SHENG WANG

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EDUCATION

University of Iowa — **Iowa City, IA** — **May 2025**
Master of Science in Electrical and Computer Engineering
Focus Area: Software Engineering

University of Iowa — **Iowa City, IA** — **May 2022**
Bachelor of Science in Chemical Engineering
Focus Area: Computation, Data Science, and Machine Learning

TECHNICAL SKILLS

- **Languages**: Python, Java, Ruby, TypeScript, JavaScript, C++
- **Frameworks**: React, React Native, Django, Spring Boot, Node.js
- **Cloud & DevOps**: AWS(Elastic Beanstalk, Lambda, EC2, S3, CloudFront), Docker, GitHub Actions
- **Databases**: PostgreSQL, Redis, MongoDB, DynamoDB
- **Tools**: Github, Jira, Figma, Agile/Scrum

EXPERIENCES

University of Iowa — **Iowa City, IA** — **Feb 2022 – May 2025**
Graduate Research Assistant

Designed, built, and deployed production-ready sensor used across 5 states, supporting 600+ deployed units.

Air and Soil Sensor Development

- Led **full-stack development** of a IOS dashboard for monitoring and purchasing air/soil sensors, using **React Native + Django**, deployed via **AWS Elastic Beanstalk** with **CloudFront**. The frontend is deployed on **TestFlight**.
- Reduced backend latency by **80%** using Redis caching and Celery for async tasks, improving **UX responsiveness** and supporting **real-time data visualization** for field technicians.
- Introduced structured **CI/CD pipelines** via **GitHub Actions**, enabling automated testing and deployment across production environments and achieving over **85% code coverage** on both backend and frontend.
- Worked cross-functionally with 3D designers and hardware engineers to ensure seamless integration between software and physical sensor systems. Co-developed robust sensor enclosures to improve installation stability and usability in the field.
- Enabled consistent nationwide sensor operations with **<4% annual failure rate**, contributing to long-term reliability and scalability of the hardware-software ecosystem.

Improvement of Satellite Surface Temperature Resolution

- **Enhanced MODIS LST spatial resolution from 1 km (~5×5 pixels per scene) to 100 m (~50×50 pixels per scene)** using a self-developed convolutional neural network (CNN) model trained on multi-source satellite datasets (Landsat, MODIS, Sentinel), land-cover types, and elevation data. Achieved high accuracy validated against Landsat ground truth **(R^2=0.982, BME=1.284, RMSE=1.59)**. Trained the deep-learning-based model on **HPC clusters**, enabling scalable and efficient satellite data processing across large geographical regions.

Publication: S. Wang, J. Wang, L. Garcia, X. Qiao, T. Rose, and C. Reuben, Improvements of a smart-and-connected low-cost sensor system for measuring canopy properties in the central U.S., FRP.P19.4, IGARSS 2023, Pasadena, 16 - 21 July 2023.

PROJECTS

Project: Online AI-Generated RPG Game

A browser-based multiplayer RPG powered by GPT, deployed as SaaS MVP.

- Integrated OpenAI ChatGPT API to generate dynamic game content in real-time, building a **scalable** backend in **Ruby on Rails** and secure login/payment flow.
- Led implementation of SSO login and IP-based payment verification, ensuring both compliance and user onboarding efficiency.
- Practiced **TDD & BDD**, achieving 85%+ test coverage and reducing production bugs on Heroku.
- Conducted MVP demo sessions bi-weekly, incorporating live feedback into sprint planning and iterative feature design.
- Demonstrated ability to ship a creative, API-heavy product from scratch, balancing experimentation with real-world deployment considerations.

Project: UX for AI-Powered Learning Assistant

React Native app enhancing textbook reading with AI-generated highlights, notes, and content recaps.

- Focused on productization by building features based on user interviews (n=15) and usability testing.
- Developed core features, such as PDF reading, annotation, and AI-driven recommendations, using **Figma**(Prototype), **React Native**(frontend) and **Django**(backend).
- Designed and **iterated UI/UX**, improving accessibility and engagement based on user feedback.