

# Michael Einhorn

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<https://michaeeinhorn.github.io/Portfolio/>

## Skills

- Python, C, C++, C#, Java
- R, SQL, Julia, Bash
- Machine Learning in PyTorch
- CV NLP and RL
- Finetuning large models with Deepspeed
- AWS Serverless Development
- Agile Development
- Test Driven Development
- Refactoring
- Linear Algebra and Differential Equations
- Data Visualization in PyPlot and GGPlot
- Parallel Processing with CPU Multithreading, GPU CUDA, and MPI
- Distributed Computing

## Education

Georgia Institute of Technology, College of Computing, Graduated May 2023

Major: Computer Science, GPA: 3.90

Concentrations: Artificial Intelligence, Modeling and Simulation

Undergraduate Thesis: Benchmarking Federated Reinforcement Learning

## Work Experience:

### Computer Scientist GG-07, US Air Force:

**January 2024 – Present**

Developing a data pipeline in Javascript using Docker Swarm. Working on Test Driven Development, adding test coverage to legacy code, refactoring, and automating deployment with Ansible.

### Stanford Existential Risk Initiative Machine Learning Alignment Theory Scholars:

**Machine Learning Engineer June 2022 – December 2022**

Finetuned Language Models GPT-Neo 1.3B and GPT-Neox 20B with PPO using Deepspeed to play text adventures. Tested KL divergence and prompt engineering. Used a toy model of minGPT to quickly compare mode collapse in RL with PPO and an alternative algorithm.

### Undergraduate Thesis, Georgia Tech COAR Lab:

**Spring Semester 2022 and 2023**

Tested for convergence and linear speedup for Federated Reinforcement Learning using Tabular Q-learning, and Convolutional Networks with PPO. Analyzed results in R with linear regression.

### ML Engineer Intern, Georgia Tech Research Institute CIPHER:

**August 2021 – December 2021**

Developed methods to accurately determine scaling laws for neural networks to predict the amount of data needed and evaluate improvements to scaling laws. Used this procedure to test Resnet with Mixup data augmentation on the CIFAR-10 image datasets, and analyzed data with regression in R.

### AWS Developer Intern, Orca IoT:

**February 2021 – July 2021**

Developed production software for management of construction sites. Developed Serverless APIs with Python using AWS Lambda, and Cloud Formation. Deployed a Yolo model in AWS Neuron which was both more accurate and less expensive than AWS Rekognition analyzing our in-house dataset. Created a marketing tech demo for visualizing object detection boxes with real data in the SQL server. Tested models on edge devices such as the Coral TPU and Jetson Nano.