Vraj Rajpura

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EDUCATION

Master of Science - Computer & Information Sciences, *University of Washington, Seattle* **06/2026**
Data Structures and Algorithms, Data Science, Statistics, Software Engineering, Machine learning, Data Pipelines.

Bachelor of Technology - Computer Science Engineering, *National Institute of Technology, Surat* 05/2024
Object-Oriented Design (OOD), Operating Systems, Computer Networking, Artificial Intelligence, Mathematics, Security.

TECHNICAL SKILLS

Languages and Frameworks: C, C#, C++, Python, Java, HTML, CSS, JavaScript, Flask, Dot Net Core, API Designing, Node.js.

Database Management & OSs: MySQL, Oracle SQL, MongoDB, SQLite, RDBMS, UNIX, Linux, Windows, MacOS.

Tools & Platforms: Jira, Bitbucket, SourceTree, Tableau, Snowflake, Figma, WordPress, Git & GitHub, Postman, Azure.

Skills: Full-Stack Development, Front-end & Backend Development, REST API, JSON, Cloud Computing, CI/CD, Debugging, Unit Testing, Integration Testing, Spring boot, GenAI, Agile, Strong Problem-Solving, PostgreSQL, Version-Control Systems, Software Development Life Cycle (SDLC), Analytical Thinking, Scalable Systems, TypeScript, Kubernetes, Docker, Web Development, Scripting, DevOps, Distributed Systems, Concurrency, EC2, S3, Caching, React, System Design, GCP, Spark.

WORK EXPERIENCE

Graduate Research Scholar, Software Engineer - *UW eScience Institute & Paul Allen School of CSE.* 09/2025 – Present
- Spearheaded development of **reusable, open-source frameworks** streamlining scientific software adoption, accelerating research workflows by **30%** and expanding accessibility of high-impact tools to the research community.
- **Partnered with domain scientists** to translate complex research challenges into scalable, production-quality software solutions, embedding industry practices that **scaled to terabyte-sized datasets** and **advanced discovery timelines**.

Software Engineering Intern, *Expedia Group* – (Splunk, Docker, Lambda, Spinnaker, Aerosol, Vault) 06/2025 – 08/2025
- Collaborated with SREs to develop an observability assistant integrating **Python** microservices, **AWS Lambdas, VPC networking, SQS Queues** & **Splunk** to deliver real-time uptime metrics reducing **incident investigation time by 40%.**
- Automated **containerized** Lambda deployments with custom Lambda Layers, Vault secrets engines, and orchestrated CI/CD Spinnaker pipelines, cutting release times from **4 hours to 7 minutes** for deployments across test and prod envs.

Software Intern, *Musafir.com* – (C#, ASP.NET Core, MVC, Automation, Redis) 02/2024 – 06/2024
- Enhanced client expense tracking and reduced processing time by 15%, by developing modular features tailored to each client's travel and finance policies using **C#** and **.NET MVC architecture**.
- Automated report generation for 900+ clients to track travel expenses & emissions, reducing **turnaround time by 80%.**

Developer and co-founder, Emma *Coach* - (OpenAI API, Replit, WA Business API, Stripe, Python) 01/2024 – 03/2024
- Engineered a WhatsApp AI therapist using **OpenAI's Assistants API**, **Replit hosting**, Flask and a multi-threaded architecture to enable 100+ simultaneous conversations while achieving response times under 1.5 seconds.
- Acquired 50+ customers across three countries through a free trial. Analyzed user behavior and launched features like time zone-based scheduling and daily check-ins, **boosting session length by 25%.**

Software Development Intern, *Barclays* – (Java, Maven, Kafka, SQL, Spring, Automation testing) 05/ 2023 – 07/ 2023
- Architected a critical, **fault-tolerant** component in the Markets Technology division using **Java, Maven**, and basic **Kafka**, saving 7 hours of the team weekly; Provided management a bird's-eye view of missing trades & transactions.
- Built and integrated highly available **server monitoring** and **logging** tools to track server health and application failures, improving system reliability and enabling 30% faster resolution time within proprietary trading reconciliation systems.

RESEARCH AND PROJECTS

KeyTrack - Key Approval Software, *University of Washington, Housing & Food Services*
- Automated the key tracking process for 80+ stakeholders, reducing administrative overhead by 30% by developing a full-stack WebApp using **Google Apps Script**, **JavaScript**, **TypeScript** and **HTML**.
- **Automation tested** and deployed a production-ready key approval system using Gemini 2.0 and browser-use automation, cutting approval errors by 70% and saving 30% in admin time across 80+ users.

Ragnificient, *Gen-AI Dynamic RAG Chat-bot for Boeing use-case*
- Built a dynamic RAG (Retrieval-Augmented Generation) prototype leveraging **open-source LLMs- Meta Llama 3.3 & vector databases** to consolidate Boeing's internal documentation and deliver source-linked responses 10x faster.
- Enabled **multi-source retrieval** by integrating OneDrive, Google Drive, and web scraping capabilities; deployed the agent on **Streamlit Community Cloud** for affordable POCs & seamless internal access.

Sentiment Analyzer on Microsoft Azure, *Cloud project – Advised by Prof. Fawad Khan (Head of Product – Azure Labs)*
- Developed and deployed a scalable sentiment analyzer WebApp using **Azure ML Studio** and **Cognitive Services APIs**, leveraging GitHub Copilot to speed development by 40% while enabling real-time analysis with 92% accuracy.
- Configured **Azure Web App**s with auto-scaling and virtual network subnets for secure, cost-efficient deployments, achieving a 60% reduction in idle costs by dynamically rescaling IaaS resources based on peak traffic.