

CHARVI SHUKLA

+1 858-319-5868 | shukla.charvie@gmail.com | [linkedin.com/in/charvi-shukla](https://www.linkedin.com/in/charvi-shukla) | github.com/charvishukla

Education

University of California, San Diego

Sep. 2021 – May 2025

B.S. in Mathematics-Computer Science

La Jolla, CA

B.S. in Cognitive Science (specialization in Machine Learning and Neural Computation)

La Jolla, CA

M.S. in Computer Science

Fall 2025 – Fall 2027

Relevant Coursework

Computer Vision, Advanced Linear Algebra, Data Structures and algorithms, Numerical Analysis, Statistical Techniques, Supervised ML Algorithms, Introduction to ML

Experience

Computer Vision Research Assistant

August 2023 – Present

Advanced Robotics and Controls Lab (ARClab)

La Jolla, CA

SuPerPM, A Large Deformation-Robust Surgical Perception Framework Based on Deep Point Matching

- **Fine tuned Leopard**, a point cloud matching model for rigid and deformable scenes, over a physically constrained simulation dataset
- Implemented a custom visualization algorithm using Open3D to **visualize 3D point clouds** and their correspondences. Tuned hyperparameters, and optimizing model structure to achieve better matches

LLM Fine Tuning

- Processed a large medical-assessments dataset and used **LoRA finetuning** to fine tune mainstream and cutting-edge large language models.
- Deployed **CUDA based Docker containers** to efficiently train models using the PyTorch DataParallel class, leveraging **4 GPUs in parallel**

Machine Learning Intern

November 2023 – April 2024

WiseCounsel.ai (Start-up)

Remote

- Developed **core negotiation engine CLI** for WiseCounsel's **end-to-end deal-making platform**, enabling structured bi-directional communication between clients and counter parties
- Designed and wrote a python implementation of a **deterministic state machine** for the WiseCounsel's Negotiation engine, enabling the **verification** and **E2E testing** of the negotiation workflow for accuracy and consistency.

Tutoring and Supplemental Instruction

March 2022 – Present

Academic Achievement Hub, MATH 18: Linear Algebra

La Jolla, CA

- Collaborated with Teaching Assistants to conduct **5** weekly discussion sessions for **20-30** undergraduates each and orchestrated weekly supplemental instruction in groups of **10 students** for doubt clarification

Computer Science and Engineering

La Jolla, CA

- Tutor for CSE 30, Computer Organization and Systems Programming. Conducted **4.5** hours of weekly tutoring for students, debugging C and ARM Assembly code and re-iterating core class concepts
- Tutor for CSE 105: Theory of Computation in Fall 2024

Projects and Publications

Enhanced Vehicle Detection and Counting Using YOLOv8 | Conference Presentation

August 2024

- Agrawal, A., Shukla, C., & Shukla, P. (2024). "Enhanced Vehicle Detection and Counting Using YOLOv8 with Augmented Data and Optimized Object Grouping." **Presented at the MANIT Bhopal Conference**, to be published in **Springer Book Series**.
- Proposed an enhanced YOLOv8-based method for vehicle detection and counting, using novel object grouping, data augmentation, and pre-processing techniques, with applications in traffic **management and autonomous systems**.
- Formulated and proved the efficiency of the new grouping and classification algorithm, resulting in **marginal improvements in inference time and reduced resource usage**.

Wave-IT | PyTorch, OpenCV, Jupyter

November 2023

- Worked in a team of 2 to develop an IoT device for individuals with hearing disabilities
- Trained a **LSTM Neural network** using **PyTorch** and **MediaPipe** with manually collected data to recognize hand gestures and control smart-home devices

Technical Skills

Languages: Python, C/C++, Java, JavaScript, ARM, System Verilog

Developer Tools: Git, Docker, Jupyter Lab, VS Code, Gradle, Circle CI

Frameworks, Databases: PyTorch, React, Express, MongoDB, Firebase Firestore, AWS S3, DynamoDB

Libraries: Tensorflow, Pandas, CUDA, OpenCV, Numpy, Matplotlib, SciKit Learn, JavaFX