Kieran Khan

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Education

University of Maryland, College Park — College Park, MD
B.S. Computer Science and Statistics - GPA: 3.7 — *Expected May 2026*

- Dean's List and President's Scholarship Awardee
- **Coursework:** Data Science, Machine Learning, Probability Theory 1 and 2, Advanced Data Structures, Computer Network Security, Sampling Theory, Real Analysis, Computational Methods, Algorithms, Computer Systems

Experience

Aerospace Corporation — May 2024 - Present
Software Engineering Intern — *Chantilly, VA*

- Engineered a data pipeline in **Go** to process heterogeneous satellite telemetry for a ground system testbed.
- Developed a telemetry dictionary using **MongoDB** and integrated downstream services including **MySQL** and **Grafana** for visualization, **Kafka** for logging, and an image repository. Containerized all services with **Docker**.
- Integrated **Federated Machine Learning** into a satellite constellation simulation used for geospatial image classification with **Flower**. Researched automated biasing of datasets.
- Leveraged an internal **Python** library for orbital propagation to determine the orbit of an unknown satellite. Developed a solver using regression and optimization techniques with **NumPy** and **SciPy**.

University of Maryland — August 2024 - Present
Teaching Assistant — *College Park, MD*

- Teaching and grading for CMSC320, "Data Science" under lecturer Maksym Morawski.

U.S. News & World Report — January 2024 – May 2024
Software Engineer — *College Park, MD*

- Built an internal quality assurance application for efficiently managing and validating School ranking data, saving non-technical staff hundreds of hours of manual lookup and cross-referencing.
- Utilized **React** with **TypeScript** for building a robust UI, and implemented **TanStack** query to fetch and cache data from a relational **PostgreSQL** database.
- Presented the product at U.S. News Headquarters to company leadership, including the CTO and lead engineers.

Projects

TestudoAI | *https://github.com/kierankhan/TestudoAI* — August 2023

- Launched an Auto-GPT service where users can interact with an AI agent that unifies University of Maryland's course/section data, grade data, and professor reviews database.
- Built Custom Tools from scratch to leverage API's. Performed prompt engineering to allow the agent to correctly parse user requests. Implemented **Conversational Memory** to have the Agent remember past interactions.
- Utilized **Embeddings**, **Vector Stores**, and **FAISS Similarity Search** to allow the Agent to reference large review data that exceeds the GPT-3.5 token limit.

Python, LangChain, LangSmith, OpenAI, Streamlit, Vector Stores, FAISS, Matplotlib

WillHeSave | *https://github.com/kierankhan/WillHeSave* — February 2024

- WillHeSave is a machine learning project built to predict whether a user will save a song to their Spotify library.
- Performed audio feature extraction using Spotify's API. Built custom fuctions using the Spotipy library to turn playlist links into a labeled **Pandas** dataframe. Set up a 10-fold cross validation train-test split.
- Analyzed the performance of five different classification algorithms with **Sklearn**, optimizing for **precision**. Used **Seaborn** to make a covariance heatmap of features.

Pandas, Sklearn, NumPy, Seaborn, Spotipy, Jupyter Notebook

Technical Skills

Languages: Python, Typescript, Go, Java, C, Javascript, R, HTML/CSS, OCaml
Technologies: Git, Docker, SQL, ReactJS, Node.js, LangChain, Pandas, Numpy, Scikit-learn, TanStack, FastAPI, Kafka

Community & Leadership

App Development Club — August 2024 – Present
Project Lead — *College Park, MD*

- Project Lead for a MITRE sponsored project to build an internal cyber training application. Manage a team of 8+ people, lead meetings, and oversee communication with the MITRE team.

Gamer Symphony Orchestra — Feburary 2023 – Present

- Violinist for the Gamer Symphony Orchestra, playing video game music custom-arranged for a full orchestra.