

# Amr El Mantawi

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Computer Engineering junior in Penn State's Schreyer Honors Program with a minor in physics, skilled in C/C++, Python, and Verilog. Actively utilizing graph neural networks at APUS Lab and proficient in operating systems programming, machine learning, FPGA design, and embedded programming.

## Education

### Penn State University

BS, Computer Engineering. GPA: 3.66

Minor, Physics

Schreyer's Honors Program

University Park, PA

Aug 2021 - May 2025

**Relevant Coursework:** Microprocessors and Embedded Systems, Operating Systems, Computer Architecture, Data Structures and algorithms, Quantum Mechanics

## Work Experience

### Research Assistant, APUS Lab

Aug 2023 - Present

- Applied graph neural networks in Python to model complex physics systems within VTOL aircrafts in collaboration with the "Geometric Deep Learning for Dynamics on Graphs" group.

### Computer Engineering Learning Assistant, Penn State

Aug 2023 - Present

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

### Engineering Intern, Penn Dot

May 2023 - July 2023

- Collected and analyzed data for PennDOT's Roadway Management System.

## Projects

### FPS Multiplayer Game

Jan 2022 - Present

- Developed a multiplayer game using Unreal Engine and C++, applying knowledge of data structures, algorithms, networking, and object-oriented programming.
- Implemented peer-to-peer networking via Epic Online Services for seamless player connections and enhanced multiplayer experiences.

### Retro Gaming Console

Aug 2022 - Present

- Designed and built a mobile arcade using a Raspberry Pi and Python, applying knowledge of electronics, embedded programming, and hardware design principles.
- Implemented an I2S signal to output sound from the Raspberry Pi, enabling the arcade to produce high-quality audio output.

### MDADM Memory Manager

Jan 2023 - May 2023

- Created a memory manager program in C, applying knowledge of memory handling, networking, and systems programming.
- Implemented networking support, allowing users to connect to a remote JBOD server and send and receive packets.
- Integrated a cache system within the memory manager, leading to substantial speed improvements by reducing memory access latency.

## Activities & Awards

- Nittany Motorsport, Embedded Programmer 2024-Present
- IEEE-HKN, Member 2024-Present
- ACM, Member 2021-Present
- Dean's List, Recipient 2021-Present
- Coding Club, Vice President 2021-2023

## Skills & Interests

- Technical:** C, C++, C#, Assembly, Verilog, Java, Arduino, Python, Linux, SQL, Shell Scripting, TensorFlow, Git, Object-Oriented Programming, Debugging, Machine Learning, FPGA design, Operating Systems Programming
- Soft Skills:** Teamwork, Adaptability, Critical thinking, Leadership
- Tools:** GitHub, Visual Studio, Vivado, Unreal Engine, Unity, Multisim, MaxPlus II, Microsoft Office
- Language:** English, Arabic