Samuel Maley

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Recent Computer Science graduate seeking opportunities in Software Engineering, Data Science, or Machine Learning.
Proficiency and experience with deep/machine learning algorithms, software development, data science, and research.

EXPERIENCE

Applied Research Lab at Pennsylvania State University May 2024 – Aug 2024
Machine Learning Engineering Intern - Research

Researched image augmentation and object-detection deep-learning pipelines for remote sensing on aerial images
- Investigated the effects of data augmentation on satellite imagery as a distinct data modality in object detection
- Utilized pytorch, CUDA, Meta's Detectron2, and MMDetection to create data augmentation and model training pipelines for overhead image chips to compare each augmentation's effect on accuracy
- Trained several deep learning model architectures for object detection, including: Shifted Window (Swin) transformer, 101-layer Residual Network (ResNet101), and YOLO
- Performed dataset preprocessing to generate COCO style annotations for over 180,000 object instances across 2,800 images
- Automated satellite imagery chipping to create 256x256 pixel image chips from iSAID dataset

Data Science Research Lab, University of Florida Jan 2024 – Present
Undergraduate Research Assistant

Researched various topics in video quesion-answering as part of the DARPA ECOLE project under Dr. Daisy Wang
- Contributed to DARPA's Environment-driven Conceptual Learning (ECOLE) by researching potential improvements to a few-shot classification pipeline for complex video actions
- Implemented Meta's Segment Anything Model (SAM) and Grouding-DINO to isolate and mask objects in videos from a single textual input
- Deployed state-of-the-art computer vision models to analyze object affordances in videos, enabling the prediction of potential action locations
- Created bash scripts utilizing FFMPEG to generate image and video test cases from the STAR dataset

Food & Resource Economics Department, University of Florida Jan 2024 – Present
Software Engineering Intern - Research

Implemented a LLM RAG-based information retrieval system for legal documents under Dr. Xinde (James) Ji
- Developed a framework using LangChain that utilizes Large Language Models (LLMs) and Retrieval Augmented Generation (RAG) to analyze and query large, legal documents
- Implemented scalable, future-proof backend to handle the usage of multiple LLM APIs, including support for 9 different state-of-the-art models
- Automated testing and analysis engine for performing accuracy checks on outputted results
- Deployed Chroma vector database for efficient embedding retrieval for RAG

PROJECTS

PokéGAN: AI-Pokémon Generator | *https://github.com/smaley02/Pokemon-Generation*
- Implemented image generation model, multi-label classification model, and text generation model for the purpose of creating unique, AI-generated Pokemon sprites
- Trained generative adversarial network (GAN) and Denoising diffusion probabilistic model (DDPM) on 100,000 images to create AI-generated images of Pokémon sprites
- Developed convolutional neural network (CNN) for multi-label image classification to predict Pokémon typing
- Trained Long short-term memory (LSTM) Recurrent neural network (RNN) to generate new and unique Pokémon names

MediGator: AI Healthcare Assistant | *https://github.com/bmansour1/Disease-Detecting-Doctors*
- Led a team of 4 as Scrum Master to develop a full-stack Flask/React application with Firebase database integration, Clerk-powered user authentication, and a LLM-powered healthcare chatbot
- Handled Firebase integration and wrote/tested backend methods to post user information within the database
- Utilized Vite and wrote/stylized React components to handle user information input and continual Chatbot information
- Debugged and refined healthcare provider locator tool and ensured connection with Google Maps API

Ancient Latin/Greek Temporal Sentiment Analysis Tool | *https://github.com/smaley02/AI-In-Classics-Sentiment-Analysis*
- As part of a team of 3, implemented a flask/react application that analyzed the sentiment of an inputted latin/greek word over its recorded usage across numerous ancient texts
- Automated the date estimation process of 60,000 textparts using Wikipedia's API and LLM-enhanced scraping methods
- Wrote Flask methods for receiving/calling analysis functions, and React components for stylized functional input/display forms

EDUCATION

University of Florida Dec 2024
*Bachelor of Science in **Computer Science***
- **Major GPA:** 3.51/4.0
- **Relevant Coursework:** Data Structures & Algorithms, Discrete Math, Operating Systems, Database Systems, Machine Learning, Data Science, Software Engineering

Extracurricular Involvement:
- **Filipino Student Association:** Freshmen Engagement Committee; Multimedia Chair
  - Directed a team of 4 over 8 months to create promotional content, boost engagement, and grow social media accounts

TECHNICAL SKILLS

Programming Languages: Python, C++, SQL, Java, JavaScript, HTML/CSS, ECL
Developer Tools/Methodologies: Git, Linux, Jupyter, Docker, Agile, Scrum, Jira
Libraries/Technologies: Scikit-Learn, Keras/TensorFlow, PyTorch, Torchvision, CUDA Toolkit, PIL, OpenCV, Pandas, NumPy, Matplotlib, OpenAI API, LangChain, SLURM, FFMPEG, React, Vite, NodeJS, Flask, Firebase