), ≈ 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), Probability Theory (Stat. C205A/Stat. C205B), Theoretical Statistics (Stat. 210A/Stat. 210B)

Work Experience

Amazon — *Manager: Kumar Sohony*

Software Developer Engineer, 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 AyasdiAI — *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