# Samien Rahman

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## Education

**University of Texas at Austin** *Expected* Dec. 2026

Bachelor of Science, Electrical and Computer Engineering | GPA: 3.7

- **Relevant Coursework:** *Computer Architecture, Embedded Systems + Lab, Digital Logic Design, Data Structures + Algorithms, Linear Algebra, Circuit Theory, Signals and Systems, Differential Equations*

## Skills

**Programming Languages**: Embedded C, C++, Python, ARM32 Assembly, Java
**Embedded Systems**: JTAG, I2C, SPI, UART, GPIO, Timers, Interrupts
**Hardware and Electronics**: PCB Design, Oscilloscope, Micro Soldering
**Tools and Platforms**: UEFI/SBIOS, ARM Cortex-M, Linux, Segger Ozone, EDK2, Git, KiCAD

## Experience

**Embedded Firmware Engineering Intern** May. 2025 – August 2025

Lutron Electronics Company *Austin, TX*

- Engineered redundancy communication protocol over GPIO, increasing reliability in daisy-chained system
- Utilized JTAG via J-Link for low-level debugging and memory inspection on ARM Cortex-M3 microcontrollers
- Designed serial protocol via interrupt-driven bit-banging in bare-metal C to redirect backup signals
- Reverse-engineered legacy firmware to maintain backward-compatible message routing

**BIOS Firmware Engineering Intern** Jan. 2025 – May 2025

Advanced Micro Devices *Austin, TX*

- Developed UEFI firmware drivers in C (EDK2) to capture in-band debug telemetry data and transmit to BMC
- Wrote PEI module to collect hardware registers, preserving critical error telemetry via Hand-Off Blocks
- Implemented DXE driver to retrieve and process error telemetry to preserve data for post-reboot analysis
- Created four drivers for EDK2 Redfish Client to transmit captured data to BMC via DMTF Redfish protocol

## Projects

**USB-C Security Key** | *Hardware Design, Cryptography, USB Protocol, C++* Jun. 2025 – Present

- Developing cost-effective FIDO2-compliant security key with USB-C interface for 2FA using STM32 microcontroller
- Designing full PCB layout for compact, USB-powered device using KiCad
- Implementing I2C firmware in C++ to integrate cryptographic operations with dedicated secure element chip

**Wireless Split Ergonomic Keyboard** | *Circuit Design, PCB Design* Aug. 2023 – Jun. 2024

- Developed compact, reversible PCB layout using KiCAD, reducing manufacturing prices by 15%
- Interfaced Bluetooth using custom ZMK shield
- Programmed ZMK firmware to be deployed on Seeeduino Xiao nrf52840 development board

**Astro Party Video Game** | *C, C++, PCB Design, ARM32, Git* Apr. 2024 – May 2024

- Interfaced buttons, ADC, DAC, and an LCD screen to recreate Astro Party game on MSPM0+ microcontroller
- Implemented IO drivers in C and ARM assembly for LCD display over SPI and ADC
- Configured IO interfaces using GPIO for buttons, ADC slide potentiometer, DAC speaker, and LCD screen
- Leveraged edge interrupts and GPIO inputs for physics calculations in game engine

**Home Lab** | *Linux, Python, Apache2, HTML/CSS, Git* Dec. 2023 – Jan 2024

- Repurposed old computer hardware into robust Ubuntu Linux server, managing over 10 services at once
- Programmed Python scripts to convert Markdown and LaTeX notes into suitable files for HTML conversion
- Securely managed terabytes of photography by self-hosting cloud storage, enabling photo sharing with clients