

# Erika Sy

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## EDUCATION

University of Wisconsin - Madison | B.S. in Computer Science

May 2026

Coursework - Operating Systems, Algorithms, Artificial Intelligence, Honors Computer Graphics, Machine Organization & Programming, Theory of Probability

University of Illinois - Chicago | B.S. in Computer Science

Aug. 2022 - May 2024

Coursework - Software Design, Data Structures, Programming Practicum, Calc 3, Linear Algebra, Physics 1

## SKILLS

Languages: Python, C++, C, Java, JavaScript, TypeScript, HTML, CSS, R, SQL

Frameworks & Libraries: TensorFlow, Keras, PyTorch, FastAPI, React, Next.js, TailwindCSS, scikit-learn, OpenCV, Matplotlib

Tools: Git, Docker, PostgreSQL, Redis, Vercel, Conda, Postman, Figma, Power BI, Unreal Engine, Snap Lens Studio, SolidWorks

## EXPERIENCE

University of Wisconsin - Madison | Undergraduate Research Assistant

Sep. 2024 - Present

- Using **evolutionary search** optimization using **CMA-ES** and **parallel computing** through **CHTC** to identify optimal reward function weights for **RL** agents.
- Performed robotic motion analysis in **SimRobot** to optimize gait patterns, enhancing walking speed, stability, and responsiveness in simulation.
- Used **Unreal Engine 4** to generate high-fidelity **synthetic data** for enhancing a robot's **computer vision** in real-time, for referee hand **gesture detection**.

NASA - NPWEE | Lead Software Engineer

Jan. 2025 - May 2025

- Led technical direction for **GMAPS**, a mission scheduling tool enhancing **NASA Gateway's** autonomy with **AI-driven** planning and fault prediction.
- Designed the tech stack (React, FastAPI, PostgreSQL, Docker, OR-Tools) and managed a team of **4** across frontend, backend, and ML components.
- Created a **12-month** roadmap with **Agile** sprints and **Gantt** milestones; assigned writing and dev tasks for proposal and prototype phases.
- Co-authored a **15+** page technical **proposal** outlining system architecture, **AI** contingency planning, and **UI/UX** design for human-in-the-loop ops.

Snap Inc. | Augmented Reality Development Extern

Sep. 2024 - Nov. 2024

- Developed **4 interactive lenses**, including a **multi-user** Halloween costume lens with synchronized **3D animations**, **custom scripts**, and **spatial tracking**.
- Presented technical design, creative vision, and use-case applications to Snap engineers during the final extern showcase.

Headstarter AI | AI Software Engineering Fellow

Jul. 2024 - Sep. 2024

- Engineered **5+ AI** applications and APIs using **React**, **Next.js**, **OpenAI**, **Pinecone**, **Node.js**, **Vercel**, **Scikit-learn**, and **Stripe API**.
- Managed the project lifecycle from design to development, implementing MVC design patterns to ensure robust and scalable solutions.
- Received coaching from Amazon, Bloomberg, and Capital One on **Agile**, **CI/CD** processes, **Git** version control, and microservice architecture.

AbbVie | Business Technology Solutions Intern

May 2024 - Aug. 2024

- Identified and implemented **end-to-end automation** opportunities within the ServiceNow platform to enhance efficiency and reduce operational costs.
- Led **8** employee workshops, used **Spreadsheets** to document **12** processes, and utilized **Visio** to map out **5**.
- Assisted in rebranding and rebuilding the AI landing page from scratch, including information and resources about AI, and presented our MVP 1 to a **VP**.
- Conducted **3** smoke tests using **Postman** and compared **Claude**, **Iliad**, **Gemini**, **Llama 4**, and **GPT-4** to build a robust prompt engineering library.

KPMG | Seasonal Advisory Intern

May 2023 - May 2023

- Designed a sustainability rewards app prototype in **Figma** to help KPMG reach its **net-zero** carbon emissions goal by 2030.
- Built stakeholder-facing dashboards in **Power BI** and **Excel** to visualize travel mode trends, CO<sub>2</sub> savings, and reward eligibility for green incentive planning.

## PERSONAL PROJECTS

[Path-Mind](#) | Arduino, C++, Python, Q-Learning, PyTorch, Matplotlib

Mar. 2025 - Present

- Built a robot with **ultrasonic** and **IR sensors** to autonomously solve mazes, using **C++** firmware for motor control, sensor fusion, and serial communication.
- Developed an offboard **Q-Learning** agent in **Python** and **PyTorch** that learned optimal navigation strategies through exploration and reward feedback.
- Visualized agent trajectories in **Matplotlib** and benchmarked performance against heuristic wall-following, reducing average completion time by **23%**.

[Hustle Hub](#) | Python, TypeScript, Next.js, TailwindCSS, FastAPI, PostgreSQL, Redis

Mar. 2025 - Present

- Making a **FastAPI** backend with **PostgreSQL** and **SQLAlchemy**, adding secure **JWT** login, form-based auth, **protected API routes**, and token validation.
- Developed task creation, reactions, and dark-themed **UI** using **Next.js**, **Zustand**, and **TailwindCSS** for smooth cross-platform **UX**.
- Integrating **WebSocket** live task feed (via Redis pub/sub), streak leaderboards, push reminders, friend circles, and a mobile app via **React Native**.

[PlantDocNet](#) | TensorFlow, Keras, MobileNetV2, scikit-learn, Python

Apr. 2025 - Apr. 2025

- Trained a deep learning classifier using **MobileNetV2** on **20K+** leaf images from a dataset, achieving **89.1%** validation accuracy across 16 disease classes.
- Designed a full **ML pipeline** with image augmentation, data splitting, transfer learning, and early stopping to ensure stable convergence.
- Assessed performance using **scikit-learn** metrics (accuracy, precision, recall, confusion matrix) to analyze model robustness and class balance.

[Digital Hand Pen Whiteboard](#) | Python

Aug. 2023 - Apr. 2024

- Created a gesture recognition whiteboard using **MediaPipe**, **OpenCV**, and **PyCharm** that enabled real-time interactions with a **90%** accuracy rate.
- Participated in solution-oriented team discussions and mentor-led reviews to refine the application's functionality and user experience.
- Showcased the project's innovation and practical applications capabilities at a comprehensive poster session and the **ERSP national conference**.

## LEADERSHIP & AWARDS

Women in Computer Science | Newsletter Chair

May 2023 - May 2024

- Published **10** bi-weekly newsletters highlighting events, workshops, internship opportunities, and member spotlights to boost engagement.
- Supported logistics for **13** events, **3** fundraisers, and the annual Women in Tech Week by managing setup, cleanup, and live coverage.

SparkHacks | Organizer

Sep. 2023 - Feb. 2024

- Orchestrated a student-run **hackathon** that had **300** participants collaborate, innovate, and compete over **24** hours and a series of **4** prompts.
- Coordinated with judges on the hackathon's objectives, criteria for evaluation, and the support needed to carry out their roles effectively.
- Co-led** and managed logistics for a Mario Kart tournament with **25** participants to foster community engagement and provide a fun break.

Code Your Dreams | Ideathon

Apr. 2023

- Won the **Best Community Outreach Award** for a **search-enabled calendar** that displays STEM events to help engage underrepresented groups.