# Jaehah Shin

jaehah.shin@mail.utoronto.ca / (778) 222-4285 / Toronto, ON, Canada /
https://jaehahshin.github.io/contact.html

## EDUCATION

**University of Toronto**                                                      **Sep. 2022 – May. 2027**
Bachelor of Applied Science in Engineering Science + PEY Co-op                *Toronto, Ontario, Canada*
**Major:** Robotics Engineering
**Certificate:** J.E.D.I (Justice, Equity, Diversity, and Inclusion)
**Relative Courses:** Microprocessors & Embedded Microcontrollers, System Software, Digital and Computer
Systems, Electronics for Robotics, Data Structures and Analysis

## WORK EXPERIENCE

**Ted Rogers Centre for Heart Research –** https://franklinresearch.ca/          **May. 2023 – Present**
*Undergraduate Researcher*                                                    *Toronto, Ontario, Canada*
**Project 1:** Design Flexible PCB (fPCB) for wearable heat regulation in hyperemia research.
- Tuning PID controller to maintain specific temperature (42°C) for certain duration to induce condition for the cutaneous hyperemia.
- Developed a fPCB for heater integration with PID temperature controller to maintain 42°C for 10 minutes.

**Project 2 (On-Going):** Working individually on optimizing System in Package (SiP) / System on Chip (SoC)
- Select and evaluate SiP and SoC through datasheets for integration with accelerometers and optical sensors.
- Assess and develop device drivers for usability within the Zephyr RTOS to communicate and configure data through SPI from the Maxim Integrated device with nRF52833 chip.
- Quantify and optimize battery consumption using power profiling kits.
- Design a prototype board in Eagle to integrate the best SiP/SoC into a compact wearable platform, ensuring fPCB compatibility with various circuit components for Franklin Research Lab.

## EXTRACURRICULARS

**UofT Wearable (University of Toronto Wearable)**                              **Jun. 2024 – Present**
*Co-Founder, Co-President*                                                     *Toronto, Ontario, Canada*
- Co-founded and led the UofT Wearable 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 Zephyr RTOS, Bluetooth Low Energy, and communication protocols (UART, SPI, I2C), enhancing their technical proficiency and understanding.

**Robotics Engineering at University of Toronto**                              **Sep. 2024 – Present**
*Robotics Option Representative*                                               *Toronto, Ontario, Canada*
- Collaborate with faculty and peers to manage workload adjustments based on student feedback and concerns.

## PROJECTS

**Continuous all-day Wearable ECG Signal Acquisition Device**                  **Sep. 2024 – Present**
- Led the project and meetings under UofT Wearable.
- Design and optimize device drivers for the MAX30001G and nRF52840 within Zephyr RTOS to enable ECG data collection via electrodes, using SPI for inter-chip communication, and transmit data through Bluetooth Low Energy to the application.
- Configure the form of the wearable device based on wearability, signal quality, comfort and aesthetic.

## SKILLS

- **Embedded System:** Zephyr RTOS, NRF Connect, UART, I2C, SPI
- **Hardware Design:** SuperSpice, Eagle (PCB), FPGA, Oscilloscope, Micro-soldering
- **Programming Language**: C, Python, Assembly, LaTeX, MATLAB
- **Framework & Software:** ROS, LabVIEW, Autodesk Fusion 360, Git, ModelSim