

# Juhyung Lee

juhyunglee0313@gmail.com • 201-723-3962

## Education

### University of Rochester

Rochester, NY

*Bachelor of Science: Biomedical Engineering (Concentration: Medical Devices)*

May 2023

*Minor: Electrical and Computer Engineering (Concentration: Robotics)*

May 2023

Cumulative GPA: 3.83

Github: <https://github.com/Juhyung-L>

Blog: <https://juhyungsprojects.blogspot.com/>

Website: <https://juhyung-l.github.io/>

## Technical Skills

- Languages: C++, C, Python, Java, Matlab
- Libraries/Frameworks: OpenCV, Qt5, ROS2, Gtest, Pytest
- Tools: Linux, Git, Docker, CMake, Blender, Gazebo, RViz

## Internships

### DEKA Research and Development | Test Engineer Intern

June 2022 - Aug 2022

- Developed an electro-mechanical fixture to automate the durability testing of a medical device prototype using a **Raspberry Pi**. The fixture sped up the durability testing phase by over 30%.
- Wrote a state machine C++ program on the **Raspberry Pi** to move the stepper motors and linear actuators in the correct sequence to perform the durability testing.
- Improved a data analysis tool in **Python** for analyzing medical device test logs from an excel file by fixing runtime errors and adding 2 new features to extract insightful information from the data.

## College Activities

### Capstone Project | [https://github.com/Juhyung-L/bird\\_view](https://github.com/Juhyung-L/bird_view)

Jan 2023 - May 2023

- Worked with a team of 5 engineers to develop a visualization-aid for a wheelchair-bound client.
- Led the software development of the primary GUI application using C++, **OpenCV**, and **Qt5**. The application performs real-time image processing on live video streams captured by three cameras attached to the wheelchair to provide the client with a comprehensive view of the environment around his wheelchair.
- Performed code profiling to identify and improve performance bottlenecks so the GUI program can run reliably for 8 hrs/day on an **Nvidia Jetson Nano**. The program's CPU usage was reduced by over 50% through profiling.

### Robotics Club

Sep 2021 - Dec 2022

- Developed a feature-based visual odometry system and A\* search path planning algorithm using C++ and **ROS2**.
- Modeled the competition arena using **Blender** and tested the performance of our robot in **Gazebo** simulation.

## Personal Projects

### Dynamic Obstacle Avoidance | [https://github.com/Juhyung-L/dynamic\\_obstacle\\_avoidance](https://github.com/Juhyung-L/dynamic_obstacle_avoidance) | C++, ROS2, Navigation2

- Global and local path planner for a mobile robot navigating in an environment with moving obstacles.

### RGB-D Visual Odometry | [https://github.com/Juhyung-L/RGB-D\\_visual\\_odometry](https://github.com/Juhyung-L/RGB-D_visual_odometry) | C++, ROS2, OpenCV

- Estimates the motion of a depth camera by tracking the features in the images in consecutive image frames.

### Autonomous SLAM | [https://github.com/Juhyung-L/autonomous\\_slam](https://github.com/Juhyung-L/autonomous_slam) | C++, ROS2, Navigation2

- Analyzes the 2D map that is being generated with SLAM to set waypoints to unexplored regions in the map.