Govind Aadithya Rajagopalan

govindaadithya.rajagopalan@gmail.com | LinkedIn | Google Scholar | Research Gate

EDUCATIONAL QUALIFICATION

MASTER OF SCIENCE IN MECHATRONICS AND ROBOTICS **May 2024**
New York University, Tandon School of Engineering, Brooklyn, New York, USA CGPA – 3.89/4
Advanced Course: Reinforcement Learning and Optimal Control, Robot Localization and Navigation.

BACHELOR OF TECHNOLOGY IN MECHATRONICS ENGINEERING **May 2018**
SRM Institute of Science and Technology, Kattankulathur, India CGPA – 7.96/10
Thesis: Decentralized collaborative control for collision-free navigation of autonomous vehicles at an intersection.

TECHNICAL PROFICIENCY

CAD Skills: CREO Parametric, SolidWorks, Festo FluidSim
Programming: Python, C, C++, LabVIEW, MS SQL, Matlab
Toolkits: ROS, ROS2, OpenCV – Python, Pandas Python, Django – Python
Other Software: Microsoft Office suite, Google Docs suite, Minitab, Tableau

PROFESSIONAL EXPERIENCE

DEPUTY MANAGER **Oct 2018 – Jun 2022**
@ Schneider Electric India Pvt. Ltd (L&T EAIC), Gujarat, India

- Design and development of Special Purpose Machines, establishing Robotic Handling system to aid Factory Automation in Brown Field projects.
- Software development –Soft Poka-Yoke, Human Machine Interface (HMI) for in-house automation setups, and Process automation for ERP systems. Web interface for Machine data tracking (IIoT) using HTML, CSS, and Django.
- Database Management for product testing data and backend interlocking using MSSQL.
- Proposals for Innovative technologies to be implemented on the shop floor.
    - Concept Design and Simulated verification using CREO.
- Building Production dashboards with Tableau to accelerate Genba for stock management and production planning with the help of Digital Kanban built with SAP stock integration on the backend.
- Led multiple cross-departmental teams for Project implementation and customer complaint analysis.

GRADUATE APPRENTICE TRAINEE **Jun 2018 - Oct 2018**
@ Wabco India Pvt. Ltd. Chennai, India

- Production planning and control.
- Demand data and variance analysis with production and dispatch data to standardize average machine/line output.

DOMAIN HEAD - CONTROL & COMPUTER VISION **May 2017 - Jun 2018**
@ SRM Team Humanoid Chennai, India

- Gait Planning
    - Built Inverse kinematic control of the lower body.
    - Built LTI controller for passive responsive gait.
- Object detection and tracking
    - Implemented Blob-based object tracking for obstacle avoidance using OpenCV- Python.
    - Explored sample/model-based object detection algorithm using OpenCV and Scikit Learn- Python
- ROS Experience
    - Integrating inverse kinematic control and OpenCV-based Computer Vision codes with motor control code
    - Explored gazebo-based Model in loop simulation of Darwin OP3.

LVP MITra Fellow **Dec 2017 – Feb 2018**
@ Srujana, Hyderabad, India

- Analytical modelling and prototype development.
    - Literature Survey and Mathematical Modelling using 3D geometric projections.
    - Prototype design on Solid Works and 3D Printing of prototype on Ultimaker.
- Image processing algorithm development for detection of the projected pattern using OpenCV – Python.

PROJECTS

MINIATURE AGV FOR MATERIAL DELIVERY **Apr 2023 - Apr 2023**
@ NEW YORK UNIVERSITY
• Aim: Built a mini AGV primarily line guided with dynamic path planning capabilities using A* and onboard sensors like Ultrasonic and IR sensors to perceive the environment.
• Contribution: Coding of A* algorithm in embedded C.
• Used Propeller controller, Embedded C.

SENSOR FUSION AND STATE ESTIMATION FOR AERIAL ROBOT **Apr 2023 - Apr 2023**
@ NEW YORK UNIVERSITY
• Aim: Given the data recorded during a flight, from sensors like IMU, VICON, and Camera, the bot's states like position, orientation, velocity, and angular velocity were estimated.
• Contribution: Individual coursework project. Complete EKF and UKF design and implementation, Visual localization.
• Used Matlab and Simulink.

TRAJECTORY PLANNING AND INVERSE DYNAMIC CONTROL OF MANIPULATOR **Oct 2022 - Dec 2022**
@ NEW YORK UNIVERSITY
• Aim: Building a trajectory planner and inverse dynamics-based tracker for industrial manipulators with Matlab and Simulink.
• Contribution: Trajectory generation and controller design.
• Used Matlab and Simulink.

DECENTRALIZED COLLABORATIVE CONTROL FOR COLLISION-FREE NAVIGATION OF AUTONOMOUS VEHICLES AT INTERSECTION **June 2017 - May 2018**
@ SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
• Aim: Creating a Decentralized system to coordinate multiple vehicles at an intersection.
• Contribution: Developed Trajectory Optimization and Tracking algorithms.
• Used ROS Nav Stack for sensors and simulated on Gazebo.

CONTOUR-BASED PATH PLANNING **Nov. 2016 - Dec. 2016**
@ SRM TEAM HUMANOID
• Aim: Making a Bioloid GP plan its path according to the colored obstacle in front of it while dribbling a miniature football.
• Contribution: Built on color-based blob tracking code to steer the robot between obstacles.
• Hardware: BioloidGP, Odroid, Logitech Web camera.

ARTIFICIAL TELEPRESENCE ROBOT **Oct. 2016 - Oct. 2016**
@ SRM TEAM HUMANOID
• Aim: To build a torso that can mimic the upper human body motion of the operator. The system has a loop closure by giving the operator a VR feed of the scene.
• Contribution: Angle extraction and robot arm control algorithm used to control the robotic arm using the generated skeletal framework overlay for the operator and integration of the same into Team's ROS control framework.
• Hardware: Dynamixel, Kinect2 3D vision sensor, Android mobile phone.

OTHER ACCOMPLISHMENTS

WORKPLACE

2018-22 Key Performance Indicators, Gujarat, India
Avg. Man hour saving: 196 hours per project
Avg. Tangible Annual savings: INR 25Lakhs (3 Hardware Projects)
Avg. Capacity Ramp-up: 30% per project
One-time savings with in-house development: INR 18Lahks

INTERNATIONAL

2018 Best Paper Award, IEEE Symposium On Robotics and Manufacturing Automation. Tamilnadu, India
2017 Multiple, Robogames (1st Penalty Kick, 2nd Biped Race and Freestyle, 3rd Sumo) Pleasanton, U.S.A
2017 2nd Runner up, IROS Humanoid Robot Application Challenge Vancouver, Canada