Natanel Roizenman

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Education

University of Waterloo – BASc in Computer Engineering Expected 2027

Skills

Languages: C, C++, Python, JavaScript, SystemVerilog, VHDL

Tools: WinDBG, gdb, Git

Technologies: DisplayPort, HDMI, HDR, Linux Kernel Development, Windows Driver Development

Experience

Associate Engineer (Part-Time), AMD – Toronto, ON Starting Jan 2025

- Leading the development and optimization of display driver features on an upcoming semi-custom product

Driver Engineering Intern, AMD – Toronto, ON Sep 2024 – Dec 2024

- Resolved critical HDR stability issues affecting approximately 7% of configurations, eliminating display corruption and visual artifacts in OLED panels
- Optimized Panel Self-Refresh (PSR) implementation across display panels, reducing display power consumption by up to 15% in typical usage scenarios
- Resolved a 5+ year old backlight management firmware bug on AMD-powered gaming handhelds, enabling full support on Windows
- Implemented and validated HDCP content protection fixes on DisplayPort and DP Alt Mode configurations, reducing related customer escalations by approximately 25%
- Contributed critical display driver stability fixes to both Windows and Linux kernel drivers, significantly reducing system crashes in affected configurations

Driver Engineering Intern, AMD – Toronto, ON Jan 2024 – May 2024

- Optimized DisplayPort compliance testing by automating manual intervention with Python, reducing validation time by more than 50% and saving approximately 20 engineering hours per product launch
- Collaborated with senior developers to quickly debug and resolve critical display driver issues using WinDBG
- Resolved 2x more tickets per week than expected, enabling on-schedule launch of major laptop products

Projects

3D Printed E-Reader

- Developed C++ firmware for an e-paper display, implementing custom I2C communication protocols based on component datasheets with no existing driver support
- Implemented efficient display refresh algorithms and power management systems, optimizing battery life without compromising image quality

Custom Casio Module (WIP)

- Designing a fully custom PCB replacement for the Casio DBC611 calculator watch, including component selection, schematic capture, and PCB layout optimized for minimal power consumption
- Developing an efficient event-based operating system in C for the PIC24 microcontroller, implementing LCD driver interfaces and precise timing control with multi-year battery life

Automated Birdfeeder github.com/nroize/Birdfeeder-Code

- Designed and implemented an embedded system using an STM32 microcontroller for real-time load cell data processing and motor control
- Created efficient firmware in C to handle continuous sensor monitoring and precise mechanical control