Sina Tahbaz

Toronto, ON

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Skills

- **Languages:** C / C++, Python, Verilog, VHDL
- **Software:** Nordic nRF Connect SDK, Altium, KiCad, Keil uvision, Vivado
- **Embedded :** STM32 (CMSIS Bare metal and Cube HAL), FPGA, ESP32, nRF52 (Zephyr RTOS), AVR (Arduino)
- **General:** Soldering (Through hole down to 0402 SMD), Test Equipment (Logic Analyzer, Oscilloscope, Multimeter), Fab Equipment (Sputtering, E-beam), Prototyping (CAD Design, PCB, Assembly), 3D Printing

Experience

Embedded Systems Engineer, Fibra Inc, Toronto, ON, Part time — Feb 2024-Present

- Designed a miniaturized PCB, incorporating design for manufacturing principles (DFM)
- Reduced product size by 50% integrating a small LiPo battery and a Type-C charging port
- Developed an iOS application using Bluetooth Low Energy (BLE) to facilitate user data collection
- Utilized Git for precise code change management throughout the project lifecycle

Hardware Engineer , Torion Plasma Corporation, Barrie, ON , Contract Project — Oct 2022-Feb 2023

- Developed a high precision closed loop stepper motor control system
- Embedded a TMC motion controller IC, achieving a positional accuracy of $\pm$ 0.05 mm.
- Utilized a rotary optical encoder and a 0.9 degree 400 step NEMA17 motor to achieve high precision
- Implemented a compensation algorithm to account for any step losses with an accuracy of 0.2°

Research Assistant , York University, Toronto, ON — 2021-2023

- Fabricated samples of 2D materials using mechanical exfoliation of the crystal flakes
- Deposited a layer of Aluminum on top of the samples and measured the them using FDTR

Teaching Assistant , York University, Toronto, ON — 2021-present

- Provided guidance and support to students in programming courses as a lab assistant
- Fostered a collaborative learning environment that encouraged student success

Publications

Extreme in-plane thermal conductivity anisotropy in Rhenium-based dichalcogenides.

- Sina Tahbaz, Simone Pisana. (2024). Journal of Physics: Materials, 7(1), 015014. 10.1088/2515-7639/ad1d8b

Projects

PID Ball Balancing System - Industrial Control Systems Course Project — Apr 2020

- Designed a ball balancing system using two Arduino boards, a time of flight distance sensor, and a servo motor
- Implemented a PID control algorithm to maintain the ball at the center of a track with an accuracy of $\pm 3\%$.
- Created a user-friendly interface to adjust PID values using three potentiometers, one for each parameter.

Smart RFID Alarm Clock - Personal Project — Feb 2020

- Engineered a smart alarm clock utilizing an I2C OLED display and an SPI MFRC522 RFID reader.
- Programmed the device, using embedded C/C++, to only silence the alarm after detecting a specific RFID tag.
- Implemented ADC for real-time battery voltage monitoring and optimized firmware for ultra-low power consumption.

Education

MASc. in Electrical and Computer Engineering, GPA A , York University, Toronto, ON — 2021-2023

- Thesis: Investigating thermal properties of 2D transition metal dichalcogenides (TMD)s using frequency domain thermoreflectance (FDTR)

BSc. in Electrical Engineering, GPA 3.54/4 , Shahid Beheshti University, Tehran, Iran — 2016-2020

- Thesis Project: Design and simulation of a MEMS logic device for binary neural networks in COMSOL