DHRUV SHARMA

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EDUCATION

UC San Diego, San Diego, CA   Sep 2023 — Jun 2027
BS Computer Engineering, GPA: 3.88 **Relevant courses**: Data Structures and Algorithms, Object Oriented Programming, Circuits, Cloud Computing, Computer Vision

EXPERIENCE

Q-Lab   San Diego, United States
Graphics and LLM Research Intern   Feb 2025 - Present
- Designed and implemented a novel simulation framework leveraging Vision Language Models (VLMs) and Large Language Models to generate dynamic virtual worlds and enable real-time agent collaboration in a Large World Model.
- Developed high-fidelity character animations in Unreal Engine 5.3, accurately simulating 200+ unique social interactions.
- Integrated chain-of-thought methodologies to train 50+ context-aware autonomous agents, enhancing decision-making from text prompts and environmental cues.

Knight Lab   San Diego, United States
Machine Learning Research Intern   Oct 2024 - Present
- Built and trained deep learning models in Tensorflow to process 16S RNA data, boosting species identification accuracy from 65% to over 90%.
- Optimized training pipeline and implemented failure-tolerant testing using Slurm on HPC and Kubernetes on the National Research Platform.
- Applied OOP principles (Singleton, Decorator) to streamline pipeline architecture and reduce code complexity by 15%.
- Created robust tests to capture model failure points prior to model loading, reducing development time by 20%.

Consat Orahi   Gurgaon, India
Data Analyst Intern   Jun 2023 - Aug 2023
- Analyzed on-premises employee attendance for company management by collecting and processing access card data in Python.
- Designed an interactive Tableau dashboard to visualize attendance trends of employees over the course of 3 quarters.
- Delivered presentations to the management presenting data findings and proposing actionable recommendations based on insights from the dashboard.

G-Square Solutions   Mumbai, India
Data Analyst Intern   Jun 2022 - Sep 2022
- Developed a Machine Learning pipeline using scikit-learn to predict property buyer interest in real estate markets across major Indian cities.
- Created and cleaned a training dataset by collecting information on over 700,000 customer-broker interactions using pandas.
- Implemented machine learning algorithms including **Gradient Boosting** and **Random Forest** models for classification and obtained an accuracy of 94.5%.
- Model sold to a real estate company.

PROJECTS/ PUBLICATIONS

SimWorld: An Open-ended Simulator for Agents in Physical and Social Worlds   CA, US
Under Review
Authors: Xiaokang Ye, Jiawei Ren, Yan Zhuang, Xuhong He, Yiming Liang, Yiqing Yang, Mrinaal Dogra, Xianrui Zhong, Eric Liu, Kevin Benavente, Rajiv Mandya Nagaraju, **Dhruv Vivek Sharma**, Ziqiao Ma, Tianmin Shu, Zhiting Hu, Lianhui Qin

Computer Science and Engineering Society   CA, US
President CSES Innovate, Machine Learning Engineer   Oct 2024 - Present
- Managed multi-student research groups; facilitated professor mentorship to support project development. 2 projects to be presented at the San Diego Tech Conference in Fall 25.
- Organized large-scale events, including a research panel connecting students with academic researchers.
- Designed and implemented a hybrid neural network for labeling data associated with musical instruments.
- Developed a transformer-based model leveraging tokenization techniques to convert isolated instrument audio into numerical representations, enabling efficient sheet music generation.

Full Stack Website   CA, US
Project Link: `https://github.com/Dhruv2027/Full_Stack_AI`   Aug 2024
- Developed a full stack MERN application using Langchain, Ollama, and OpenAI for contextual QA over 7+ book documents.
- Enabled local and cloud based RAG execution for seamless hybrid deployment.

SKILLS AND INTERESTS

- **Languages**: JavaScript — Swift — SQL — HTML — Java — Python — C++
- **Frameworks/Tools**: TensorFlow — scikit-learn — Node.js — MongoDB — React — Tableau — AWS (Lambda) — Slurm — Kubernetes — Unreal Engine 5 — MS Office
- **Concepts**: OOP — Distributed Computing — API Design — Cloud Integration — Model Deployment

INTERESTS

Deep Learning — Data Analysis — Running — Working Out — Squash — Music Tech