David Andrews

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CS student eager to contribute innovative problem-solving skills and deep understanding of computers and programming to drive advancements in AI and gain hands-on experience.

Skills & Interests

Technical Skills: Python, C, Rust, Go, Java, Git, Linux, Docker, AWS, HuggingFace, PyTorch, TensorRT-LLM

Interests: AI, Deep Learning, LLMs, Reasoning, Multimodality, Programming Languages, Digital Logic, System Design

Education

Georgia Institute of Technology, Atlanta, GA: *B.S. in Computer Science* Aug. 2023 – May 2026
GPA: 4.0/4.0
Coursework: Honors Linear Algebra with Abstract Vector Spaces, OOP & OOD, DS & A, Honors Discrete Math, Honors Multivariable Calculus, Perception & Robotics, Probability and Statistics, Honors Algo, Computer Organization and Programming, Systems and Networks, Intro to AI, Combinatorics, Operating Systems

Experience

Undergraduate Research: *Undergraduate AI Researcher* Aug. 2024 - Present

- Working under Professor Chao Zhang to improve LLMs' ability to perform agentic tasks, planning, and reasoning.

DuckAI: *AI Researcher and Engineer* Aug. 2023 – Present

- Currently working with other researchers on PRM-Bench, a process reward model benchmark inspired by OpenAI's PRM-800K which evaluates LLMs abilities as a PRM on domains such as math, science, and programming
- Developed DuckTrack, an application for precise cross-platform computer action data collection, contributing meaningfully to open-ended multimodal computer agent research in the field

Rialtic: *Junior Machine Learning Researcher* June 2022 – Aug. 2023

- Pretrained a decoder-only transformer model to generate realistic, fictional medical claim histories from real data for improved internal testing and public demos
- Significantly improved realism over company's preexisting first-order statistical generation method

Projects

AI Document Analysis June 9 2024 - July 17 2024

- Worked with Aran Komatsuzaki to develop AI agent for multi-hundred page document analysis, improving query response accuracy by integrating ColPali for visual embedding with reranking and GPT-4o for comprehension
- Enhanced answer traceability by implementing source highlighting feature using Azure's document intelligence layout model
- Optimized query-answering strategies, achieving 37% ANLS performance boost on MP-DocVQA benchmark, through comprehensive testing and evaluation of various approaches

AI Photo Album Dec. 18 2023 - Dec. 31 2023

- Created novel local AI photo album app which allows users to privately manage their photos at home
- Uses Meta Imagebind model for accurate semantic search over video, audio, and images
- Scalable to millions of photos with fast USearch vector index, Postgres database, React frontend, and FastAPI backend

RecipeGPT Nov. 17 2023 - Nov. 19 2023

- Created AI agent using GPT-4V and DALLE-3 for AIATL 2023 hackathon that analyzes items in user's fridge and suggest potential recipes which follow user's dietary restrictions and ingredient options

GPT-4 Stack Overflow QA Research Paper Sept. 2022 - June 2023

- Conducted research on newly released GPT-4 model related to its performance on answering Stack Overflow questions based on software developer preferences.
- Showed that GPT-4 answers were equally as preferred or more preferred to human-made answers
- One of the first pieces of research investigating GPT-4's real world performance in the domain of Stack Overflow QA.

Hardware Minesweeper July 2021 – Aug. 2021

- Constructed the first playable Minesweeper game using logic gates, leveraging principles of cellular automata.

Bluebox Computer Dec. 2018 – June 2019

- Designed and built a novel 8-bit computer from logic gates, programming it with applications like the Fibonacci sequence and integrating I/O devices including a keyboard, pixel display, and BCD display.