Divit Rawal

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Education

University of California, Berkeley Aug. 2023 – Present

Physics, Mathematics, Electrical Engineering & Computer Science (Minor) *Berkeley, CA*

- Relevant Coursework: Data Structures, Deep Learning for Visual Data, Advanced Programming in R, Mathematical Physics, Computer Programs, Communication Networks, Information Devices and Systems, PCB Engineering
- Launchpad AI/ML, Hands-On PCB Engineering Course Staff

Experience

ExperienceFlow AI Jun. 2024 – Present

Machine Learning Intern *Remote*

- Developing finite state machines and graph neural networks for enterprise applications
- Simulating, analyzing, and optimizing business operations using machine learning techniques

Kairos Academics Apr. 2023 – Present

Tutor *Remote*

- Provide one-on-one tutoring to high school students in math and science
- Develop personalized lesson plans and study strategies to address individual student needs and learning styles
- Monitor student progress and adapt teaching methods to ensure comprehension and academic growth

Amazon Aug. 2023 – Dec. 2023

OpenSearch Contributor *Remote*

- Selected as member of 2023 OpenSearch Contributor Initiative
- Contributed to the ml-commons repository by developing machine learning algorithms, unit tests, and plugins
- Collaborated with students, industry professionals, and Amazon Machine Learning Engineers worldwide

UC Irvine, Department of Physics & Astronomy Feb. 2022 – Jul. 2023

Researcher *Irvine, CA*

- Developed, trained, and tested TensorFlow/Keras deep learning models to address data scarcity issues in high momentum collision analysis with >90% accuracy
- Simulated particle collisions using MadGraph, Pythia8, Delphes, and ROOT and designed/implemented reconstruction algorithms in C++ and Python to predict particle mass with <2% error

SimpleMath Foundation Aug. 2021 – Jun. 2023

Head of Tutoring *Irvine, CA*

- Led a team of 11 tutors to provide academic support to children from underserved communities, helping improve their understanding and confidence in math
- Personally tutored 2 students each week, tailoring instruction to meet individual needs and learning styles
- Created and published a series of engaging and informative YouTube videos on key math concepts

Projects

AntiChess | *Python, Statistical Decision Making*

- Developed PyPI package to play and simulate antichess games with one or two players
- Implemented decision making techniques such as Minimax with alpha beta pruning and Monte Carlo Tree Search

Neural Navigator | *Graph Neural Networks, LightGCN*

- Developed deep-learning based recommender systems to recommend users activities and events in the Bay Area
- Implemented collaborative filtering using LightGCN and matrix factorization methods
- Built web application for user interaction using the React JS and Django frameworks

Physics Directed Reading Program | *Statistical Modeling, Machine Learning*

- Studied applications of statistical and thermal physics to machine learning
- Investigated statistical and machine learning methods in physics, focusing on Markov Chain Monte Carlo methods
- Delivered engaging presentation about the intersection of physics and machine learning to physics students

3-D Filament Fuser | *PCB Design, KiCad, Circuit Design*

- Conceptualized and designed device that automatically joins 3-D filament together, allowing users to change filament color without interrupting their print
- Designed schematic, layout, and custom-printed circuit board in KiCad
- Presented final product to Apple engineers and UC Berkeley EECS faculty

Research-Engine | *Python, Flask, Svelte, Web Scraping, Natural Language Processing*

- Led team of 3 to develop Research-Engine, helping users efficiently find and summarize information about a topic
- Developed a full-stack web application hosted on an AWS EC2 instance using Flask and Svelte
- Implemented web scraping and natural language processing to obtain and summarize information from Google

Watersort Solver | *Flutter SDK, Dart, Java*

- Designed and developed Watersort Solver in Java and Flutter to quickly solve any watersort brainteaser
- Published to Google Play Store with 4.5 star rating and >160 downloads

Certifications

Machine Learning Professional Certification *IBM*

- Studied data analysis, supervised, unsupervised, and semi-supervised learning with a focus on deep learning
- Completed capstone project using machine learning to build recommender systems

Decision Making and Reinforcement Learning *Columbia University*

- Studied theoretical and mathematical foundations of reinforcement learning strategies for dynamic environments
- Implemented algorithms such as Q-learning and SARSA in Python

Stanford/UBC Game Theory Certification *Stanford University*

- Studied multi and single player games, using mathematical modeling to optimize outcomes

Skills

Languages: Python, R, C, C++, Java, HTML/CSS, JavaScript, SQL
Frameworks: ROOT, Flutter, Flask, TensorFlow/Keras, PyTorch, Mockito
Libraries: Pandas, NumPy, Matplotlib, SciKit-Learn, BeautifulSoup