Archit Hardikar

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Skills

Languages: ROS1, ROS2, Python, MATLAB, C, C++
Software: Ansys, MATLAB Simulink, Solidworks

Education

Master of Science (MS) in Robotics and Applied Mechanics — Aug 2021 - July 2023
UPenn, Philadelphia, USA

Bachelor of Technology (BTech) in Mechanical Engineering — Aug 2016 - Sept 2020
University of Pune, India

Work experience

University of Pennsylvania — Philadelphia, USA
Graduate Research Assistant — Feb 2022 (ongoing)
[Working on Quadrotor planning project – Reinforcement Learning]

Eaton India Innovation Centre, India — Pune, India
Associate Engineer (Aerospace) — Dec 2020 - Aug 2021
[Contribution to two **Intellectual Property** (IP) disclosures**,** a **Research Paper** and a **Trade Secret**]
- Implemented digitization tool for scanned Engineering Drawings to database digitization. OCR, NLP, data clustering and segmentation. Profile analysis using computer vision. (80% TAT reduction, 80,000$ annual savings)
- Developed Graphical User Interface for a smart hose directory search tool.
- Developed a requirements assessment tool for data validation using semantic textual similarity, NLP. (50% TAT reduction, estimated 180,000$ annual savings)
- Other responsibilities: Requirements capture, analysis, validation and assessment for global Aerospace companies. Successfully handled Requirements Report [100% On Time Delivery and 100% First Pass Yield].

Mercedes Benz India Ltd., India — Pune, India
Project Trainee — Jun 2019 - Dec 2019
[6-axis robot, Kaizen (Continuous improvement), Macros, VBA]
- Programmed 6-axis KUKA robots in paint shop, body assembly shop.
- Implemented line setup and line balancing for 5 new cars/ models. Kaizen for 20% cycle time reduction- overhead glass gluing station. (50,000$ yearly savings)
- Created an Automation Tool for a Calibration Alert System using excel VBA macros and access database.

Academic Research/ Projects

Autonomous racing - SLAM and Particle filters — University of Pennsylvania, Feb 2022 (ongoing)
Aim - To implement SLAM for a 2D map of the car environment. Use Odometry and LIDAR scan data to update the log-odds of the map based on maximum correlation.

Autonomous F1 tenth racing car –reactive path planning — University of Pennsylvania, Jan 2022 – Feb 2022
Wall follow in close loop circuit using Hokuyu 2D LIDAR scans using ROS2 and C++. Safety node to prevent car crash. PID tuning and design of control for steering through gaps.

Road image object detection using computer vision and YOLO — University of Pennsylvania, Oct 2021 – Dec 2021
Road object classification using CNN, autoencoders. Achieved 0.86 test accuracy.

Autonomous Battle Robot for GTA-2021 competition (UPenn) — University of Pennsylvania, Oct 2021 – Dec 2021
Designed and built an autonomous wall following robot. Localization using HTC Vive in C. Obstacle detection, frequency detection and wall following.

Trade Secret

- Automatic Engineering Drawing Digitization Data Extraction Tool (Classified Trade Secret - ITAR)

Research Publications

- ‘Automation and Digitization of Systems Engineering tools’ (INCOSE).
- ‘Addition of Rosy Pipit *Anthus roseatus* to the avifauna of Peninsular India’ (IndianBirds journal- Vol. 15. No. 5) [Link]

Certifications

- Neural Networks and Deep Learning (Stanford Online) [credentials]
- Machine Learning (Stanford Online) [credentials]

Awards

- ‘E-Star award’ for developing automation tools (*Eaton,* 2021)
- First rank in BTech.- batch of 2020. (VIT Pune, 2021)
- ‘Mercedes Star award for high performing managers’ (*Mercedes Benz,* 2019)