Amr El Mantawi

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Education

Pennsylvania State University — University Park, PA
B.S. in Computer Engineering, Minor in Physics — GPA: 3.65 — *Aug 2021 – May 2025*

- Schreyer Honors Program, IEEE-HKN President, Dean's List Recipient
- **Relevent Coursework**: Microprocessors and Embedded Systems, Operating Systems (honors), Computer Architecture, Data Structures and Algorithms, Systems Debugging

Work Experience

Software Engineer — Aug 2024 – Present
Nittany Motorsports — *University Park, PA*

- Developed and debugged embedded C firmware for an RTOS-based STM microcontroller
- Designed and optimized data logging to an SD card integrating real time data acquisition to the cars diagnostics using SDIO and FATFS
- Collaborated with the team to align firmware with overall system requirements
- Currently adding multithreading to enhance system performance

Enterprise SSD Firmware Engineer Intern — May 2024 – Aug 2024
Samsung Semiconductor — *San Jose, CA*

- Developed human readable NVMe-CLI vendor-unique commands in C, providing a simple interface for the user to interact with a drive. This reduced the time and effort previously expended by programmers across the team by omitting the need of the NVMe spec to issue a command
- Created an internal tool using java to track and display missing changes from customer release firmware, improving efficiency and quality control

Research Assistant — Aug 2023 – May 2024
Pennsylvania State University (APUS Lab) — *University Park, PA*

- Utilized graph neural networks in Python to create a dynamic system that models the position of autonomous aircrafts accounting for uncertainties within the system

Computer Engineering Learning Assistant — Aug 2023 – May 2024
Pennsylvania State University — *University Park, PA*

- Mentored students in understanding Verilog, CPU architecture and FPGA design concepts

Engineering Intern — May 2023 – July 2023
PennDOT — *Clearfield, PA*

- Collaborated with PennDOT's Engineering team to update data on PennDOT's Roadway Management System

Projects

UEFI Bootloader | *C, Linux, UEFI, Git* — Oct 2023 – Nov 2023

- Developed a UEFI Bootloader in C, applying knowledge of operating systems and low-level systems programming
- Implemented features for dynamic kernel loading, graphics mode configuration, and memory allocation, ensuring the bootloader's smooth and reliable performance

Dynamic Memory Allocator | *C, Linux, Git* — Jan 2023 – May 2023

- Designed and developed a dynamic memory allocator in C, applying principles of operating systems and memory management
- Implemented memory allocation and deallocation function (e.g. malloc, calloc, realloc, and free) and optimized memory utilization with the use of segregated free lists

Technical Skills

Programming Languages: C, C++, C#, Assembly, Java, JavaScript, HTML, CSS, Verilog, Python, SQL, Shell
Systems & Embedded Development: Linux, Arduino, Raspberry Pi, Object-Oriented Programming, Debugging, Operating Systems, FPGA Design, Embedded Systems
Tools: Git, GitHub, Visual Studio, Vivado, Jira, Unreal Engine, Unity, Multisim, MaxPlus II, Microsoft Office
Languages: English, Arabic