

# Seung Hyun Jin

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## EDUCATION

### Duke University

*Bachelor of Science in Computer Science, Statistical Science*

Relevant Coursework: Database Systems, Data Structures and Algorithms, Applied Machine Learning, AI Protein Design

Durham, NC

*Aug 2023 - May 2027*

## EXPERIENCE

### Software Engineering Intern

*Zoetis*

May 2025 – August 2025

*Durham, North Carolina*

- Architected **NLP** pipeline in **Python** using fine-tuned **Flan-T5** with **LoRA** adaptation and **RAG** integration
- Integrated vector search and conversational AI to deliver solutions with data retrieval and workflow automation
- Optimized **LLM** using **PEFT** techniques, mixed-precision training, and gradient checkpointing with **PyTorch**
- Deployed solutions to **AWS** environments with automated data collection workflows

### Software Engineering Intern

*Lunch Bunch LLC*

August 2023 – Present

*Durham, North Carolina*

- Built microservices arch with **Docker** and **Azure Kubernetes** along **CI/CD** pipelines with automated testing
- Developed real-time analytics dashboard for **2K+ concurrent users** using **PostgreSQL** and **WebSocket**
- Implemented **REST APIs** with **Node.js**, integrating Stripe gateway and authentication system
- Optimized connections with lazy loading and **AWS CloudFront CDN**: 40% faster load times and 99.9% uptime

### Research Assistant

*Pratt School of Engineering*

January 2024 – Present

*Durham, North Carolina*

- Performed data exploration and analysis across **1M+ cellular datasets** using **SQL** queries and **Python** scripting
- Pioneered techniques achieving **81% accuracy** for structure identification in **265K+** spatial-omics samples
- Devised statistical methods to uncover spatial relationships across datasets for tissue architecture understanding

## PROJECTS

### Mechanical Failure Analysis

- Developed ML pipeline using fine-tuned models and **RAG** to automate mechanical failure analysis, achieving **80% solution accuracy** and **50% reduction** in troubleshooting time
- Implemented NLP system with **PyTorch**, **Hugging Face**, and **FAISS vectors** to process data and generate contextualized repair solutions through **LoRA** tuning
- Deployed AI bot via Microsoft Teams integration enabling real-time responses to failure queries

### TriCen

- Engineered mental health crisis intervention system preventing caller abandonment through AI conversation
- Developed integration between **Twilio API** and **LLM** to deliver responsive, empathetic AI interactions
- Implemented real-time speech-to-text transcription with optimized chunking to maintain natural conversation flow
- Created operator dashboard displaying conversation summaries and transcripts for handoffs while preserving caller privacy

### Hierarchical Tissue Unit Annotation

- Used Unsupervised ML models for statistical analysis of cell neighborhoods in colon and intestinal tissues
- Processed and segmented large-scale microscopic datasets using automated **Python** scripts
- Designed and trained neural networks to process and identify spatial patterns across **1M+ pixels**

## TECHNICAL SKILLS

**Programming Languages:** Python, SQL, TypeScript/JavaScript, Java, C, C++, Bash

**Technologies:** Linux, Unix, GitHub, React.js, Node.js, PostgreSQL, MySQL, AWS, Azure, Docker, Kubernetes, Redis, WebSocket, REST APIs, CI/CD, Pandas, PyTorch, Scikit-Learn, TensorFlow

**Languages:** English (Native), Spanish (Native), Korean (Native)

## LEADERSHIP & INVOLVEMENT

**National Cervical Cancer Coalition (NCCC)** *President, Community Outreach*

**Cards For Humanity Duke** *Co-Founder*

**Duke Applied Machine Learning Club** *Member*

**Duke Club Taekwondo** *1st Year Representative*

**August 2023 - Present**

**January 2024 - Present**

**September 2023 - Present**

**August 2023 - May 2024**