Alan Mu

https://xiaohanmu.github.io/

Email : xm24@illinois.edu
Mobile : +1-217-305-3796

Education

- **University of Illinois Urbana-Champaign** — Urbana, IL
  B.S. in Computer Science & Geography and GIS; GPA: 4.0/4.0 — *August 2022 – May 2026*
  - **Coursework**: Discrete Structure, Data Structure, Computer Architecture, Algorithms & Models of Computation, Computational Photography, Machine Learning, Computer Systems, Database Systems, Programming Languages and Compilers, Probability and Statistics, Spatial Analysis, Geographic Information Systems.

Programming Skills

Languages: C++ (Advanced), Python (Advanced), C, Java, SQL, JavaScript, HTML/CSS
Technologies: Linux, Docker, REST APIs, MongoDB, NodeJS, React, Spring Boot, Redis, Git

Experience

- **ZTE Corporation** — Nanjing, China
  Software Engineer Intern — *May 2024 - August 2024*
  - Collaborated in a team to define the **Text2APIAgent** and the **ExecApiAgent** to execute the fault diagnosis and validate mock API interactions.
  - Conducted **Mock Tests** for **Fault Diagnosis API**. Defined **Mock API endpoints**, implemented asynchronous functions to handle API calls and responses in a **distributed system environment**. Created **callback functions** to validate request payloads and return predefined JSON responses.
  - Accomplished a 16% reduction in **Large Language Model (LLM)** response time by engineering an API filtering mechanism with the **SelectFunction** to select relevant APIs based on user input, and parsing and storing the selected API names and parameters for further validation.
  - Conducted **pipeline optimization**, reducing latency by 9% by refining the fault diagnosis workflow and embedding prompt placements into the automation pipeline. Employed **Agile development methodologies** to expand API accessibility.
- **PURE | UIUC** — Urbana, IL
  Research Assistant — *August 2023 - December 2023*
  - Developed **correlation analysis** using **R** to examine the relationship between anxiety levels and key nutrients, ensuring data accuracy and relevance through **data cleaning** and preprocessing methods.
  - Conducted **PCA analysis**, creating **correlation matrices** and **biplot visualizations** with **ggplot2** to identify cluster patterns and enhance visualization.
  - Identified a significant relationship between anxiety levels and sweeteners with a **p-value of 0.015** by performing **multilinear analysis** and **ANOVA**, and applying the **Tukey-Kramer Test** and **Kruskal-Wallis Test**.
- **UIUC Datathon** — Urbana, IL
  Team Leader — *March 2023*
  - Analyzed time-to-event data from 20,000 bank users, applying preprocessing techniques using **Pandas** and **NumPy**.
  - Developed machine learning models including **Random Forest**, **Gradient Boosting Machines** and **Cox Regression Survival models** to deliver charge-off rate predictions.

Projects

RunTrack (Startup Project)| UIUC — *August 2024 - Present*
- Designed the data model using **UML diagrams** to structure entities and relationships, and implemented a **MySQL database** on **Google Cloud Platform** for a running app, supporting over 10,000 users.
- Achieved a 35% reduction in query execution time through **MySQL B+tree indexing** of key attributes (UserID, EventID).
- Collaborated in a team to design and develop a user-facing app using **React**, enabling users to track running sessions, view progress, and manage profile data.

Time-based Blind SQL Injection Vulnerability Reproduction (CVE-2024-22120) | UIUC — *June 2024*
- Configured a controlled **Docker** environment to replicate the **Zabbix** server, an open-source monitoring platform.
- Utilized knowledge in **IP addressing** and **network protocols** to identify server endpoints, manage container communication, and execute crafted network requests for the **SQL injection**.
- Decoded session ID and executed a time-based blind SQL injection exploit on an **Ubuntu** Docker image, extracting admin session details and gaining unauthorized access to the system.

EasyShare | UIUC — *March 2024*
- Developed a file and message sharing web application using **Node.js** and **Express.js**, managing real-time requests through **asynchronous functions** and **RESTful API endpoints**. Utilized **Multer** for handling file uploads.
- Designed a responsive UI with **Bootstrap**, implementing client-side file selection, validation, and messaging.
- Deployed the application on **AWS Elastic Beanstalk**, automating deployment pipelines with **AWS CLI** and leveraging **Docker** for containerization.