# JIYOON HWANG

## Summary

Two years of experience in building two mobile robots. Eight months of experience in controlling robotic arms. Four month of embedded system development experience. **Key accomplishments include**:

- Responsible for all software parts of the safety mobile robot and make the robot drive partly autonomously.
- Built a self-driving server robot and winning the prize for excellence.
- Selected as the final three teams in the Korea CubeSat Competition and launched the satellites into space.

## Work Experience

**Robotics Research Intern** Oct 2020 – Jun 2021
*Korea Atomic Energy Research Institute, Nuclear Robot Division* Daejeon, Republic of Korea

- Developed a user interface to send control commands and monitor the status of the KUKA iiwa robot arm and Force torque sensor & IMU data based on the Microsoft Foundation Class (MFC) Library. Built a hot cell testbed for evaluation of remote operation and shared autonomy preliminary framework with the team.
- Created an autonomous mobile robot with Dr. Ryu that can drive via waypoints without collisions by fusing the data obtained from a RealSense tracking camera, LiDAR, and GNSS module based on ROS and Cartographer.
- Tested driving a safety mobile robot with 3D LiDAR and a gamma-ray detector in a cave located 1.1km underground and obtained a 3D map of the cave.

## Skills

**Programming:** C/C++, Python, MATLAB/Simulink, (Entry level) JavaScript, HTML, Ruby
**Framework/Tools:** Robot Operating System (ROS), Ubuntu, Git, TensorFlow, Keras, OpenCV

## Projects

**NVIDIA Platform-based Developer Training Project** May – Nov 2019
*Hancom MDS Academy* Pangyo, Republic of Korea

- Built a self-driving restaurant server mobile robot that can serve food to certain tables with two team members, winning the Prize for Excellence in the project.
- Compared driving performance of the robot between RTAB-Map based navigation and 2D Lidar SLAM based navigation using ROS Navigation Stack.
- Developed spot the difference game with LCD touch screen on Samsung S3C2450 mobile processor.

**CANYVAL-X CubeSat Mission** Jul 2015 – Jun 2016
*Yonsei University* Seoul, Republic of Korea

- Developed reaction wheel controller as a researcher of Attitude Determination and Control System using C and MATLAB for the CANYVAL-X (CubeSat Astronomy by NASA and Yonsei using Virtual Telescope Alignment eXperiment) project, which is the mission to implement flight formation of two separated CubeSats and won the Korea CubeSat Competition Final Award.

## Education

**M.C.S. Candidate in Computer Science** Aug 2021 – Current
*Texas A&M University,* College Station, TX
**Part-time Student in Computer Science** Mar 2020 – Jun 2021
*Korea National Open University,* Seoul, Republic of Korea (GPA: 4.3/4.5)
**M.S., Navigation, Control & Design for Autonomous Systems Lab** Jun 2016 – Feb 2019
*Yonsei University,* Seoul, Republic of Korea (GPA: 4.15/4.3)

- Courses: Optimal control, Theory of automatic control, Nonlinear control, Space guidance navigation and control
- Thesis: Collision-Free Control for Formation Flying of Multiple Satellites using Artificial Potential Field

**B.S. in Astronomy and Physics** Mar 2012 – Aug 2016
*Yonsei University,* Seoul, Republic of Korea (GPA: 3.4/4.3)

- Course: Mechanical system control