Tae Hoon Yang

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EDUCATION

Northeastern University, Boston, MA

B.S. in Computer Engineering and Minor in Robotics, GPA: 3.95/4.0 — May 2024

Relevant Courses: Machine Learning & Pattern Recognition, Robotics Sensing & Navigation, Mobile Robotics, Robot Dynamics/Control, Digital Design, Linear Systems, Algorithms, Networks, Embedded Design, Electronics

Activities: Eta Kappa Nu, Tau Beta Pi, IEEE, Susan Bailis Assisted Living Volunteering

SKILLS

Programming: C/C++, C#, Python, SystemVerilog, RISC-V

Computer Applications: ROS, Linux, Git, MATLAB, Simulink, Quartus Prime

Electronics: Raspberry Pi, Arduino, Wi-Fi/Bluetooth communication, Basic circuit design

WORK EXPERIENCE

Hardware Automation Engineering Intern – iRobot, Bedford, MA — Jul 2023 – Present

- Plan, design, and develop automation projects in manufacturing and qualifying new and existing products

Computing Fundamentals TA – Northeastern University, Boston, MA — Jan 2023 – May 2023

- Held office hours to answer questions as to Python programming covering syntax, libraries, and DSA
- Graded Python assignment evaluating and comparing scripts to rubrics

Silicon Synapse Lab RA – Northeastern University, Boston, MA — Dec 2022 – May 2023

- Designed custom actuator controller board comprised of STM32 MCU, DC motor, and hall sensor
- Assisted PID controlled quadcopter development with graduate students

Embedded Design TA – Northeastern University, Boston, MA — Sep 2022 – Dec 2022

- Instructed students in labs covering FPGA board, Linux, C++, Quartus Prime, and robotic arm
- Held office hours and extra lab hours to answer questions as to C++, Logic Design and lab assignment

Communication Equipment Maintenance – ROK Army, South Korea — Jan 2021 – Jul 2022

- Maintained communication systems, navigation, flight recorders installed in 500MD, UH-60 (Black Hawk), and AH-1S (Cobra) aircrafts to be readily operable and available
- Repaired mechanical and communication components of pilot helmets

Electrical Engineering Co-op - Instrumentation Laboratory, Bedford, MA — Jul 2020 – Dec 2020

- Designed test setup to measure temperature sensors and LEDs (e.g., characteristic curves, and response time) using Arduino and MATLAB
- Assisted engineers configuring test fixtures for LED reliability testing and chamber testing

ENGINEERING PROJECTS

School Tunnel Mapping — Mar 2023 – May 2023

- Collected 2D LiDAR, RGB-D camera, and VectorNav IMU data in school tunnel using ROS
- Performed Hector, Gmapping, Cartographer SLAM, RTAB-Map, and ORB-SLAM 3 on the sensor data to generate grid maps and point cloud maps and compare each algorithm's result

Autonomous Reconnaissance Robot — Nov 2022 – Dec 2022

- Utilized Turtlebot3 robot with various ROS and Turtlebot3 packages
- Performed Frontier-Based Exploration using Gmapping SLAM to generate occupancy grid map
- Transformed coordinates of AprilTags detected by Pi Camera from robot body frame into grid map frame

Wearable Fitness Motion Tracker — Aug 2021 – Oct 2021

- Utilized 6-DOF Gyroscope and Accelerometer IMU to track human motion
- Processed IMU data with the Complimentary Filter to acquire accurate position of human body
- Programmed C++ algorithm to evaluate correct squat positions of users

Flower-Care Sensor — Jul 2021 – Sep 2021

- Designed a plant sensor utilizing Arduino and various sensors to monitor moisture, light, and temperature
- Transmitted collected data to google cloud server in real-time through Wi-Fi using Temboo platform

Wii-mote Controlled Robot Arm — Dec 2019

- Configured robotic arm on FPGA board using Simulink
- Connected Wii-mote to FPGA board to receive accelerometer data over Bluetooth using shell script on Linux
- Programmed C++ algorithm to manipulate the arm based on the movement of the controller

Tight-space Cleaning Robot — Mar 2019

- Programmed C++ path planning algorithm to clean the floor thoroughly using ultrasonic sensor and Arduino