Erika Sy

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EDUCATION

University of Wisconsin – Madison | B.S. in Computer Science, Honors program   Minor: Mathematics   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

AbbVie | Business Technology Solutions Intern   May 2025 – Present
- Implemented **Neo4j** to automate the mapping of document processes, reducing manual tracking and saving the company time and resources.
- Developed an **AI**-driven onboarding and knowledge retention system designed to streamline team transitions, reduce stress, and enhance productivity.
- Created a **Python** script to extract and analyze keywords from spreadsheets, expediting information retrieval.

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 script**s, and **spatial tracking**.
- Presented technical design, creative vision, and use-case applications to Snap engineers during the final extern showcase.

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_2 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

**MadHacks	Organizer**	Apr. 2025 – Present	**SparkHacks	Organizer**	Sep. 2023 – Feb. 2024
• Currently organizing a 24 hour hackathon.		• Orchestrated a student-run **hackathon** that had **300** participants.	
**LOGICA	Community & Outreach Chair**	Jul. 2023 – May 2024	**Flourish	Organizer**	May 2023 – Sep. 2023
• Co-managed event operations, merchandise, and **6** events		• Flourish was an open-source conference hosted at UIC	
**WiCS	Newsletter Chair**	May 2023 – May 2024	**Code Your Dreams	Ideathon**	Apr. 2024
• Organized **10** newsletters, **16** WiCS events, and **1** woman in tech week,		• Won **Best Community Outreach Award.**	