Prakash Ravi

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CAREER OBJECTIVE

Enthusiastic embedded software engineer with proven experience in developing consumer electronics and a strong foundation in IoT technologies. Skilled in implementing robust embedded solutions, with expertise in test frameworks to support development and ensure operational reliability.

TECHNICAL SKILLS

Programming Languages: C++, Python, Ruby, C, YAML

Operating Systems: Windows, MAC, Linux, Raspibian, RTOS

Frameworks and Tools: Pytest, Cmake, CI/CD, Jira, GIT, ROS, Figma

IDEs: VSCode, Eclipse, Pycharm

Protocols: Matter, BLE, WiFi, HTTPS, MQTT, TCP/IP, UART, I2C, SPI

Flashing and Debugging Tools: J-TAG, Oscilloscope, GDB, Jlink, ESP Prog

Hardwares: TI-BLE, Cypress-BLE, STM-32, ESP32, Zephyr, Raspberry Pi

WORK EXPERIENCE

Whirlpool Corporation **Michigan, USA**

Software Development Engineer (Embedded Systems) *Mar 2022-Present*

- **Embedded Software Development:** Incorporated Matter Commissioning manager interface in C++ using MATTER sdk, which is responsible for opening the commissioning window and connecting the Whirlpool products to third party fabrics
- Accelerated product development cycles by 2 weeks and reduced integration issues through the development of a Zephyr OS sample application by integrating BLE, WiFi, and cloud microservices into the application, thereby enabling thorough testing and debugging on Zephyr boards.
- Secured a 90% increase in senior leadership funding approval for further Matter products development by demonstrating smart home integration through real-time oven status notifications on Fire TV and voice control.
- **Test Framework Development:** Reduced 90% of manual effort by developing a C++ test agent server module using websockets and pytest-based Automated Test Framework (ATF). That streamlined Whirlpool product provisioning and commissioning testing, improving efficiency through automated reporting, logging, and defect creation..
- Led Matter certification efforts by developing test plans and YAML/Python test scripts, resulting in successful CSA certification for multiple device types, enhancing product interoperability, and accelerating time-to-market reach.
- **DevOps**: Improved team productivity by 20% and product quality through the implementation of a robust CI/CD pipeline using GitHub Actions and self-hosted runners, resulting in an automated test execution on the products and seamless integration with Jira dashboards.
- Proficient in Git version control system for managing source code and experience with code reviews, pull requests, and providing constructive feedback to team members.
- Proficient in Agile Scrum methodologies, participating in daily Scrum meetings and sprint planning meetings to update the status and get the stories assigned appropriately.

Tata Consultancy Services (TCS) Innovations Lab **Chennai, India**

Software Engineer *Oct 2015-Dec 2019*

- Reduced losses by 30% for high-value shipments through a parcel tracking solution on ESP32 MCU. Achieved by integrating accelerometer and tamper-evident sensors to detect breaches, excessive vibrations, and unauthorized openings; implemented real-time GPS tracking and cellular alerts using cloud MQTT.
- Improved postal system efficiency by 20% and streamlined operations with an IoT-based Smart Mailbox solution, by developing a system for remote tracking of mail at stations and optimizing postman routes.
- Engineered a comprehensive home automation solution using Raspberry Pi as a custom server, integrating HVAC systems and lighting through IFTTT, and implementing voice control capabilities for remote and hands-free operation.
- Developed a Wi-Fi-based indoor localization system using scikit-learn's KNN model, trained on RSSI data from existing Wi-Fi anchors, achieving accurate positioning for enhanced indoor navigation and eliminated additional hardware.
- To Enhance office efficiency in delivering needs, engineered and implemented an autonomous office robot using Atmega MCU, integrating IR and obstacle detection sensors for navigation. Developed a BLE mobile app interface for remote control.

Miami University **Ohio, USA**
Graduate Research Assistant *August 2020 – Jan 2022*

- Improved switching efficiency from 30 to 0.5 seconds for electronic tintable Air Force helmet visors, by engineering bidirectional wireless BLE-based communication between TI-CC2640R2F devices, integrating light sensors via ADC protocol for automatic tint control.
- Increased airtime by 20% and enhanced communication coverage for solar-powered UAV base stations, by incorporating charging strategy through optimal altitude placement and multi-UAV resource sharing methodology, improving overall system efficiency and user connectivity.

University of Dayton Research Institute **Ohio, USA**
Summer Research Intern *May 2021-Aug 2021*

- Developed optimization algorithm using Nonlinear Programming (NLP) and Interior point optimization to generate the reference trajectory by minimizing an objective function of the system to reach the destination in a shortest path.
- Improved navigation efficiency by 15% for the Turtle Bot hardware using a PID-based closed-loop control algorithm. This enhancement was achieved by designing and implementing the algorithm on a Robot Operating System (ROS) to navigate the robot in a reference trajectory, providing precise and stable control
- 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.

EDUCATION

Miami University **Ohio, USA**
Master of Science in Electrical and Computer Engineering *Jan 2020-Jan 2022*
Anna University **Chennai, India**
Bachelor of Engineering in Electronics & Communication Engineering *Aug 2011-May 2015*

PUBLICATIONS

- **Ravi, Prakash**. Energy optimization on UAV assisted communications by machine learning. 2022. Miami University, **Master's thesis**. OhioLINK Electronic Theses and Dissertations Center
- **Ravi, P**. Wang, M. Scott, M. J. Solar powered UAV charging strategy design by machine learning. . *J. Smart. Environ. Green. Comput.* 2022, *2*, 126-42.
- **Ravi, P**. Zang, T. Scott, M. Wang, M. UAV assisted communication for ground users using machine learning and optimization. . *J. Smart. Environ. Green. Comput.* 2022, *2*, 175-91.

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.