Maya Wallach

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EDUCATION	**Michigan State University, East Lansing, MI** PhD Physics *July 2024 – Present* **Michigan State University, East Lansing, MI** BS Physics *Aug 2021 - April 2024* Graduated with Honors

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RESEARCH/WORK EXPIRENCE

Michigan State University, East Lansing, MI
July 2024 – Present
Graduate Research Assistant
- Creating an ANN for Geant4 reweighting
  - ANN built from scratch (only using NumPy)
  - Project page: here

FermiLab, Batavia, IL
May 2023 – July 2024
Student Researcher
- Use Machine Learning models for Identifying/Classifiying tracks in a bubble chamber
- Faster R-CNN used for identification and DCGAN for data generation
- Project page: here

IRIS-HEP @ Davidson College, Davidson, NC
May 2022 - August 2022
Undergraduate Fellow
- Track Classification @ AT-TPC using Unsupervised Learning methods
- Presented at the annual Division of Nuclear Physics meeting in 2022

Los Alamos National Lab, Los Alamos, NM
September 2021 - September 2022
Undergrad Research Assistant
- Use computational methods to simulate the k-L turbulance and Rayleigh-Taylor models

Facility for Rare Isotope Beams, East Lansing, MI
August, 2020 – present
Undergrad Research Assistant
- Predicting unstable particle radii using computational methods

	Michigan State University, East Lansing, MI *June 2020 – August 2020* **High School Physics Intern** • Studied Zeeman effect using Python and derivation

NOTEABLE PROJECTS	**KlaudOS** Klaud themed hobby operating system • Double Stage bootloader • Klaud file system • Interupts/FPU support • Interactive shell with commands • Languages: C and x86 asm • Project page: here • Demo video: here **40kAI** A Renforcement Learning Model that plays 10th Edition Warhammer 40k • DQN using PyTorch • Custom Warhammer Gymnasium Environment • Interactive GTK GUI used to train, evaluate, and play against the model • Web scraper to get unit data from Wahapedia using scrapy • Languages: Python, C++, C • Project page: here **Number Station Identification** A program that identifies number stations • CNN used for classification ◦ Built from scratch (only using NumPy) • Interactive GUI made with PyQt5 • Languages: Python • Project page: here **Obsidian-kak** Kakoune plugin for Obsidian integration • Languages: C, KakouneScript • Project page: here **Solved CrackMes** A repo of some crackme's I've solved • Languages: C • Project page: here

HONORS/AWARDS	**Thomas Osgood Award** *Issued April 2024* Given to seniors majoring in Physics and/or Astrophysics for excellence in academics and research.

	University Disinguished Fellowship (UDF) *Issued Feburary 2024* Merit-based annual scholarship of $10,000 for 5 years. Only 40 students receive this award out of an incoming class of around five hundred doctoral students.

SKILLS	**Programming Languages** – Python (5 years), C/C++ (5 years), Bash (1 year), R (3 years), JavaScript (4 years), HTML/CSS (4 years), Rust (1 year), x86 Assembly (1 year) **Frameworks** – Pytorch (3 years), Tensorflow (3 years), scikit learn (3 years), OpenCV (4 years) **Computer Skills** – Linux (Debian and Arch) Operating Systems (4 years), Windows Operating systems (10 years), Git (4 years), Microsoft Office (5 years), LibreOffice (4 years) **Other** – Ghidra (1 year), Radare2 (1 year), IDA Pro (1 year)