

JACK SETTLES

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🐙 <https://github.com/jacksettles>

Education

University of Georgia

Doctor of Philosophy in Artificial Intelligence

Jan. 2025 – TBD

Athens, GA

University of Georgia

Master of Science in Artificial Intelligence, GPA: 3.97

Aug. 2022 – Dec. 2024

Athens, GA

University of Georgia

Bachelor of Arts, Double Major: Cognitive Science and Philosophy; Minor: Linguistics, GPA: 3.75

Aug. 2017 – May 2021

Athens, GA

Relevant Coursework

- | | | | |
|---------------------------|--------------------|---------------|-----------------|
| • Artificial Intelligence | • Machine Learning | • Data Mining | • Computational |
| • Deep Learning | • NLP | • AI Ethics | Linguistics |

Experience

Boehringer-Ingelheim

Information Technology Advanced Applications Co-op

July 2024 – December 2024

Athens, GA

- Built and deployed several internal applications/APIs for the company using FastAPI/Streamlit, and using Jenkins and Red Hat OpenShift for CI/CD. Developed a chat-bot using Langchain to take in large text documents, summarize them, and answer questions about it utilizing FAISS as a RAG vector database.
- Developed a binary logistic regression model to detect and reduce waste in the vaccine production process, saving an estimated 2.3M USD annually.
- Improved the above model by implementing an image segmentation model that can assess vaccine ingredients' quality based on their pixel values.
- Developed a linear regression model with XGBoost to predict vaccine potency and allow for better resource allocation, saving an estimated 10M USD annually.

University of Georgia - Exercise Psychology Lab

Research Lab Assistant

June 2023 – April 2024

Athens, GA

- Collected and processed data from Samsung wearable devices after subjects performed physical activities.
- Wrote multiple python files and shell scripts to automatically obtain, format, and filter the data.
- Implemented VADER + BERT based model for sentiment analysis to assess athlete performance pre-competition.

Projects

Knowledge Distillation for Language Modeling | Python, PyTorch, Linux HPC

Dec 2024

- Developed a knowledge distillation pipeline between a syntactic language model and a custom 1.2B param transformer.
- Optimized training by aligning the transformer's predictions with the syntax model's output through KL divergence loss, leading to more efficient learning of syntax and language structure.
- Achieved a lower perplexity with the distilled transformer compared to the non-distilled transformer (17.07 and 17.47, respectively) with less than 40M words of training data
- Distilled model outperformed the non-distilled model on 38/67 of the BLiMP evaluation suite
- Utilized PyTorch's Distributed Data Parallel module to train on a multi-GPU rig.

Response Extractor | Python, LangChain, Streamlit

November 2024

- Developed a large language model (LLM) application for summarizing lengthy documents exceeding the model's context window using MapReduce. Integrated chat functionality and Retrieval-Augmented Generation (RAG) with vector search for enhanced interaction. Built the front end in Streamlit and deployed the application on RedHat OpenShift.

Technical Skills

Languages: Python, Java, TypeScript

Developer Tools: VS Code, Eclipse, Jupyter, Docker, Red Hat OpenShift, GCP, HPC Clusters

Technologies/Frameworks: Linux, Pandas, PyTorch, Scikit-Learn, XGBoost, NumPy, NLTK, LangChain, FAISS, Jenkins, GitHub and Git, Jira, Bitbucket, Streamlit, FastAPI, SegmentAnything (SAM), Next.js

Leadership / Extracurricular

Orangetheory Fitness

Head Coach

October 2017 – December 2023

Athens, GA

- Promoted to head coach after 4 years where I lead a team of 11 other coaches - 2700+ classes taught.
- Hired, trained, and scheduled new coaches for the last 2.5 years/first 1.5 years while in grad school.
- Created an 8 week curriculum covering resistance training, fat loss, basic nutrition principles, sleep, and alcohol intake.