

# HAYLIE WU

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## EDUCATION

**Northwestern University - BA in Computer Science & BA in Flute Performance**

June 2020 - June 2024

- Coursework: Algorithm & Data Structure, Networking, Database, Operating Systems, Agile Development, Software Architecture

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## PROFESSIONAL EXPERIENCE

**MathWorks - JavaScript, MATLAB, C++, Node.js, Express, MongoDB**

June. 2023 – Sep. 2023

*Software Engineer Intern*

- Created from scratch a 2-dimensional combinator Excel parser for SIMULINK Test signal inputs in MATLAB, an industry first. This innovative parser detects and highlights structural inconsistencies, providing custom Excel formats and streamlined error handling and visualization, and includes a user-friendly editor to create and edit Excel test cases that are syntactically correct by construction.
- Implemented two full-stack enhancements for MATLAB Test Manager's 2024a release, including persistent session configurations and advanced keyword filtering. Reinforced features with unit and integration tests, achieving 90% code coverage.
- Developed a global asynchronous data initialization tool, centralizing scattered initialization processes across different AMD modules, which enhanced code maintainability, reduced redundancy, and accelerated development by allowing for cleaner code structure.
- Implemented a customizable point system for an internal bug tracking tool, transforming a frontend-only tool into an agile, efficient back-end system with database that empowers the team to prioritize bugs according to a tailored point system.

**NetLogo Web - TypeScript, Svelte, CoffeeScript, Ractive.js, HTML, CSS**

Sep. 2022 – June. 2023, part time

*Software Engineer Intern*

- Developed an open-source code editor package tailored for the NetLogo language to accommodate the release of CodeMirror 6. Seamlessly integrated functional APIs, parsers, and auto-completion features and integrated it into NetLogo's web platform.
- Developed a robust drawing tool allowing users to design, draw, or import shapes to create custom tokens, coupled with a responsive token library for managing simulation icons. The tokens are serialized into JSON, offering a unique customization solution that enhances user engagement by 15%.
- As part of a team, developed 'ChatLogo,' the natural-programming language interface of NetLogo powered by GPT-4, providing interactive and intuitive guidance during coding.
- Streamlined development processes by establishing an automated workflow, implementing comprehensive automated tests, and building a robust CI/CD pipeline using Github Actions, reducing development cycle time by 30%.

**SKUY (Mobile App) - React Native, Flask, PostgreSQL, Python, Javascript, Heroku, Firebase**

May. 2022 – May. 2023, part time

*Lead Backend Software Engineer*

- Spearheaded the design and development of a robust backend and essential frontend features, leading to a 25% increase in user retention. Also introduced dynamic content through web scraping, engaging 200+ new active users.
- Improved application performance through strategic optimizations, including lazy loading, pagination, and backend API redesign, achieving a 30% reduction in load time.
- Led the transition from Heroku to Firebase, ensuring a seamless user experience and 100% data integrity through meticulous backend reconfiguration and complex data migration.
- Demonstrated leadership by streamlining deployment, app launch/updates, authoring comprehensive documentation, and reducing new team member onboarding time by 50%, fostering a more efficient and collaborative environment.

**Algorithm Design Research – Python, Gurobi**

Jun. 2022 – Sep. 2022

*Research Intern*

- Developed and implemented algorithms for active-time scheduling on heterogeneous machines, achieving a 76% lower bound via lazy-activation approximation and dynamic programming approaches.

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## PROJECTS

**"Marketplace" - Node.js, React, Redux, Express, Firebase, MongoDB, AWS EC2, Cloudinary, Passport.js**

- Engineered an innovative full-stack Marketplace App, featuring advanced functionalities like real-time messaging, search/filter functionality, and image management, providing a comprehensive and user-friendly shopping platform.

**"VisualQuery" - AWS EC2, AWS S3, AWS RDS, SQL, lambda, React**

- Leveraged Amazon EC2, RDS (SQL), and Lambda functions to develop an image storage application integrated with a chatbot, enabling user queries, metadata-based search, and image content filtering within the S3 storage environment.

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## SKILLS

- **Languages:** Python, JavaScript, TypeScript, C, C++, Java, HTML, CSS, Bash, C#, SQL, MATLAB.
- **Frameworks & Libraries:** React, React Native, Node.js, Express.js, Flask, Svelte, Ractive.js, jQuery.
- **Tools & Platforms:** Git, Heroku, AWS, Azure, Firebase, Unity, MongoDB.