Jackson Hall

Machine Learning Engineer / Data Scientist
jacksonthall22@gmail.com ◇ (802) 356-4622 ◇ New York City ◇ GitHub ◇ LinkedIn

Education

University of Vermont Honors College — Burlington, VT
B.S. in Computer Science, GPA: 3.4 — Sep 2018 – Mar 2022

- Honors Thesis: *The Introspective Case Study Framework: Crowdsourced Introspection as a Research Pipeline for Humanlike General Intelligence* (https://tinyurl.com/ICSFr)

Work Experience

Hyperchess.ai — Side project
Founder — Jun 2023 – Present

- Creating a suite of chess improvement tools infused with generative AI
- Designing thoughtful user experiences with a SvelteKit + TS stack
- Building and training HyprGM, a custom multimodal LLM for chess instruction, using open-source parts
- Using computer vision (YOLOv8) to extract chess positions from freely available instructional chess videos, timestamping and aligning each change to the transcript

Mathpix — Full-time
Machine Learning Engineer — Mar 2025 – Oct 2025

- Worked across ML + devops teams to design, debug, train, and monitor OCR models for converting STEM documents to text
- Overhauled chemistry recognition stack (annotation schemas, training targets, validation/error-correction, and test pipelines) to improve OCR of complex organic chemistry diagrams
- Implemented and improved core chemistry parsing/validation features including robust ring/chain detection, recursive SMILES parsing, stereochemistry handling (chiral centers, E/Z), and exports to ChemDraw

Flipmine.com — Half-time
Data Scientist & Machine Learning Engineer — Jan 2024 – Mar 2025

- Using deep learning to improve product matching and recommendation algorithms
- Implementing custom ML architectures and ELT training pipelines from scratch
- Using Docker and nginx to scale backend resources
- Reduced calls to 3rd party APIs by 10x with custom-built cache servers

Dynamic Organics — Full-time
Machine Learning Engineer — Jan 2023 – Apr 2023

- Researched & implemented state-of-the-art ML algorithms for multivariate time-series forecasting and hierarchical reconciliation of forecasts
- Improved mean absolute percentage error (MAPE) by over three percentage points (5% to 1.5%)
- Cleaned and organized data from a ~5TB database
- Designed a custom ML architecture leveraging several datasets, some with a time-series structure and others with graphical or hierarchical structures

Aimchess.com — Full-time
Senior Python Developer — May 2021 – Nov 2022

- Designed chess-specific data structures and graph search algorithms to extract metrics on hundreds of thousands of user chess games while balancing constraints like accuracy, understandability, runtime, and compute cost

Skills

Programming & Tools: Git, Python, TypeScript, Jupyter, C++, Java, Flask, Svelte(Kit), SQL/NoSQL
ML & AI: PyTorch, TensorFlow, Pandas, Numpy, Matplotlib, LLMs, Ollama, Transformer families, Multimodal architectures, RAG, Vector DBs, Embedding spaces, AI/ML system design, Geometric foundations of deep learning and generalization/AGI
Other: Spanish (11yr), Chess (2300+ on Lichess)