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Shailesh Pranav Rajendran

EDUCATION

Expected: May 2023 — **UNIVERSITY OF MARYLAND** — College Park, MD, USA
Master of Engineering in Robotics

May, 2020 — **PSG College of Technology** — Tamil Nadu, India
B.E in Robotics and Automation Engineering

EXPERIENCE

New York University Tandon School of Engineering: Mechatronics, Control and Robotics Lab — Feb 2020 - May 2020

- Designed and fabricate a rehabilitation device for stroke patients with partial loss of arm maneuverability under the guidance of Dr. Vikram Kapila
- Utilized 3d printing technology to manufacture the device components.
- Integrated the dynamixel library to control the motor and a force sensor to measure the force feedback applied by the patient.
- Contributed to the development of a customized solution to improve the quality of life for stroke patients through the application of engineering principles.

L.G. Balakrishnan & Bros Ltd – Automation Intern — DEC 2017 - APR 2018

- Developed and deployed a custom data logging system to accurately track and analyze production output of individual machines at L.G. Balakrishnan & Bros Ltd.
- Leveraged expertise in cloud computing to design and implement a cloud-based database, streamlining inventory management and facilitating real-time production planning.
- Contributed to the development of a more efficient and effective production process using data analysis and cloud-based technology.
- Worked collaboratively with the team to ensure the successful implementation and deployment of the data logging system and cloud-based database.

PROJECTS

Trash Detection and Collection Robot in an unknown environment (GitHub)

- Developed and simulated a robot for traversing an unknown environment, utilizing software development techniques such as ESC methodology, Agile Development Process, and Test-Driven Development.
- Implemented CI and CD pipelines using GitHub Actions.
- Developed the robot's ability to detect and deliver objects using its cameras to a pre-specified goal position

Autonomous Vehicle Trajectory Generation using Vision Transformer (ViT) (GitHub)

- Developed and implemented a trajectory generation system for autonomous vehicles using a Vision Transformer (ViT) algorithm.
- Utilized the Level5 planning dataset for training and testing in a simulation environment using Lyft's gym library.

Autonomous Urban Search and Rescue Robots (GitHub)

- Simulated a system that uses a pair of robots for search and rescue in urban environments.
- Designed the lead robot to traverse the map and identify victim locations using AR tags.
- Programmed the second robot to receive victim information and carry out rescues in the specific order where patients with higher danger receives higher preference.

Human Detection and Tracking Project (GitHub)

- Developed a human detection and tracking feature for a 4-wheeled robot to be used for package delivery inside office buildings.
- Utilized computer vision techniques to locate all instances of human beings present in the robot's path and generate persistent paths of their movement.
- Utilized software development techniques such as ESC methodology, Agile Development Process, and Test-Driven Development.
- Implemented CI and CD pipelines using GitHub Actions.

Maze solver using Depth First Search Algorithm (GitHub)

- Implemented Depth First Search Algorithm to enable a robot to navigate through a maze.
- Visualized the robot's movement in real-time using the Micro Mouse Simulator.

LEADERSHIP EXPERIENCE

TIDES Conference — September 2016

- Volunteered as an organizer for the TIDES Leadership Summit, conducted by the Confederation of Indian Industry.

ENEXT — April 2016

- Lead the team for the console at the E-NEXT Conference hosted by the Entrepreneurs Club of PSG College of Technology

KRIYA – Intercollege Technical Fest — January 2019

- Organized and managed a maze solver and memory-based path planner competition.

SKILLS

- **Software/Programming Language**: Python, C, C++, C#, MATLAB, OpenCV, Keras, PyTorch, TensorFlow, Scikit-Learn, Pandas, Git, ROS, ROS2, MySQL, Unity, Blender, SolidWorks, Android Studio
- **Hardware:** Arduino, Raspberry Pi, Siemens PLC, Quest 2, Android