RONAK NARKHEDE

St Paul, Minnesota US | +1 (763) 900 1339 | ronaknar2001@gmail.com | Portfolio

EDUCATION

University of Minnesota, Twin Cities **May 2026**
Masters of Science in Robotics *GPA: 3.3/4*
SRM Institute of Science and Technology - Chennai, India **May 2024**
Bachelors in Mechatronics with specialization in Robotics, *GPA: 8.32/10*

SKILLS

Programming Languages: Python, Embedded C/C++, MATLAB, Ladder Logic
Robotics & Automation: ROS 1/2, Robot Programming (ABB, UR), PLC Programming (Siemens), HMI LabVIEW, Simulink, Gazebo, RoboDK
Design & Hardware: SolidWorks, Onshape, Microcontrollers, Laser Cutting, Rapid Prototyping

PROFESSIONAL EXPERIENCE

MEDICAL ROBOTICS AND DEVICES LAB | Prof. Timothy Kowalewski **Minneapolis, USA**
Graduate Research Assistant *January 2025 – May 2025*

- Built real time motion tracking system using EM sensor for 6 DOF pose estimation in surgical navigation application.
- Developed sensor data processing pipeline with Kalman filtering for position tracking at 120 Hz update rate.
- Built a data streaming interface to share data using UDP with AI and hardware teams.

PHYCHEM TECHNOLOGIES **Nashik, India**
Robotics Engineer Intern *December 2022 – February 2023*

- Developed a parallel delta robot for pick and place operations, handling frame assignment, workspace analysis, and inverse kinematics implementation in Python.
- Implemented trapezoidal velocity profile for joint space trajectory planning, improving motion smoothness over point-to-point control.
- Programmed Siemens PLC implementing sequential control for robot conveyor coordination, using timer based logic and proximity sensor to trigger pick operations.

PROJECTS

Vision Based Robot Control | Prof. Ranjith Pillai

- Developed wireless teach pendant for serial manipulators using stereo camera and ArUco marker detection for 3D point selection in robot workspace.
- Implemented pose estimation pipeline for localization and used ROS to create a modular software framework, making it easy for the system to work with various robots.

Franka 3

- Contributed to lab bring up of Franka Research 3 robot arms by containerizing multiple control methods in Docker.
- Co-developed a C++ lab framework to enable access to real time unified depth camera and arm sensory information.
- Developed real time obstacle avoidance demo with SIMD point cloud collision checking.

LEADERSHIP AND OUTREACH EXPERIENCE

Next Tech Lab **Chennai, India**
Board Member, Robotics and Embedded Systems *April 2022 – June 2024*

- Led a research lab honored with the prestigious International QS Award.
- Mentored a team of 7 juniors, guiding and helping them with their projects.
- Oversaw research initiatives, comprising of 6 hardware projects and 4 other research projects. Additionally, managed the organization and held more than 10 technical events and workshops.