Benjamin E. Jordan

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LinkedIn | Website | GitHub

Education

Cornell University
M.Eng. in Computer Science - Concentration in Machine Learning

Rochester Institute of Technology
B.S. in Computer Science - Minor in Music - Presidential Merit Scholarship

Skills

Programming: Python, PyTorch, NumPy, C++, C, CUDA, Scikit-learn, Java, C#, Angular
Other Skills: Git, Docker, Linux, Unit Testing, Agile, LaTeX

Experience

Machine Learning Engineer @ Northrop Grumman **[Feb 2024 - Present]**

- Applied machine learning R&D role
- Finetuned YOLO using knowledge distillation to decrease object detection latency from ~.6s to ~.08s
- Developed a system that uses LLMs to generate executable courses of action (CoA) for drones. The system "learns" without weight updates by saving and doing retrieval over validated CoAs (Voyager).
- Created a written survey of techniques for automated data labeling & generation
- Technologies used include Python, PyTorch, FSDP, Faiss, Docker, Git, Linux, LaTeX

Machine Learning Engineer Intern @ KLA **[May 2023 - Aug 2023]**

- Independently researched and implemented semiconductor defect detection algorithms
- Finetuned and quantized vision transformers for efficient and robust classification with limited data
- Applied bayesian optimization library to tune hyperparameters
- Presented project during poster board session and was invited to give a second technical talk

Software Engineer Intern @ Carestream **[May 2022 - Aug 2022]**

- Developed and maintained C# backend functionality in Carestream's ImageView x-ray software
- Gained professional experience with unit testing, agile, git, large codebases, and OOP design

Research Software Engineer @ RIT - Link To Website **[Aug 2022 - Jan 2023]**

- Re-hired part-time by faculty to develop software for spatial audio research during final semester
- Independently created a program with 3D graphics used for data collection
- Technologies used include Three.js, Angular, and Typescript

Notable Coursework

ML: Large Scale Machine Learning, Machine Learning Theory, Reinforcement Learning, Computer Vision, Numerical Linear Algebra, Deep Probabilistic & Generative Models, Natural Language Processing
Sys: Operating Systems, Parallel Computing, Computer Architecture, Distributed Systems, Networks

Projects

Entropy Audio [Personal] - Link To Website **[Dec 2023 - Present]**

- Used Meta's MusicGen research to create an autoregressive foundation model for audio synthesis
- Created a novel instrument sample dataset, incorporating extensive music theory and production knowledge into text descriptions and other attribute fields
- Trained and deployed a multi-billion parameter autoregressive model on GPU servers, using downscaled training attempts and research papers as a reference for hyperparameters
- Implemented a full stack application using Angular and Firebase to serve model
- Added preference data collection to the UI for future preference optimization (DPO)

Distributed Systems Labs & Framework [Coursework]

- Created a Google Spanner-esque distributed key-value store in Java
- Implemented Paxos for replica group consensus, 2PC to achieve atomic commit for distributed transactions, and dynamic load balancing of shards to handle server reconfiguration
- Implemented the Paxos algorithm according to the paper "Paxos Made Moderately Complex"

GPU Programming Deep Dive [Personal]

- Personal endeavor to solidify knowledge of GPU programming and architecture
- Read the book "Programming Massively Parallel Processors: A Hands On Approach, 4th Edition"
- Implemented CUDA kernels from the book along with their various optimizations

Activities

RIT Varsity Track and Field (15-20 hrs / week commitment) **[March 2019 - Dec 2022]**