# Samien Rahman

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## Education

**University of Texas at Austin** *Expected* May. 2027

Bachelor of Science, Electrical and Computer Engineering | GPA: 3.6

- **Relevant Coursework:** *Computer Architecture, HDL, Operating Systems, Embedded Systems Design Lab, Data Structures, Algorithms, Linear Algebra, Circuit Theory*

## Skills

**Programming Languages**: SystemVerilog, Verilog, C, C++, Python, ARM32 Assembly, Java
**Embedded Systems**: JTAG, I2C, SPI, UART, GPIO, Timers, Interrupts
**Hardware and Electronics**: FPGA Development, RTL Design, PCB Design, Oscilloscope, Micro Soldering
**Tools and Platforms**: Xilinx Vivado, 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 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

**32-bit RISC-V Pipelined Processor Core** | *Microarchitecture, RTL Design, SystemVerilog* Oct. 2025 – Present

- Designed and implemented 5-stage pipelined RV32I processor core (IF/ID/EX/MEM/WB) in SystemVerilog
- Integrated control unit and distributed decoders for distinct instruction formats
- Resolved data hazards using forwarding logic and handled control hazards via pipeline flushing and stall logic
- Authored self-checking testbench to validate instruction execution against golden reference model

**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