ZAIN JERATH

(202) 480-6263 ◆ zainjerath2024@u.northwestern.edu ◆ Linkedin ◆ Github ◆ Portfolio

EDUCATION

Northwestern University **Evanston, IL**
B.S. in Computer Science, Minor in Data Science *June 2024*

- **GPA**: 3.7
- Relevant Coursework: Data Structures and Algorithms, Operating Systems, Computer Networking, Full Stack Software Engineering, Rapid Prototyping for Software Innovation, Introduction to AI, Machine Learning

PROFESSIONAL EXPERIENCE

NASA **Greenbelt, MD**
Software Engineer Intern *July-Sep 2022*

- Supported the Global Modeling and Assimilation Office in the maintenance of GEOS software infrastructure.
- Built images using Docker and Singularity to package and test a model used by over **200** GMAO employees.
- Developed containerized models to run on both M1 MacBooks and the NCCS Discover Cluster.
- Optimized speed of isolated build and run in user spaces by **53%** by utilizing Kubernetes and AWS.

NASA **Greenbelt, MD**
OMPS Intern *June-Sep 2021*

- Devised Python scripts that modeled LiDar data alongside satellite data in order to detect UV-absorbing aerosols.
- Automated the retrieval of **4000+** aerosol profiles in order to estimate vertical distribution of Saharan dust.
- Improved data collection from 2-D to 3-D by combining tropospheric aerosol profiles with spacial satellite data.

NASA **Greenbelt, MD**
OMPS Intern *July - Sep 2019*

- Enhanced the visualization of Ozone Mapping and Profiler Suite measurements through NumPy and Matplotlib.
- Created a Python model to filter radiance data that improved cloud detection techniques with **98.2%** accuracy.

RESEARCH

AI at Northwestern **Evanston, IL**
Research Assistant *January 2023 - Present*

- Conducting research on the advancement of Artificial Intelligence in both theory and practice.
- Investigating **a new strategy** of bias estimation in neural network development for causal inference modeling.
- Leveraging computational learning theory with probabilistic graph models to conduct correlation analyses.

PROJECTS

NBANewsletter **May 2023 - Present**

- Led a **team of 7** in developing a language model platform that revolutionizes basketball insights.
- Integrated Django, Next.js, and the NBA and OpenAI APIs to feed the model real-time data and sportsbook lines.
- Boosted scalability and performance by incorporating Selenium, Firebase, Google Cloud, and RESTful principles.

SignSense **March 2023**

- Generated a real-time sign language detector by leveraging Tensorflow's Object Detection module with Python.
- Collected over **150** images of ASL hand poses and employed LabelImg to annotate for training and testing.
- Incorporated transfer learning to train a **deep learning** model and detect in real time using PyTorch and OpenCV.

MusicPlayer **October 2022**

- Programmed an Apple Music/Spotify clone that reached **30+ daily users** using Next.js, React, and Tailwind CSS.
- Implemented authentication with Middleware and NextAuth, enabling playback through Spotify API integration.
- Introduced Recoil Atoms to optimize state management when switching between playlists and songs.

TECHNICAL SKILLS

Programming Languages: Python, C, C++, C#, Java, SQL(My, Postgres), JavaScript, Ruby, Typescript, HTML, CSS
Technologies/Frameworks: Git, AWS (EC2, Lambda, S3), Linux, Docker, Bash, React, Django, Node.js, Npm, CLion
General: AI, Web Development, Robotics, REST APIs, Embedded Systems, Cloud Infrastructure, Machine Learning