




J. Keshav Bhupathy Vignesh

Result Oriented **Software Engineer** with **2+** years of hands on experience in designing, developing, testing and maintaining **backend applications** and REST based Microservices, primarily in **Python** along with notable **frontend development experience**

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TECHNICAL SKILLS

Programming Languages - Python, Java, C/C++

Web Technologies - HTML5, CSS, Javascript, Django, Flask, Angular

Databases - MySQL, PostgreSQL

Containerization Tools - Docker, Snapcraft

Other tools and Frameworks - ZeroMQ, ActiveMQ, Postman, Jenkins, Camunda, Qt Designer, Git, Robot Operating System (ROS)

RELEVANT WORK EXPERIENCE

Senior Software Engineer, Wipro Limited

Robotics Practice, Chief Technology Office

Bengaluru, Karnataka, India

September 2019 – Present

1. Robotics Software platform

Project Description – A collection of **reusable Python Libraries and Microservices** that can be used to prototype, test and deploy **Multi level Orchestration systems** for various Robotic use cases agnostic of actual hardware

- Created various **REST API** endpoints using **Django** and also automated testing using **Postman**
- Implemented the **communication framework** for the platform using **ZeroMQ**
- Automated the build-test-deploy cycle of the development using **Jenkins**
- Designed the **Database Schema** and implemented the ORM interfaces
- Developed the core **plug-and-play architecture** for the platform using concepts such as **Dependency Injection**

2. Robot – Camera Calibration Tool

Project Description – A GUI Tool, that can be used to collect ARUCO marker data from captured images and calibrate any Robot Arm with any chosen Camera

- **Proposed and Developed** this tool, which simplifies the manual workflow **reduces the total process time** from 3 hours to 15 minutes
- Designed the Interface using **Qt Designer** and programmed the workflow and calibration algorithm using **Python**.
- Ported the application to an **Angular** web App for remote calibration
- **Dockerized** as well as created a **Snap app** for the Application deployment

that can be used to setup, configure and control a robot deployed in a shop floor or warehouse for a retail use case involving a Mobile Robot

- Developed a dynamic and interactive website used for monitoring and control using **HTML5, Jinja2 Templating, Bootstrap and JQuery**
- Implemented the Server using **Flask** and various **REST API** endpoints for the same
- Setup the database using **MySQL** and setup server bindings using **SQLAlchemy**
- Created a **Flask – ROS interface** for communication with the Robot

2. High level Orchestration System for the Retail Robot

Project Description – A ROS Based **Orchestration System** that is used to get data from the various nodes of the robot and make future decisions

- Implemented a **State Machine based Orchestrator** in **Python using ROS** for Optimal Decision Making
- Defined and implemented **synchronization and data sharing protocols** between the hardware systems and the Orchestrator
- Setup Communication Interfaces with External Nodes Using **ActiveMQ**
- **Dockerized** the application for use across systems

EDUCATION

Bachelor of Technology in **Computer Science and Engineering** from **Vellore Institute of Technology (VIT), Chennai Campus**

June 2014 – March 2018

CGPA: 9.23 / 10.00

PERSONAL PROJECTS

- A **physical chessboard** that the user can play with, without the need of an opponent. The opponent pieces move by themselves. There are no visible moving mechanisms
- **Ecosense** – A Smart Home Energy Control and Management System
- A Game theoretical approach to prevent Network Congestion in sensor networks

LANGUAGES

English, Tamil, Malayalam

OTHER INTERESTS

Filmmaking, Magic, Visual FX, Game Development

Project Engineer, Wipro Limited

Robotics Practice, Chief Technology Office

Bengaluru, Karnataka, India

July 2018 – August 2019

1. Web Based Monitoring and Control System for the Retail Robot

Project Description – A remote Monitoring and Control System