Adam Mouedden

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EDUCATION

University of Central Florida

Bachelor of Science: January 2023 - Present

- **Computer Science Degree |** *Pending Graduation: Fall 2026*
  - Computer Science Tutor
  - UCF Competitive Programming Team Practitioner

EXPERIENCE

ZuLeris Interactive: United States Department of Defense

Software Engineer Intern   February 2025 - Present

Electromagnetic Warfare Virtual Training Environment | *Game Development*, *Unity, C#, **Machine Learning**, PyTorch,*

- Implemented a **custom physics engine** in **Unity and C#** to accurately simulate **radio wave propagation**.
- Developed a custom **GAN model** using **PyTorch** to dynamically **generate adversarial** communications and interference.
- Integrated **LLM-driven** conversational **agents** with voiceover capabilities for user instructions and tutorials.
- Engineered a **scalable software architecture** to integrate with **ZuLeris end product**, potentially improving military training by **25-35%**.

PROJECTS

Project Kestrel: Association of Computing Machinery

A.I. Developer   November 2024 - Present

Autonomous Drone for Cinematic Tracking | ***Machine Learning**, Python, PyTorch, NumPy, Git*

- Developed a **Computer Vision** module that handled occlusion and improved re-identification capabilities by **over 50%**.
- Crafted a multi-object tracking solution through **DeepSORT**, causing a 40% reduction in SORT's ID switching.
- Built a **Convolutional Neural Network** using **PyTorch** to generate appearance based descriptors.
- Utilized the **Hungarian algorithm**, cascade matching, and 8 other **cost association metrics** for multi object tracking.

OrbitAI

Lead A.I. Developer   January 2025 - Present

AI-Driven Satellite Collision Prevention Model | ***Machine Learning**, Python, PyTorch, Unity, C#, Git, Scikit-learn*

- Developing an **ensemble neural network** implementing a **Transformer Neural Network** for trajectory prediction.
- Engineered a **Graph Neural Network** for collision prediction based on probability and distance.
- Integrated real-time satellite data and space debris tracking for improved **predictive collision avoidance**.
- Predictive A.I. reports that, if scaled, OrbitAI could reduce satellite collisions by **10-20%**, especially for mega-constellations owned by **Starlink** and **OneWeb**.

Hack@UCF

Red Team   May 2024 - October 2024

Cyber Defense Competition | *Bash, Python, Linux, Scripting, Penetration Testing*

- Conducted rapid **penetration testing** in a blue team-style competition with **175+ competitors**.
- Attacked and **exploited vulnerabilities** in 5 virtual machines while Blue teams worked to secure them.
- Specialized in breaking services, using **C2 frameworks**, and writing **custom scripts** for exploitation.
- Executed **persistence** techniques and **web exploitation** to maintain access and evade detection.

SKILLS

- **Programming**:   Python | C | C++ | Java | Bash | C#
- **ML Frameworks**:   PyTorch | TensorFlow | Scikit-learn
- **Tools**:   Unity | NumPy | Pandas | Git | Docker

CLUBS & CERTIFICATIONS

- AI@UCF | KnightHacks | **Google Developer Group** | Association of Computing Machinery @UCF Chapter | Hack@UCF
- CompTIA **Security+** Certified.