

ETHAN VERTAL

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📍 : Boston, MA

EDUCATION

B.S. in Statistics and Machine Learning

Carnegie Mellon University

Aug 2020 - May 2024

Pittsburgh, PA

- **Graduated with Honors**
- **Relevant Coursework:** Generative AI, Machine Learning with Large Datasets, Intermediate Deep Learning, Statistical Computing, Statistical Methods in Finance, AI Problem Representation & Problem Solving

EXPERIENCE

Research Apprentice

Carnegie Mellon University

Jun 2023 - Aug 2023

Pittsburgh, PA

- Led team to design a feasibility report and scalable plan for parallelizing a simulation software on a customized AWS-backed cluster infrastructure.
- Researched deploying NetLogo simulations on AWS using EC2, S3 Buckets, and Slurm.

Software Engineering & Machine Learning Intern

CrafterCMS

Jun - Aug 2021 & Jun - Aug 2022

Reston, VA

- Designed and implemented a TensorFlow-based recommendation system web app.
- Analyzed and cleaned data using NumPy, Pandas, and Matplotlib libraries.
- Built an Alexa plugin for enterprise websites in Groovy.

PROJECTS

A New Method of Generating Images

- Led a 3-person team in the implementation of a novel score-based diffusion algorithm for generating numbers, as proposed in an academic paper.
- Authored comprehensive project documentation, including the proposal, midway, and final reports, ensuring clear communication and project milestones.
- Developed and fine-tuned the algorithm using PyTorch, translating complex mathematical concepts from the paper into functional code, achieving a successful first-ever implementation.

Using GPT2 to Analyze Movie Reviews

- Leveraged HuggingFace and PyTorch APIs to improve GPT2-medium's ability to analyze sentiment.
- Implemented a modified linear layer to incorporate LoRA fine-tuning for IMDB movie review sentiment analysis.

Bone Fracture Detector:

- Designed and implemented a deep CNN with residual passes to detect bone fractures from X-ray images using TensorFlow's functional API.
- Leveraged image augmentation, Bayesian Optimization hyper-parameter tuning, and multi-GPU training strategies to achieve 82% testing accuracy.

AWARDS & EXTRA-CURRICULAR ACTIVITIES

- **Carnegie Mellon Men's Soccer Team (2020-2023):** Dedicated 20+ hours per week while balancing a full academic workload. Earned UAA All-Academic and UAA Offensive Player of the Week Awards.
- **Student Athlete Academic Award (2022-2023):** Achieved highest GPA in respective college as a rising fourth year in the Athletic Department.

SKILLS

Languages

Python, R, PostgreSQL, C, Java

Tools & Frameworks

PyTorch, PySpark, AWS, SKLearn, TensorFlow, NumPy, Matplotlib, Tidiverse, W&B