Caleb Z. Yu

[redacted] | [redacted] | github.com/calebzyu | linkedin.com/in/calebzyu

EDUCATION

University of Maryland, College Park — College Park, MD
B.S. in Computer Science — *Expected May 2027*

GPA: 3.93 / 4.00
Courses: Algorithms, Web Application Development, Organization of Programming Languages, Discrete Structures, Computer Systems, Object-Oriented Programming, Probability Theory, Multivariable Calculus, Linear Algebra

EXPERIENCE

Research Assistant — Sep. 2024 – Present
University of Arkansas at Little Rock | *Advisor: Xiaowei Xu* — *Remote*

- Exploring large language models (LLMs) and their applications, including prompt engineering techniques and multi-agent systems.

Research Intern — May 2024 – Aug. 2024
National Center for Toxicological Research, Food and Drug Administration | *Mentor: Huixiao Hong* — *Jefferson, AR*

- Developed a random forest machine learning model using Python and scikit-learn to predict human sex hormone-binding globulin (hSHBG) binding affinity with chemicals, achieving a model accuracy of over 90%.
- Curated chemicals from literature and the ChEMBL database and computed their molecular descriptors.
- Used pandas to preprocess binding affinity data and extract features from over 700 molecular descriptors.
- Conducted cross-validated grid searches for hyperparameter tuning to optimize model performance.
- Visualized model performance and optimization results using Matplotlib, enabling clear communication of results and insights to other research scientists.

Math Tutor — July 2023 – May 2024
Central Arkansas Library System — *Remote*

- Delivered personalized, one-on-one tutoring sessions for high school students in algebra and geometry through the grant-funded Count Up program.

PROJECTS

Spotify AI Playlist Generator | *Python, Flask, JavaScript, HTML/CSS, Spotify API, LLM* — GitHub

- Developed a web application to generate Spotify playlists from natural language prompts.
- Leveraged a large language model (LLM) to optimize search queries and implemented Spotify OAuth to access user playlist data.
- Utilized Flask for back-end development and created a responsive front-end with JavaScript and HTML/CSS.

Seashell | *C, Unix* — GitHub

- Designed and built a Unix shell in C, incorporating key features such as command execution, input/output redirection, and built-in commands.

TECHNICAL SKILLS / PERSONAL

Programming: Python, C, Java, JavaScript, HTML/CSS, OCaml, x86-64 Assembly, MATLAB, LaTeX
Technologies: scikit-learn, pandas, Matplotlib, Jupyter Notebook, Flask, Express, MongoDB, Unix, macOS, Git, Microsoft Office
Languages: English (fluent), Chinese (intermediate)
Interests: Playing violin, classical music, weightlifting, swimming