

Jaehah Shin

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EDUCATION

University of Toronto

Bachelor of Applied Science in Engineering Science + PEY Co-op

Sep. 2022 – May. 2027

Toronto, Ontario, Canada

Major: Robotics Engineering

Relevant Courses: Microprocessors and Embedded Microcontrollers, Electronics for Robotics, Data Structures and Analysis, Algorithm Design, Analysis & Complexity, Introduction to A.I., Introduction to Learning from Data, Control Systems, Introduction to Robotics, Mathematics for Robotics

SKILLS

Embedded System: Zephyr RTOS (Real-Time Operating System), NRF Connect, UART, I2C, SPI

Hardware Design: SuperSpice, Eagle & Autodesk Fusion 360 (PCB), FPGA, Oscilloscope, Micro-soldering

Programming: C, Python, Assembly, LaTeX, MATLAB

Framework & Software: ROS, LabVIEW, Git, ModelSim

WORK EXPERIENCE

Ted Rogers Centre for Heart Research – <https://franklinresearch.ca/>

May. 2023 – Present

Undergraduate Researcher

Toronto, Ontario, Canada

Project 1: Flexible PCB Design for Wearable Heat Regulation in Hyperemia Research

- Engineered a PID controller to maintain a precise temperature of 42°C for a defined period, effectively inducing a condition for cutaneous hyperemia.
- Developed a flexible PCB for heater integration in wearable applications.

Project 2 (On-Going): Optimizing System on Chip (SoC) Integration

- Analyzed and selected about 100 different SoC components through detailed datasheet evaluations, creating a [Google Sheet](#) to summarize key specifications and streamline sensor integration.
- Developed and refined device drivers within an RTOS environment, enabling effective SPI communication and configuration with a Maxim Integrated chip and chosen microcontroller.

EXTRACURRICULARS

UofT Wearable Student Design Team

Jun. 2024 – Present

Co-Founder, Co-President

Toronto, Ontario, Canada

- Co-founded and led UofT Wearable student design team, focusing on innovative wearable technology.
- Managed sub teams in Embedded Electronics, Companion Software, and Form and Function.
- Led training sessions for approximately 35 students on RTOS, Bluetooth Low Energy, and microcontroller communication protocols, enhancing their technical proficiency and understanding.

Robotics Engineering at University of Toronto

Sep. 2024 – Present

Robotics Option Class Representative

Toronto, Ontario, Canada

- Collaborate with professors and faculty to manage workload adjustments based on student feedback.
- Organized peer feedback sessions to foster a supportive academic community, showcasing strong leadership and communication skills.

PROJECT

Continuous all-day Wearable ECG Signal Acquisition Device under UofT Wearable Sep. 2024 – Present

- Design and optimize device drivers for MAX30001G and nRF52840 microcontroller in Zephyr RTOS for ECG data collection via electrodes, using SPI and Bluetooth Low Energy for data transmission.

Turtle-bot 3 Waffle Pi robot Deliver Mail to Arbitrarily Chosen Stations

Nov. 2024 – Dec. 2024

- Developed a ROS-based TurtleBot 3 for randomized mail delivery to three offices, using PID control and computer vision for precise line following on a circular route.
- Integrated Bayesian Localization and Extended Kalman Filter with Markov assumptions, ensuring robust state estimation despite sensor noise.