

# David Earnest

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<https://earnesdm.github.io> | <https://github.com/earnesdm>

## EDUCATION

### University of Cincinnati

Graduated May 2024

Bachelor of Science, Computer Science

GPA: 4.00

- Primary Coursework: Deep Learning, Machine Learning, Artificial Intelligence, Evolutionary Computing, Theory of Computation, Probability, Complex Analysis, Data Structures, Algorithms

## SKILLS

**Programming:** Python, C++, Java, Prolog

**Frameworks/Tools:** PyTorch, NumPy, Matplotlib, Scikit-Learn, LaTeX

**Operating Systems:** Windows, macOS, Linux

## EXPERIENCE

### Northrop Grumman | Machine Learning Engineer Intern

May 2021 – Aug 2023

- Developed a Deep Reinforcement Learning approach for autonomous control of aircraft/vehicles
- Generated optimal courses of action using Reinforcement Learning and Genetic Algorithms
- Developed method for differentiating human-generated text from Large Language Model generated text
- Optimized sampling code to reduce runtime from 50 minutes to 10 seconds
- Used Large Language Models for decision support
- Completed Large-scale data gathering and processing for Natural Language Processing (NLP) tasks

### Siemens PLM Software | Software Engineer Intern

May 2019 – Aug 2020

- Wrote code to determine and update the orientation of user-placed parts
- Fixed several longstanding bugs in Siemens NX (CAD) code
- Wrote test cases for Siemens NX (CAD) routing code
- Added new UI and functionality to Siemens NX (CAD) application

## PROJECTS (ACHIEVEMENTS)

### Action Space Constraints for Offline Reinforcement Learning | Python

Sep 2023 – Present

- Explored different approaches to Offline RL by constraining the learned policies action space to remove actions unlikely under the behavioral policy

### GA Populations as Ensembles | Python

Apr 2023 – May 2023

- Explored the benefits of treating Genetic Algorithm populations as ensembles

### State Perturbation for Exploration in RL | Python

Apr 2023 – May 2023

- Examined a new approach to using state perturbation as a way to explore in RL

### Proton Collision Detection | Python

Nov 2022 – Dec 2022

- Trained a bidirectional LSTM and U-Net model to predict proton-proton collision points in LHC experiments

### Checkers AI | Python

Apr 2019 – May 2019

- Designed an AI agent that plays checkers using the Minimax algorithm and PyGame

## ACTIVITIES

### Massive Open Online Courses – Student

Jun 2018 – Present

- MITx 6.86x: Machine Learning with Python - From Linear Models to Deep Learning ([Certificate](#))
- MITx 6.431x: Probability – The Science of Uncertainty and Data ([Certificate](#))

## AWARDS & HONORS

Mantei Mae Scholar (Awarded to top ~15 students majoring in CS, EE, or CE at UC)

Aug 2022 – Present

Cincinnatus Scholarship

Aug 2019 – Present

Member of Tau Beta Pi honor society

Aug 2022 – Present

AVAILABLE FOR FULL-TIME: SUMMER 2024