Yashveer Jain

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SKILLS AND LANGUAGES

Machine Learning: TensorFlow, PyTorch, Pandas, Matplotlib, OpenCV, Scikit-learn, Huggingface, TensorRT, LLMs, Stable Baseline, Reinforcement Learning (PPO, SAC), CUDA.

Programming Languages: Python, C, C++, Ladder Programming, SQL, Flutter.

Development Tools: Git, Docker, Agile Development, AWS (Certified Cloud Practitioner), Azure, Rest API.

Robotics: ROS (Robot Operating System), ROS2, Arduino, Raspberry Pi, Nvidia Jetson, Robot Modelling, LQR, PID, Control System, Motion Planning, Graph Theory, SLAM, CAD Tools (Solidworks, Fusion360).

WORK EXPERIENCE

Machine Learning Engineer – Blockhouse Labs, USA   Aug 2024–Dec 2025
- Developed market impact models using Recurrent PPO-based reinforcement learning to optimize trading costs and improve execution performance, increasing accuracy by 20%.
- Built machine learning infrastructure leveraging Python, TensorFlow, and statistical finance methods for real time data analysis and prediction, decreasing latency by 15%, and faster CI/CD integration.
- Deployed trading algorithms using kubernetes and docker on AWS, enhancing market competitiveness.

Embedded AI Intern - Renesas Electronics, USA   May 2023–Aug 2023
- Developed a machine learning model with frequency domain signal processing on Renesas RA6 and RL78 microcontrollers for Asset Tracking, enhancing efficiency by 50% in asset management (**demo**).
- Ensured the success of edge computing projects by developing and implementing machine learning models optimized for resource-constrained embedded systems.
- Developed firmware using embedded C, demonstrating expertise in embedded systems development and real-time data processing.

Machine Learning Engineer - AIMonk Labs, India   Aug 2020–Aug 2022
- Developed a Math recognition tool and improved OCR algorithms using Transformers in PyTorch, resulting in a 60% accuracy enhancement, showcasing expertise in deep learning and algorithm optimization.
- Worked with clients to identify their needs and designed a solution for parking lot occupancy detection, boosting car detection accuracy by 20% through integration of DeepLabv3 and YOLOv7.
- Collaborated across teams using Azure DevOps for seamless deployment of ML models on AWS SageMaker, illustrating teamwork and cloud deployment capabilities.

Robotic Software Intern - Swaayatt Robotics, India   Jan 2020–May 2020
- Implemented Kalman and particle filters with LK optical flow using OpenCV for vehicle and pedestrian tracking in autonomous driving systems.
- Implemented (**UnDeepVO**) paper unsupervised deep learning visual odometry paper using TensorFlow 2.0 and Keras for depth estimation and translation and rotation motion, increasing the SLAM accuracy by 20%.

RESEARCH AND TEACHING EXPERIENCE

Graduate Research Assistant, University of Maryland (Spring 2024)   Jan 2024-May 2024

AAM-SEALS: Developing Aerial-Aquatic Manipulators in Sea, Air, and Lands Simulator. Under Review CoRL.

Created a photorealistic simulator based on Isaac Sim for Aerial-Aquatic Mobile Manipulators (AAMs) in sea, air, and land environments, and implemented controllers and SAC based RL on drone for hydrodynamics simulations.

Graduate Teaching Assistant, University of Maryland (Fall 2023)   Aug 2023-Dec 2023

ENPM667 – Control of Robotic Systems with Prof. Waseem Malik, a graduate course at UMD. As a Teaching Assistant, I deepen my understanding of control systems and convey complex material. The course covers linear system theory, controller design, stability, and optimal control.

Graduate Research Assistant, University of Maryland (Fall 2022-Spring 2023)   Aug 2022-May 2023

TinyDepth: Generalized Neural Metric Depth for Palm-sized Robots. Under Review Nature npj Robotics.

Developed a sub-6cm microdrone with a Raspberry Pi and ROS-based vision pipeline for autonomous planning and control. The system achieved precise, autonomous navigation by synchronizing sensors data such as lidar and camera and decision-making. (Perception & Robotics Group, Prof. Yiannis Aloimonos).

PROJECTS

SVM-based Image Classification with Multithreading (C++)- GitHub   Mar 2024-May 2024

Implemented a Support Vector Machine (SVM) for image classification in C++. Utilized multithreading for improved performance on the CIFAR-10 dataset.

ARIAC Competition (conducted by NIST) - GitHub   Jan 2024-May 2024

Developed robot control algorithm (C++, ROS2, MoveIt!) for ARIAC Kitting Task. Implemented YOLO for object detection (part & tray) And ensured seamless robot-software communication (ROS2 backend).

Robo-Serve - GitHub   Aug 2022-May 2023

Designed and deployed autonomous delivery robot using Solidworks, ROS, differential drive controller, and A* pathfinding. Project improved hygiene and safety in food service.

LQR-Based Optimal Control for Robot Manipulator - GitHub   Aug 2022-Dec 2022

Implemented LQR-based optimal control for robust control problem to optimize performance and stability of a robot manipulator in the face of uncertain state dynamics and input matrices.

Industrial Manipulator - GitHub   Jun 2021-Aug 2021

Designed an automatic Industrial Manipulator for the segregation of metallic round objects using computer vision, useful in industries or for garbage segregation using Arduino, motor drivers, stepper motors, and camera.

EDUCATION

Master of Engineering (Robotics) (GPA:3.87/4)   Aug 2022–May 2024

University of Maryland – College Park (UMD), USA

Bachelor of Engineering (Mechatronics) (GPA:9.44/10)   July 2016- July 2020

Manipal University Jaipur, Rajasthan, India

Courses: Industrial Robotics, Pneumatics and Hydraulics, MEMS, PLC, Analog and Digital Circuit, Control System.

CERTIFICATE

CUDA programming Masterclass with C++ (Udemy)   Mar 2024

AWS Certified Cloud Practitioner – Amazon Web Services   Mar 2024