

AKSHAT PANDEY

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EDUCATION

Master of Science in Computer Engineering, Texas A&M University GPA: 3.84 / 4.0 Aug 2023 - Present
Coursework: Deep Reinforcement Learning, Software Engineering, Distributed Systems & Algorithms

Bachelor's in Electronics and Communication Engineering, Manipal Institute of Technology 2019 - 2023 Minor
Specialization in Computational Mathematics GPA: 8.69 / 10

SKILLS

Programming	C, C++, Python, Java, MATLAB
Website toolkit	HTML, CSS, Javascript, SQL, Firebase, MongoDB, Express JS, REST APIs
Software Stacks	ROS, ROS-2, PX4, Ardupilot, OpenCV, OpenAI, PyTorch
OS and other tools	Windows, Linux, Shell, Bash, Git, Docker, Kubernetes, CMake, Markdown
Hardware & Embedded	NVIDIA Jetson, Raspberry Pi, Pixhawk, UART, SPI, I2C, CAN

EXPERIENCE

Software Engineering Intern May 2024 - Aug 2024
Applied Materials Sunnyvale, California

- Developed the real-time control flow of a multi-setpoint generator for Endura PVD in C++ 20.
- Optimized the system architecture to reduce the size of compiled binaries by 25% for x32 and x64 architectures.
- Implemented interlocks to restrict unwanted behaviors in hardware based on simulated sensing data.
- Integrated hardware IOs through XML config files with an OnChange service in C++, reducing latency by 95%.

Graduate Researcher Oct 2023 - Jan 2024
Autonomous Systems Lab, Texas A&M University College Station, Texas

- Simulated a path-planning algorithm in the presence of dynamic obstacles using MILP formulations and GurobiPy as the solver. Built a simulation for the same using Matplotlib and Python3.

Software Engineering Intern Jan 2023 - May 2023
Analog Devices Bengaluru, India

- Developed a simulation in C++ and Python for a skid-steer robot using Time-of-Flight sensor data in Gazebo.
- Published images on ROS-2 Humble using OpenCV C++ on NVIDIA Jetson reducing the latency by 66.7%.
- Adapted robotic arms for robust pick-and-place algorithms using Moveit! framework and Gazebo.

Undergraduate Research Intern May 2022 - Jul 2022
Ontario Tech University Oshawa, Canada

- Worked on an autonomous wheelchair as part of the MITACS Fellowship under Dr. Scott Nokleby.
- Integrated slope detection using OpenCV and Intel D435i depth-cameras in ROS with a 98% accuracy.
- Implemented collision-free navigation with RRT* and a PD controller as the local planner on Gazebo and a Raspberry Pi-4 Turtlebot3 prototype.

PROJECTS

Chatbot for domain-specific queries: A chatbot that specifically solves queries related to machine learning and deep learning based on the OpenAI API. This used an Express JS server and multi-modal Javascript and Java clients. Firebase and MongoDB were the databases used to store user conversations.

Link: <https://github.com/akshatowl/MLDL-ChatBot>

Neural Architecture Search using Reinforcement Learning: Optimized Graph Neural Architecture Search targeted for the CiteSeer dataset with Trust Region Policy Optimization and Proximal Policy Optimization to a trainer RNN model. Used Pytorch to find GNN architectures and got a mean validation accuracy of 73.6 % equivalent to the original method. Link: <https://github.com/akshatowl/GraphNAS>

KOBU: A coverage planning arrangement for multi-agent systems used Hilbert's and Peano curves simulated using C++ and ROS in the Gazebo Simulator. Link: <https://github.com/raghavthakar/kobu>

EXTRA-CURRICULAR ACTIVITIES

- International Semi-finalist in the [Mohamed Bin Zayed International Robotics Challenge 2022](#) (Team Luna)
- Head of Automation at [Project MANAS](#). Led a team of 50+ undergraduate students in the automation front of a driverless car and an autonomous hexacopter for [AUVSI SUAS 2022](#). (Mission Rank: 17)
- Semifinalist in the [Swadeshi Microprocessor Challenge 2020](#) innovating with an indigenous FPGA board and USD 1250 in funding by the Govt. of India.