VISHWAS JAIN

Robotic Software Engineer | Firmware Engineer

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WHO AM I?

A versatile Engineer with proficiency in designing and implementing Software as well as Firmware for various Robots and Robotic Applications. With having experience of more than a year in Robotics field, I possess expertise primarily in Mobile Robots.

C++ PYTHON ROS1 / ROS2 EMBEDDED C LINUX MATLAB RTOS GIT

EXPERIENCE

Oct 2023 – Mar 2024

Robotic Software Engineer / Thesis — **N Robotics, Berlin, Germany**

`ROS2 / MATLAB / Docker / Parallel Kinematics / Local Planner / Motion Controller`

Deriving Forward and Inverse Kinematics Equations for the Parallel structure in the Robot
Developing DWX Local Planner - a variant of the DWB Local Planner for Spatial motion
Developing Motion Controller - Converts Twist Commands into Actuators' Commands for Spatial motion
Implementation of Local Planner and Controller in ROS2
Developed module to manipulate PointCloud data for Object Detection
Experimenting with multiple simulation tools such as Gazebo, CoppeliaSim, Webots in Docker

Jul 2023 – Oct 2023

Firmware Engineer / Internship — **N Robotics, Berlin, Germany**

`Zephyr RTOS / CAN / I2C / UDP / Protobuf`

Systematically designed and implemented a Lower-Level Controller on a STM32 microcontroller for a Legged Robot
Tuned and implemented Velocity and Position Controllers for Actuators
Initiation of actuators and sensors such as IMU, Analogue Distance Sensor, EEPROM
Implementation of multiple communication protocols such as UDP, CAN and I2C. Also used Protobuf for custom message exchange between systems
Configuration and Calibration of sensors and actuators in run-time

May 2021 – Mar 2022

Wissenschaftliche Hilfskraft — **WZL, RWTH Aachen University, Aachen, Germany**

`ROS / MQTT / SLAM / GPS`

Developed Library to merge multiple pointcloud data
Developed GUI using PyQt5 to control test-car from Remote-PC via MQTT and Ethernet
Worked with SLAM algorithm in ROS with various sensors such as IMU, GPS

May 2020 – Feb 2021

Firmware Engineer — **Maharshi Electronic Systems, Ahmedabad, India**

`IoT / Embedded Programming / OTA Update / BLE`

Developed an application for an industrial IoT device from scratch incorporating various sensors (humidity, temperature, pressure), SPI Flash and MIP screen
Implemented OTA firmware update via Bluetooth with encryption incorporated.
Porting the same application into Zephyr RTOS

PROJECTS

Apr 2022 – Sep 2022

YANTRA Industrial Robot **GitHub_Link**

Developing 6-DOF serial arm with ROS and Gazebo
Implemented Inverse Kinematic and Trajectory Planning algorithm
Used effort_controller and velocity_controller from ROS

May 2021 – Aug 2021

INOF Robot- Intra Office Mobile Robot **GitHub_Link**

Developed an application with mobile robot which works in indoor environment
Used A* path planning algorithm to generate the plan and Feed-Forward plus Feedback Nonlinear Controller to generate Velocity Commands for Differential Drive Controller without ROS navigation stack

EDUCATION

2021 – 2024

M.Sc. in Robotic Systems Engineering **RWTH Aachen University, Germany**

CGPA: 2.2/4.0

- Advanced Robotic Kinematics and Dynamics
- Robotic Sensor System
- Centralised Goal Reasoning for Logistic Robot
- Computer Vision
- Estimation and Information Fusion, Machine Learning
- Reinforcement Learning

2015 – 2019

B.Tech in Electronics and Communication Engineering **NIRMA University, India**

CGPA: 7.77/10.0

LANGUAGES

English - Proficient
German - Limited but Growing

INTERESTS

Volleyball | Hiking | Travelling | Cooking | Ultimate Frisbee