Rajit Sareen

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Education

University of Washington | Seattle, WA Expected June 2028

Bachelor of Science in Computer Science *GPA: 3.75*

Completed Coursework

Data Structures and Algorithms	Deep Learning	Linear Algebra
Probability and Statistics	Software Design	Artificial Intelligence
Masters Machine Learning	Differential Equations	Computer Architecture

Skills

Java (Advanced), Python (Advanced), C++ (Advanced), Object Oriented Programming (Advanced), TypeScript (Intermediate), SQL (Intermediate), Docker (Intermediate), AWS Cloud (Intermediate), PyTorch (Intermediate), PostgreSQL (Intermediate), Git (Advanced)

AI/ML

Neural Networks, MCP Servers, Prompt Engineering, Retrieval Augmented Generation (RAG), AI Agents

Experience

Undergraduate Research Developer, DAIS Lab Jun 2024 – Jan 2026

University of Washington *Seattle, WA*

- Enhanced protein structure prediction through U-Net and diffusion-based generative AI models on cryo-EM data.
- Trained deep learning models with PyTorch on high-performance GPU clusters for optimized inference accuracy.
- Applied machine learning, computer vision, and computational biology methods to molecular reconstruction.

Deep Learning Researcher, ContextOpt Project Jan 2026 – Present

University of Washington *Seattle, WA*

- Benchmarking 6 context optimization strategies (RAG, Summarization, LLMLingua, Hybrids) across LongBench.
- Evaluating Llama-3.1-8B, and Gemini-2.5-Pro under quality, token, latency, cost, and total utility
- Training an adaptive XGBoost and MLP selector to predict optimal context strategy per query over fixed baselines.

Projects

Monte Carlo Monopoly Simulator (C++)

- Built a Monte Carlo simulation engine in C++ modeling thousands of Monopoly games.
- Designed OOP architecture to simulate board mechanics and player interactions.
- Analyzed expected value, variance, and bankruptcy probability across properties and strategies.

SmartFridge

- Mobile app identifying fridge items via YOLOv8 model trained on 3K+ labeled images.
- FastAPI backend with JWT authentication, PostgreSQL, and Docker for deployment.

AppetizeAI

- Restaurant discovery app with natural language search using AWS Bedrock foundation models.
- Full-stack system built on Django, PostgreSQL, and AWS for scalable high availability.

Multithreaded File Search Engine (C/C++)

- Search engine with custom linked list, hash table, disk-based index, and query processor.
- Multithreaded HTTP server with thread pool serving search results and static files.
- Patched XSS and directory traversal security vulnerabilities.