ADITYA GAWALI

Blacksburg, VA

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EDUCATION

Virginia Polytechnic and State University, Blacksburg   2022
MS in Computer Engineering

Veermata Jijabai Technological Institute, Mumbai   2020
B.Tech in Electronics Engineering   CGPA -7.73/10

EXPERIENCE

Larsen and Toubro Limited, India
Electrical System Design Engineer   Aug 2020

- Conducted various testing operations of individual electronic and controller units
- Integrated sub-modules and units into the complete system for trials and operations.
- Designed and deployed highly reliable and robust electronics system and units for heavy engineered products.

Magnes Motors Pvt. Ltd
Embedded Software Intern   June 2019

- Implemented data logging automated solutions using wifi-equipped ESP32 and transmitting data to a centralized unit for future data analysis and testing
- Developed a Android GUI app for the user to visualise the health and essential data of the vehicle.
- Developed intelligent modules using microcontroller for Battery Management System (BMS) increasing operational efficiency by ˜20%
- Refactored legacy round-robin architecture to real-time architecture using FreeRTOS resulting in decreasing latency by ˜15%

Centre of Excellence in Complex and Nonlinear Dynamical Systems, VJTI
Research Intern   May 2018 - July 2018

- Researched on Field Programmable Gate Arrays (FPGA) and implemented designs, interfaced circuits on Spartan-3E and Kintex-7 in VHDL.
- Implemented simulations of AES encryption and decryption on Kintex-7 co-processor for transmission of encrypted and decrypted data using Vivado.
- Generated ciphers and performed mathematical transformations on the same for both the process.

PROJECTS

AVITRA - Surveillance and Disaster Mitigation Robot
Centre of Excellence in Complex and Nonlinear Dynamical Systems, VJTI   Oct 2019 - March 2020

- Developed an autonomously navigating Omnidirectional robot capable of performing mobile manipulation for disaster mitigation operations.
- Designed velocity controller using optical encoders, thus optimizing base locomotion of the bot and improving overall efficiency of the locomotion,
- Upgraded manipulator to 6-Degrees of Freedom from 5-Degrees of Freedom by designing manipulator model along with its necessary software to control and execute the operation.
- Developed Publisher and Subscriber ROS nodes in Python for the robot to detect and reach towards the target destination.

Self-Balancing and Line Following Robot

Society of Robotics and Automation, VJTI   Aug 2018 - Oct 2018

- Developed a Line-Following and Self-Balancing robot using ESP32 microcontroller and developed the code base in C using FreeRTOS.
- Implemented an HTTP WebServer on the ESP32 to tune and change the control parameters dynamically.
- Interfaced MPU6050, an Inertial Measurement Unit along with Complementary filter to get stable pose for self-balancing.
- Implemented PD controllers (Proportional and Derivative controller) for achieving error correction.

Localization of Differential-Driven Robot

Society of Robotics and Automation, VJTI   March 2018 - Apr 2018

- Worked on the localization problem of differential robot controlled using Atmega32 and H-Bridge Motor Drivers.
- Employed Rotary encoders to obtain feedback of the distance traversed by the robot.
- Calculated Position and Speed accurately for different conditions of motion.
- Localized itself accurately and traverse between different points with minimal error margin.

ABU Robocon, 2018

Society of Robotics and Automation, VJTI   Nov 2017 - March 2018

- Part of the Electronics team that represented VJTI for National Robocon 2018, a Robotics Competition organized by the Asia-Pacific Broadcasting Union (ABU).
- Involved development of a Manual robot that picks up a rack of ball-like objects and transfers them to the Autonomous robot which then travels to the shooting point and launches the object through a hoop.
- Developed electronic interfaces on Atmega128 and Embedded C codes for the same.
- Achieved 3rd fastest time of completion of the tasks and secured 4th position amongst the 107 teams from all over India.

SKILLS

Programming Skills	C, C++, Java, Python, JavaScript, HTML, CSS, VHDL
Industry Skills	Real Time Operating Systems (RTOS), FPGA, Embedded-Linux, ESP-IDF, Robot Operating System(ROS), Git
Hardware	ESP32, Atmega128, RaspberryPi, Spartan-3E, Kintex-7, LiDAR, Intel NUC
Soft Skills	Team Management, Leadership, Public Speaking

LICENCES & CERTIFICATIONS

Development of Real-Time Systems | EIT Digital	April 2020
I/O Efficient Algorithms | EIT Digital	April 2020
Web Connectivity and Security in Embedded Systems | EIT Digital	April 2020

CO-CURRICULAR ACTIVITIES

- Read story books to the underprivileged students of the community under Larsen Toubro's Corporate Social Responsibility "Read a Story" initiative.
- Organized technical workshops (Line-following, Self-balancing, ROS, Kinematics, LINUX) and seminars for students of VJTI and delivered lectures on the same.
- Project Mentor for the Eklavya 2018, an annual mentorship program of SRA, where juniors build projects under the guidance of seniors.