Jai Parera

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EDUCATION

University of California, Los Angeles (UCLA) June 2024

Bachelor of Science - Computer Science – GPA: 3.94 - Dean's List (Winter 2021 – Fall 2022)
Organizations: Tutored undergraduate students in Computer Science, Mathematics, and Physics for two hours every week as a part of **Upsilon Pi Epsilon (Computer Science)** and **Tau Beta Pi (Engineering)** Honor Societies. Mentored freshman through **MentorSEAS.**
Coursework: Data Structures and Algorithms, Artificial Intelligence, Operating Systems, Data Management Systems, Machine Learning, Deep Learning, Automata Theory, Computer Systems Architecture, Computer Graphics, Digital Design, Systems and Signals
Standardized Testing: SAT (1570), SAT Math II (800), SAT Physics (800), SAT Literature (760)

TECHNICAL SKILLS

Languages: Python, C/C++, JavaScript
Data Analysis/Machine Learning: NumPy, Pandas, PyTorch
Frontend/Backend: Streamlit, React, Express, Node, MongoDB, SQL
Miscellaneous: Git, JIRA, Linux, Bash, Excel, AWS

WORK EXPERIENCE

The Ozcan Research Group | *Undergraduate Researcher* October 2022 – Present

- Running custom physics-based simulations to develop applications of optical computing to encryption and privacy
- Trained a machine learning light-propagation model using **PyTorch** to accept close matches of visual keys while causing destructive interference for keys of the same class beyond this matching threshold

Zest AI | *Data Science Intern* June 2022 – September 2022

- Owned end-to-end software development and documentation of an internal visualization tool in **Python** named Birdzai
- Strengthened data monitoring for Data Scientists and improved data access for Business Analytics through Birdzai, allowing Client Engagement Managers to quickly grasp patterns in underlying data to inform client interactions
- Devised class hierarchies as part of a data pipeline from **Snowflake** to **AWS** s3 buckets for loading and aggregating hundreds of gigabytes of data into cached files under 10 megabytes with parallel optimizations for insights with under **1/10000th** the file size
- Designed web-app and backend in a modular manner to easily integrate Birdzai with different data sources or new use cases

PricewaterhouseCoopers LLP | *Technical Consulting Intern* June 2021 – August 2021

- Collaborated with advisory team developing digital assistants for large B2B companies with thousands of customers
- Refined chatbot process flows to suit client vision of addressing common user queries, boosting productivity by **70%**
- Crafted hundreds of conversation variations to suit unique customer intents before training and testing these interactions on conversational artificial intelligence powered services Microsoft Azure's LUIS and QnA Maker
- Analyzed dynamic user queries and debugged chatbot backend to ensure deployment for MVP demonstration

PROJECTS

Dropper Dec 2022

- Designed an endless runner game using **JavaScript** for custom animations, texturing, and physics to augment falling experience
- Implemented control mapping to allow for smooth interpolation and perspective-based movement for first and third person
- Developed efficient primitive shape-based collision detection from scratch for player-health system and map bounds-checking

Sort School Nov 2022

- Created and deployed web-app using **Streamlit** to visually teach new Computer Science students about the concept of sorting
- Integrated sorting with custom graphics and created shuffling functionality in **Python** to compare cases for different algorithms

CPU Simulator Oct 2022 – Nov 2022

- Built a CPU simulating program in **C++** to interpret RISC-V instructions, translate them and efficiently execute the resulting machine code on virtual hardware components as part of a single-cycle processor
- Implemented a data path and controller design for arithmetic, immediate, memory-based, branch and jump instructions

Loom (Hack on the Hill Winner) Feb 2022

- Developed a web-app for collaborative storytelling in under 12 hours while project-leading three other developers
- Created frontend in **React** displaying dynamic content, allowing users to 'Like' and 'Branch' from existing stories
- Integrated frontend with backend API, resulting in reflection of user activity in **MongoDB** and real-time updates through **Express**

GiggleMaps (LA Hacks Winner) Mar 2021

- Project-led four developers by splitting development into algorithm development, Google Maps integration, and visualization
- Formulated primary algorithms in applying a novel **Distributed Dijkstra's approach** to optimize overall travel time, simulate traffic congestion, and realistically compare different navigation route distributions
- Implemented scalable **Python** back-end and constructed graphing functionality of project with **Networkx** for demonstration