Zachary McCoy

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EDUCATION

Northwestern University **Evanston, IL**
Bachelor of Science in ***Computer Science***, *Minor in Data Science and Engineering* *Anticipated June 2026*
Institute for Sustainability and Energy Certificate

- **Relevant Coursework:** Data Structures and Algorithms, Design & Analysis of Algorithms, Computer Systems, Discrete Mathematics, Software Construction, Generative AI, Machine Learning, Scalable Software Architectures, HCI Studio
- **Activities:** Responsible AI Student Organization, Engineers for a Sustainable World, The Garage at Northwestern, Northwestern Associated Student Government (Committee Lead), Northwestern Baja SAE

TECHNICAL SKILLS

- **Programming Languages:** Python, JavaScript, TypeScript, HTML/CSS, Java, SQL, C++
- **Technologies:** Next,js, Node, React, Tailwind CSS, Firebase, Flask, Pandas, NumPy, OpenCV, AWS, Azure
- **Developer Tools:** Git/GitHub, WordPress, Docker, Postman, PostgreSQL, Cloudflare, Power BI
- **AI:** PyTorch, TensorFlow, Hugging Face Transformers / BERT, OpenAI, NLTK, Milvus (Vector Database)

EXPERIENCE

AI Software Engineer **Evanston, IL**
Spesland Inc. *September 2023 – Present*

- Deployed MySQL on AWS RDS, efficiently managing 10TB+ of complex vertical infrastructure data for LLM training
- Developed a custom RAG system in Python, boosting document retrieval efficiency by 60% and increasing user query speed
- Engineered NLP pipeline using spaCy and NLTK, processing 100K+ texts and improving classification accuracy 25%

Undergraduate Research Assistant **Evanston, IL**
Northwestern tiilt Lab (Gesture-Craft) *August 2023 – Present*

- Analyzed gestural interfaces for educational AI, quantifying cognitive gains in elementary machine-human interaction
- Architected computer vision system using OpenCV and NumPy to detect and classify 20+ gestures via camera input
- Crafted Python-based gesture recognition API, integrating it with Minecraft to create an interactive educational platform

Software Engineer Intern (Data Analytics) **Rolling Meadows, IL**
Gallagher Insurance *June 2024 – August 2024*

- Automated conversion of 1,000+ complex DAX queries to Snowflake using Python scripting, reducing manual effort ~70%
- Trained machine learning model using random forests and linear regression, improving claim forecasting by ~8%
- Implemented RESTful API using Flask and Docker, enabling efficient claim data access and reducing query time by 35%

Software Engineer Intern **Evanston, IL**
Sleek Technologies *June 2023 – June 2024*

- Normalized SQL database schema, eliminating redundancies across 1M+ records and reducing storage requirements by 40%
- Led website redesign with JS, HTML, CSS, and Express.js, adding 30+ UI features and significantly improving SEO ranking
- Utilized Qrvey's embedded analytics to create 15+ interactive visualizations, enhancing client reports and data insights

PROJECTS

Skin Disease Classification Project | *React.js, Next.js, HTML, CSS, Flask, Firebase, Tensorflow, Git*

- Engineered a web app to classify skin lesion images into 8 distinct types, facilitating doctor-patient communication
- Trained a convolutional neural network (CNN) on 10,000+ images of skin diseases to achieve an accuracy of 87%
- Managed Git workflows, orchestrating branch merges for concurrent development across 3 teammates

Stock Sentiment Analysis Project | *Python, BeautifulSoup, Flask, PyTorch, Transformers, SQLAlchemy*

- Created a real-time stock sentiment analysis web application wielding the finBERT natural language processing (NLP) model
- Utilized Finnhub Stocks API to access real-time market data and scraped Google News headlines for over 250 companies
- Leveraged SQLite database to store and manage real-time stock symbols, prices, sentiment scores, and historical timestamps

AutoAquaponics Club Website | *HTML, CSS, JavaScript, React.js, Firebase*

- Constructed AutoAquaponics site using React, improved UX with seamless animations, and reduced load time by 30%
- Implemented Firebase real-time sync with NoSQL listeners, dynamically updating 6 key metrics on the frontend

Web Portfolio | *Tailwind CSS, Next.js, TypeScript, JavaScript, Cloudflare, AWS Amplify*

- Built a Web Portfolio applying Next.js and Tailwind CSS, integrating TypeScript and JavaScript for 10+ enhancements
- Leveraged AWS Amplify for deployment, ensuring seamless updates and scalability for high-traffic periods
- Boosted site speed and security through Cloudflare, attaining 40% faster load times and robust protection against threats