Morgan(Haiyue) Liu

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EDUCATION

University of Wisconsin-Madison Madison, WI
B.S. in Computer Science, and Cartography and Geographic Information Systems (3.7/4) *Sept. 2021—June.2026*

SKILL

Languages: Java, Python, JavaScript, Kotlin, C/C++, C#, Rust, SQL, HTML, CSS, MATLAB
Tools: Linux, Node.js, React.js, Vue.js, Express.js, Git, GCP, Spring Boot, JavaFX, FXGL, Unity, PyTorch, Langchain, MongoDB
GIS Tools: ArcGIS Pro, QGIS, Leaflet, maplibre

EXPERIENCE

Spatial Computing and Data Mining Lab at UWM May 2023—present
Research Assistant and Website Developer *Madison, WI*

- Full stack developed an interactive dynamic map web application with functional API service handling users' requests.
- Dominated website development and UI design, continuously upgrading website and services according to needs of the research team and USDA clients.
- Deployed machine learning models based on mass historical crop yield data and ran inference on cloud processing users' selected ROIs.

Byte Dance May—Aug 2023
Software Development Engineer and AI Model Training Intern *Beijing, China*

- Contributed to LLM development in China, and participated in data processing and dataset building.
- Worked on data collection by scraping, and ensured data quality through data cleaning, data fusion and data augmentation.

PROJECTS

USDA Crop Yield Prediction and Dissemination Website | *Fullstack, JS, HTML, Vue.js, MySQL* May 2023—present

- Developed n interactive, dynamic website for geo-visualization of crop yield predictions.
- Use Vue.js to rebuild responsive and high-performance front-end.
- Deployed backend with RESTful API serves, allowing users to request data ad hoc and integrating deep learning models into the website.
- Managed an SQL database (PostgreSQL/MySQL) for dynamic data storage and retrieval.

Fans' Derivative Room Design Game ("Xinzhiju") | *Java, JavaFX, FXGL* May 2024—present

- Developed an indie cross-platform mini-game with Java that allows players to extend room design experience from the original game, providing greater creative freedom.
- Adept at game development workflow with game engine FXGL. UI design and implementation with a common UI framework like JavaFX.
- Develop a community platform for users to register and share. Used a Postgres database managing users' design.

GitHub Issue Hound | *Python, Langchain, vector database, RAG* Sept. 2023—May 2024

- Developed a system to automate bug discovery and analysis in GitHub repositories, increasing users' contributions.
- Built a Retrieval-Augmented Generation (RAG) system using LangChain's Multi-Agent workflow and a vector database, demonstrating proficiency in designing and implementing LLM-driven applications.
- Implemented knowledge base management, enabling automated scraping and analysis of GitHub repositories to extract and assess project issues, files for bug identification.
- Incorporate advanced multi-step reasoning techniques to conduct issue analysis, improving the precision of bug detection and root cause identification.

PUBLICATIONS

Yang, S., Liu, H., Wang, X., Wu, M., Zhang, Z., Yang, Z., Huang, Q. A Cyber-agricultural System for Automating Near Real-time Crop Yield Prediction and Dissemination. *Computers and Electronics in Agriculture.* UW-Madison; USDA National Agricultural Statistics Service.