DAEWE KIM

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SKILLS

Programming Languages : C, C++ **Microcontroller :** AVR, Keil, STM32CubeIDE

Robotic Framework : ROS **Computational Modeling :** Matlab, Creo

EDUCATION

Master & Bachelor of Electronic Engineering – *Advisor : Prof. Eung-Hyuk Lee* *Korea Polytechnic University*

EXPERIENCE

Wireless Joystick Module for Control of Various Robot Platforms

Graduate Researcher, Korea Polytechnic University *Mar. 2022 ~ Feb. 2024*

- Developed wireless ROS system based on Bluetooth to control multiple robots using a single joystick
- Designed 1 Cell 3.3V lithium battery charging circuit that achieves greater convenience through reduced weight
- Implemented STM Cortex MCU based UART, USB communication, and ADC for debugging and interface

Development of Upper Limb Disability Wheelchair User-Specific Joystick Module and Simulation

Graduate Researcher, Korea Polytechnic University *Mar. 2022 ~ Feb. 2024*

- Developed LPF, Deadzone, and Auto Calibration functions to address hand tremor and shaking symptoms
- Achieved 67% reduction in collision accident rates based on preliminary results from clinical trials

Elevator Boarding and Alighting System for Powered Wheelchairs

Graduate Researcher, Korea Polytechnic University *Mar. 2022 ~ Feb. 2024*

- Developed low and high reflection elevator recognition algorithm using LiDAR sensor
- Developed ROS-based elevator boarding and alighting navigation system
- Achieved 76.7% recognition success with 4.86cm precision using a LiDAR on an elevator with 94.2% reflectivity

PATENTS / PUBLICATIONS

Study on Elevator Recognition Techniques for Upper-Limb-Disabled Wheelchair Users *MDPI 2023*

A Study on the Assistive System for Safe Elevator Get on of Wheelchair Users with Upper Limb Disability *ICEIC 2023*

Real-Time AI-Based Calibration Cloud System for 6-Axis Force/Torque Sensors *Korean Patent PCT/KR2023/021864*

UWB based, Multi-Story Autonomous Robot Elevator Navigation System *Korean Patent PCT/KR2023/021862*

Safe Wheelchair Elevator Boarding System Utilizing LiDAR and Ultrasonic Sensors *Korean Patent No.10-0130386(2023)*

Wheelchair Moving System That Can be Used In Elevator *Korean Patent No.10-0158357(2022)*

Sensor Module and Wheelchair Including the Same *Korean Patent No.10-0158356(2022)*

AWARDS

Undergraduate Paper Competition at The Fall Academic Conference – *Encouragement Award* *IEIE 2021*

Pro Bono ICT – *Silver Medal* *Hanium 2021*

CP-CoP – *Grand Prize* *Korea Polytechnic University 2021*

Capstone Design – *President's Award* *Korea Polytechnic University 2021*

AI & IoT MAKE A TON – *Excellence Award* *GIST(Gwangju Institute of Science and Technology) 2020*