

Wayne Zhou

zzwwayne39@outlook.com | [zz39.github.io](https://github.com/zz39) | [linkedin.com/in/waynezhou39](https://www.linkedin.com/in/waynezhou39) | (206)960-8669

EDUCATION

Northeastern University - Master of Science in Computer Science (GPA 4.0) Expected Graduation - July 2025
University of Washington - Bachelor of Arts in Architectural Design June 2016

WORK EXPERIENCE

Earth & Space Research (ESR) June 2024 - Dec 2024

Software Engineer Intern | *Machine Learning System, Python, Data Engineering, TensorFlow*

- Developed machine learning models to forecast sea ice concentrations in the Arctic Ocean. Improved predictive accuracy by 64%
- Engineered robust **data preprocessing pipelines** for multi-source climate datasets, reducing processing time by 50%
- Optimized model performance through **fine-tuning** and **cross-validation**, resulting in a 30% reduction in prediction error
- Visualized geospatial data and model predictions using **Matplotlib** and Cartopy for research presentations and publications

Beam Group Inc. April 2024 - June 2024

Software Engineer Intern | *Full-Stack Development, Cloud Infrastructure, DevOps*

- Developed an end-to-end **web application** for employment analytics, enabling users to make decisions 35% faster
- Built a responsive **React.js** frontend and RESTful APIs using **FastAPI**, achieving p99 response times below 100ms
- Automated a **CI/CD** pipeline with **GitHub Actions** and **AWS** (EC2, S3, CloudWatch) to streamline deployments
- Led technical discussions in **Agile** team meetings and contributed to design documentation following **SDLC** methodologies

PROJECTS & AWARDS

LLM-Enhanced Search System with RAG Architecture | *Information Retrieval, LLM, Vector Database*

- Architected a Retrieval-Augmented Generation (**RAG**) system using DataStax Astra DB as the vector store, improving search relevancy by 89% over traditional keyword-based search
- Utilized **Azure OpenAI**'s embedding model to generate high-dimensional vector representations of documents, enabling semantic understanding and contextual matching
- Engineered the entire workflow using **LangChain/LangFlow** framework, reducing development time by 65%

Ski Resort Lift Tracking System | *Distributed Systems, Cloud Infrastructure, Java, Database*

- Engineered a **distributed** tracking system for ski resorts processing 200K+ daily lift rides using **Java**, **AWS EC2**, and **RabbitMQ**
- Designed a scalable architecture with **load balancing** across multiple EC2 instances, reducing message queue backlog by 90%
- Built data persistence layer using **MySQL** database supporting complex analytical queries with <40 ms response time

Real-time Environmental Sensing Platform | *IoT Systems, Cloud, C++, Database*

- Developed a real-time environmental **IoT** monitoring system using **Arduino** (C++) with multiple sensors
- Built a scalable **serverless** data pipeline on **AWS** (API Gateway → Lambda → DynamoDB) for processing 10,000+ daily sensor readings with sub-second latency
- Developed a web dashboard using **React.js** to visualize real-time sensor data, enabling instant environmental insights and alerts

2x Hackathon Winner | *Northeastern University Hackathon (2023 & 2024)*

Emerging Leader Award | *Northeastern University Graduate Leadership Institute (2024)*

SKILLS

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

Frameworks: FastAPI, Flask, React.js, Node.js, Spring Boot

Cloud & DevOps: AWS (**AWS Certified Practitioner**), Azure, Docker, Git, CI/CD

Data Science & Databases: Pandas, NumPy, Matplotlib, PostgreSQL, MongoDB, DynamoDB

Machine Learning: PyTorch, TensorFlow, Keras, Scikit-Learn