Alex Ali

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Education

New York University Aug. 2022 – Present
B.A. Computer Science *GPA: 3.90*

Graduate Courses: Bayesian Machine Learning, Deep Learning

Undergraduate Courses: Machine Learning, Natural Language Processing, Algorithms, Operating Systems, Vector Calculus, Linear Algebra

Experience

Undergraduate Research Assistant Dec. 2024 – Present
Andrew G. Wilson's Lab *New York, NY*

- Researching inductive biases in attention models for solving linear algebra problems
- Implemented experiments in **PyTorch** and **NumPy** using random matrix theory to test model robustness on synthetic data
- Performed hyperparameter sweeps, debugging, and experiment design to investigate models' ability to replicate iterative algorithms (Krylov subspace, power iteration)

Machine Learning Research Intern May. 2024 – Sep. 2024
Hyperplane, acquired by Nubank *San Francisco, CA*

- Built a credit default prediction model from transaction data using transformer architectures, achieving **3-point AUC lift** over existing baselines
- Explored **foundation model pretraining** for credit modeling using data from **1 million users**
- Developed and parallelized end-to-end **Vertex AI** pipeline for fine-tuning, **reducing train time 5x** across GPU cluster

Projects

NeuralPDE | *Python, PyTorch, GPyTorch, NumPy, Matplotlib* Sep. 2024 - Present

- Developed **Gaussian Process** framework for solving partial differential equations through marginal likelihood optimization
- Implemented **deep kernel learning** for PDE solutions, combining deep neural networks with Gaussian Processes for learnable kernels

RoBERTA Fine-Tuning | *Python, PyTorch, Hugging Face, Google Colab* Sep. 2023 - Dec 2023

- Fine-tuned RoBERTa in **PyTorch Lightning** to classify news articles for potential bias, achieving 87% accuracy and 88% macro-F1 score
- Conducted extensive EDA and data pre-processing in **NumPy**

Yann LeCun Deep Learning Graduate Competition | *Python, PyTorch* Oct. 2024 - Dec 2024

- Worked in team of three undergraduate students to implement joint-embedding predictive architecture (JEPA) model for computer vision task in Professor Yann LeCun's graduate deep learning competition

Technical Skills

Languages: Python, Java, C/C++, SQL
Frameworks: PyTorch, Jax, NumPy, Sci-kit learn, Pandas, Kubeflow, Vertex AI
Tools: Git, Linux, ZSH / Bash, Vim, VSCode, Docker

Honors

- NYU Presidential Honors Scholar Award 2023 - reserved for top 10% of undergraduates
- NYU Dean's List
- National Speech & Debate Assocation - National Quarterfinalist in US Extemporaneous Speaking