GOKUL NARAYANAN SATHYA NARAYANAN

Summary

Robot software engineer with 3 years of experience in building robots and deploying it in real-world. Have diverse skill set in developing algorithms for various robot stacks, with primary focus on planning and reinforcement learning stack.

Work History

2019-08 - Current

Advanced Robotics Intern

SIEMENS, Berkeley, CA

- Performance comparison of motion planning algorithms (sampling based vs search based vs optimization based).
- Designing and developing a modular automation solution to stitch garments using collaborative robot (UR3) which will increase the production rate by 20%. Skill: Python, ROS, MATLAB
- Developed motion primitives and waypoint trajectory generator for the collaborative robot to perform different kinds of stitches

2018-10 - 2019-08

Research Assistant

Worcester Polytechnic Institute, Worcester, MA

- Developed a planning framework to perform precise in-hand manipulation of objects with <1 mm accuracy. Skill: Python, ROS
- Developed a symbolic task planner integrated with a hierarchical reinforcement learning framework to perform loco-manipulation task.

2016-05 - 2018-05

Robot Software Engineer

ASIMOV Robotics, Cochin, Kerala

- Directed 3 software developers in building the software stack of an autonomous mobile robot. Skill: Python, ROS, C++.
- Achieved 94% success rate in long range navigation tasks by introducing recovery behaviors in the state machine of the robot.
- Developed path planning algorithms (Variants of A*) for the mobile robot to avoid obstacles and navigate autonomously.
- Reduced the error in localization module by fusing the sensory data such as odometry, LIDAR and IMU using Extended Kalman Filter.
- Spearheaded the research group in building 'Cranio-facial Surgical Robot' in collaboration with Biotechnology Research Institute.

Accomplishments

- Built India's first general purpose mobile robot assistant which can autonomously navigate hospitals to deliver medications to patients.
- Secured 30K funding for the startup from government by writing technical proposals.

Contact

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Skills

Data structures and Algorithms

Motion Planning

Reinforcement Learning

Task planning

Mobile Robots

Manipulators

Software

C++ — Excellent

Python — Excellent

Robot operating System — Excellent

MATLAB — Very Good

Pytorch — Very Good

Education

2018-08 - Current
Masters: Robotics and Automation Engineering
Worcester Polytechnic Institute - Worcester, MA

2012-08 - 2016-05
Bachelor: Robotics and Automation Engineering
PSG College of Technology - Coimbatore

Projects

- Within Hand manipulation of objects using deep reinforcement learning techniques.
- Performance comparison of trajectory tracking controllers for UR5 manipulator.
- Extended Kalman Filter based localization for mobile robots.
- Teleoperation of ATLAS robot arm using Razer hydra controller.

Papers

- Within Hand Manipulation Planning and Control Approaches for Variable Friction Fingers.
- Haptic Object Parameter Estimation during Within-Hand-Manipulation with a Simple Robot Gripper.
  (IEEE Haptics Symposium 2020)

Coursework

Advanced Robot Navigation

Motion Planning

Human Robot Interaction

Robot Dynamics

Robot Controls

Introduction to AI