

Prakash Ravi

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EDUCATION

Miami University

Master of Science in Electrical and Computer Engineering (CGPA 3.6)

Anna University

Bachelor of Engineering (Electronics & Communication Engineering)

Oxford, Ohio, USA

Jan 2020-Dec 2021

Chennai, India

Aug 2011-May 2015

TECHNICAL SKILLS

Languages & Libraries: Python, C++, NLP, ROS, Matlab, C, OpenCV, Keras, TensorFlow, PyTorch.

Tools & Hardware: Eclipse IDE, Modus toolbox, TI_BLE Sdk, Raspberry Pi, Pixhawk, TurtleBot, CC2640R2 TI-BLE, CY-BT213043 Mesh board, ESP32, Atmega328p MCU.

WORK EXPERIENCE

University of Dayton Research Institute

Summer Research Intern

Dayton, Ohio USA

May 2021-Aug 2021

- Developed optimization algorithm using Nonlinear Programming (NLP) and Interior point optimization (IPOPT) solver to generate the reference trajectory for a nonholonomic robot model by minimizing an objective function of the system.
- Designed and implemented a PID-based closed-loop control algorithm and utilized Robot Operating System (ROS) to navigate the turtle Bot hardware in a reference trajectory and visualized the same in Gazebo simulator.
- Implemented SLAM algorithm in turtlebot-2 by mapping the environment using Astra depth camera and autonomously navigated the robot to reach its goal pose and visualized its path in RVIZ.
- Enhanced Model Predictive Trajectory Generation algorithm to generate trajectory for multi waypoints and launched a network interface for TurtleBot using ROS framework to follow the trajectory.

Miami University

Graduate Research Assistant

Oxford, Ohio USA

August 2020 – Present

- Building a vehicle location prediction model using Long Short-Term Memory (LSTM) neural network and differential time-based approach to achieve the accuracy to 30meters.
- Researching and incorporating charging strategy for the solar powered UAV base station by optimal altitude placement and multi-UAV resource sharing methodology to increase the airtime by 20% and to provide communication to the users.
- Established a bidirectional wireless BLE based communication between two TI-CC2640R2F devices to control a pair of Liquid Crystal film (wirelessly) for an electronic tintable sunglass application. This function eliminated the usage of connection between the frames and attained modelling the glasses using different collection of frames.
- Devised a RTOS C program to control a liquid crystal film by generating 180-degree phase-shifted PWM signal for different duty cycles in TI-CC2640R2 Launchpad microcontroller using Code composer studio.

Tata Consultancy Services (TCS) Innovations Lab

System Engineer

Chennai, India

Oct 2015-Dec 2019

- Pioneered home automation in a hospitality industry to control the HVAC's, lights, and blinds using Voice assisted device.
- Built a WIFI-based indoor localization using ML algorithm by training the model using RSSI data from WIFI anchors.
- Engineered a Smart Mailbox solution in the postal system to improve the efficiency from 30% to 40%.
- Devised a C code on Atmega hardware for a parcel tracking solution to detect the breaches like tampering and vibrations.
- Integrated Amazon Web Services (AWS) with the WIFI-enabled ESP-32 microcontroller and devised a digital twin by publishing the sensor data and formed an interface to visualize it.

PROJECTS

- Incorporated Model Predictive Control algorithm to balance a cart seesaw system using state feedback control mechanism and tweaked the K-matrix to improve the response and reduce the balance time to less than 5 seconds.
- Created a Window classification and bounding box prediction model using RCNN and RESNET in PyTorch and collected the dataset by drawing bounding boxes on images with an average precision of 55%.

LEADERSHIP EXPERIENCE

- Co-Founded an e-commerce startup and focused on selling engineering materials and provided consultation for students.
- Guided a couple of Undergrad students for their projects in machine learning and embedded software areas.
- Managed and educated robotics in all the centers across 3 major cities as a National Support team member in Bhumi-India.
- Improved content and trained people to lead for around 250 middle school students in Bhumi-India.