

Sina Tahbaz

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Skills

- **Languages:** C/C++, Python, Verilog, VHDL
- **Software:** nRF Connect SDK, Altium, KiCad, Keil μ vision, Vivado, HSPICE, MATLAB, LabVIEW
- **Embedded Hardware:** STM32 (CMSIS Bare metal), FPGA, ESP32, nRF5x (Zephyr RTOS)
- **General:** Soldering (Through hole down to 0603 SMD), Test Equipment (Oscilloscope, Function gen, Multimeter), Fab Equipment (Sputtering, E-beam, Polarized Raman), Prototyping (CAD Design, PCB, Assembly), 3D Printing

Experience

- Hardware Engineer** | Torion Plasma Corporation, Barrie, ON | Contract Part-time 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 ± 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
- Research Intern** | Laser and Plasma Institute, Tehran, Iran Summer 2019
- Designed and simulated a high efficiency solar dish Stirling engine using COMSOL multiphysics
- Teaching Assistant** | Shahid Beheshti University, Tehran, Iran 2018-2019
- Mentored students in analog circuit design, specializing in audio amplifiers and CMOS circuits
 - Provided individualized support to help students succeed in course exercises

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