DHEERAJ KALLAKURI

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EDUCATION

M.S. Robotics and Autonomous Systems (Artificial Intelligence) May 2024
Arizona State University, Tempe, AZ GPA: 4.00

B.E. Computer Engineering May 2019
University of Mumbai, Mumbai GPA: 3.57

EXPERIENCE

Graduate Student Assistant: Battery Electric & Intelligent Vehicle (BELIV) lab, ASU February 2023 - Present

- Deployed an empty parking spot detection system for an Intelligent Parking System, achieving a 94% accuracy using a custom YOLOv5 model.
- Enhancing sensor fusion capabilities by 30% in ROS2 perception modules of Mustang Mach-E.
- Developed debugging techniques to reduce troubleshooting time by 40% of sensors and ROS2 modules in the ROSMASTER X3 bot.

Software Engineer: Zeus Learning, Lower Parel, Mumbai July 2019 - May 2022

- Full stack development of end-to-end e-learning modules for clients utilizing HTML, CSS, JavaScript, .NET, and React.

Freelance Project Coordinator: Central Railways, Mumbai September 2020 - February 2021

- Prototyped 5 railway safety and maintenance automation projects to increase overall automation by 60%.
  - Real-time Alert System for Auxiliary Transformer Failures [*IEEE Paper Link*]
  - Implementation of Implantation-Stagger Measuring Unit [*Journal Paper Link*]
- Deployed projects on embedded devices and demonstrated that automation can reduce routine maintenance tasks by 80% in terms of time.

ACADEMIC PROJECTS

Artificial Intelligence & Machine Learning Projects *using Python, Pytorch, Numpy, APIs, Pyqt5*

- **Posture Correction Chair:** Developed a chair with pressure senors that offers real-time feedback to users for maintain ideal posture, using a model trained on a policy iteration algorithm with 96% accuracy.[*Video Link*]
- **Pdf Chatbot:** Developed a Q/A chatbot using RAG architecture to answer questions from analyzed PDF content.[*Github Link*]
- **Image Summarize:** Built an Image Summary model with 40% accuracy using ResNet and LSTM/GPT1.[*Github Link*]

Deep Learning Projects *using Python, C++, Tensorflow, Keras, pandas, TFlite, Arduino, Neural Networks, Numpy*

- **High-Accuracy Keyword Spotting on Edge:** Developed an audio analysis embedded system for keyword spotting, achieving 96% accuracy using a convolutional neural network, and deployed it as a TensorFlow Lite model on an Arduino Nano BLE Sense.[*Video Link*]
- **Posture Prediction with Neural Networks:** Developed a predictive model with 81% accuracy for posture classification, trained on a custom neural network with IMU sensor data collected from various postures.[*Github Link*]

Computer Vision Projects *using Python, OpenCV, Pytorch, Numpy*

- **Perception of Intelligent Parking System:** Achieved 94% accuracy in car detection using custom YOLOv5, and defined parking spots by identifying regions of interest in the frame, with data stored in MongoDB.[*Video Link*]
- **Generalized Hand Gesture Recognition:** Implemented One Stop Shop: Hand gesture recognition apps utilizing MediaPipe architecture and ML classifiers.[*Video Link*]
- **Mini Autonomous Car:** Designed and built an autonomous car that accurately responds to selected traffic signs with 95% accuracy and follows specifically colored lanes.[*Video Link*]
- **M-Lens (IoT-based deep learning device):** Built an 85% accuracy model using YOLO architecture and transfer learning a cloud-based edge computing handheld device for detecting custom industrial defects for the airplane manufacturing industry to reduce inspection time and manpower by 80%. [*Video Link*] [*Springer Paper Link*]