

ISHAN GAUTAM GALA

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EDUCATION

University of Southern California

Aug 2023 - May 2025

Master of Science in Computer Science

Coursework - Algorithms, Robotics, Perception, NLP, Web Technologies, Information Retrieval

Savitribai Phule Pune University, India

Aug 2019 - Jun 2023

Bachelor Of Engineering in Computer Engineering with Honors in Data Science

TECHNICAL SKILLS

Languages: Python, JavaScript (React/Node.js), TypeScript, Java, C++, Shell Scripting

AI/ML: PyTorch, TensorFlow, OpenCV, Reinforcement Learning, Computer Vision

Cloud & Data Engineering: AWS, GCP, MongoDB, SQL, Docker, Kubernetes, CI/CD, REST APIs

Frameworks & Tools: Flask, Express.js, WebRTC, ROS2, Git, Linux

Robotics & Simulation: ROS2, SLAM, Gazebo, MuJoCo, Isaac Sim

EXPERIENCE

Software Engineer Intern - Machine Learning (Co-op, Founding Team)

Sep 2024 – May 2025

Avalon Mfg. Inc.

Los Angeles, CA

- Built PostgreSQL-based data logger handling 1,300 sensor points/sec for real-time robotic manufacturing analytics
- Led implementation of motion planning algorithms using ROS2, optimizing robot trajectories by 10%
- Designed high-fidelity factory simulation environment, enabling robust system testing & 30% faster debugging
- Developed real-time obstacle detection system ensuring collision-free and safe multi-robot workflows
- Built modular Python testing framework, achieving 85% test coverage and 20% fewer deployment failures

Engineering Intern (Early Team Member)

May 2024 – Aug 2024

Avalon Mfg. Inc.

Los Angeles, CA

- Developed a vision-guided machine tending system for precise picking, placing, and alignment tasks
- Optimized path planning for Fanuc and Kuka robots using simulation, improving operational efficiency
- Designed an OPC UA communication framework enabling seamless coordination between robots and PLCs
- Built an vision-based tool wear detection and a real-time human detection system for operator safety

Machine Learning Intern

Sep 2021 – Feb 2022

Atomic Loops Pvt. Ltd

Pune, India

- Engineered MRI data pipeline for 10,000+ scans, for anomaly detection using GAN-based augmentation.
- Trained GAN models to enhance MRI image quality (1.5T → 3T), improving classification accuracy by 10%
- Implemented a demographic analysis and facial emotion recognition pipeline with 86% accuracy
- Developed low-latency medical chatbot, achieving 1-second response time for 1,000+ concurrent users

PROJECTS

Reinforcement Learning for Dexterous Manipulation | Reinforcement Learning (RL), Simulation

2024

- Developed an RL-based framework for robotic hand manipulation, enabling throwing and catching tasks
- Designed and implemented MuJoCo environments supporting Leap Hand and Wonik Allegro hand models
- Trained policies using Soft Actor-Critic (SAC) and PPO in MuJoCo for precise and adaptive control
- Leveraged MuJoCo XLA for GPU-accelerated training and rendered RGB images via `rgb.array` mode

Retrieval-Augmented Generation (RAG) for Task Planning | Ollama (Local LLM)

2024

- Developed a local agent for solving task planning challenges by retrieving task-specific contextual data
- Integrated **Ollama** as a local LLM for privacy-preserving, offline task decomposition, and generation
- Designed a dynamic retrieval pipeline using vector embeddings, ensuring precise and context-aware information extraction for smarter decision-making

Real-Time Stock Market Ticker - Full Stack Web App & Android App | MERN, Full Stack Development

2024

- Developed a real-time stock market ticker and portfolio management system with seamless UI/UX.
- Utilized React.js for a dynamic frontend and Node.js with Express.js for scalable APIs
- Integrated MongoDB for efficient data storage, ensuring real-time updates and interactive charts
- Built a cross-platform web and Android solution for stock tracking, transactions, and watchlist management