CHHAVI NAYYAR

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Education

University of British Columbia (UBC) Sept 2022 – Present

BSc, Combined Major in Computer Science & Cognitive Systems Vancouver, BC

- **Relevant Coursework:** Distributed Systems, Data Structures & Algorithms, Databases, Machine Learning, Software Engineering, Web Development, Cloud Infrastructure
- **Leadership:** Design Director – UBC UX Hub | Member – Women in Computer Science, Girls in STEAM

Professional Experience

Software Engineer Intern (Incoming) May 2026 – Aug 2026

Mastercard Vancouver, BC

- Developing AI/ML models for financial transaction processing in a high-scale payments infrastructure, contributing to secure and intelligent payment systems serving millions of transactions
- Building microservices using **Java** and **Python** with **gRPC** and **RESTful APIs**, implementing scalable architectures for real-time transaction analysis and fraud detection
- Working with cloud-native technologies including **Docker**, **Terraform**, and **AWS** to deploy and orchestrate ML pipelines in production environments
- Collaborating with cross-functional teams to integrate machine learning capabilities into mission-critical financial systems while ensuring compliance with industry security standards

Teaching Assistant Jan 2026 – Present

UBC Computer Science & Cognitive Science Departments Vancouver, BC

- Supporting graduate-level instruction in CPSC 532C/554C (Human-Centered AI), facilitating discussions on algorithmic bias, fairness, and human-computer interaction for advanced students
- Delivering instruction for COGS 300 (Understanding & Designing Cognitive Systems) and COGS 303 (Research Methods), teaching core concepts in cognitive science and intelligent system design to undergraduate students
- Leading lab sessions and guiding students through practical implementations of human-centered AI concepts, bridging theoretical foundations with real-world applications in ethical AI development
- Facilitating discussions and assignments to strengthen students' analytical thinking.

Automation Engineer Sept 2025 – Present

UBC Extended Learning Vancouver, BC

- Built end-to-end automation pipeline using **Python** and **Google Apps Script** to transform CSV survey data into structured PDF reports, eliminating **70%** of manual processing
- Engineered automated notification systems and reminders, boosting survey response rates by **25%** through intelligent workflow orchestration
- Designed scalable data validation and error handling mechanisms to ensure data integrity throughout the automation pipeline, reducing manual intervention requirements

Machine Learning Engineer June 2025 – Dec 2025

BC Cancer Vancouver, BC

- Engineered unsupervised ML models using **Python** and **scikit-learn** to analyze healthcare feedback, improving thematic pattern detection by **40%** and enabling data-driven AI deployment strategies
- Developed open-source concept mapping toolkit using **NetworkX** and **FastAPI**, reducing manual analysis time by **50%** through automated qualitative data visualization
- Built scalable data pipelines enhancing model interpretability by **35%** through advanced clustering algorithms and interactive **Plotly** visualizations
- Collaborated with healthcare researchers and clinicians to translate domain expertise into technical requirements, ensuring ML solutions aligned with clinical workflows and regulatory considerations

Deep Learning Engineer Apr 2025 – Dec 2025

UBC Computer Science Department Vancouver, BC

- Architected VTNet deep learning models using **TensorFlow** and **PyTorch** for eye-tracking analysis, achieving **25% improvement** in predictive accuracy through mathematical optimization
- Orchestrated high-performance computing experiments on **Slurm** clusters, accelerating model training pipelines by

30% and enabling rapid iteration at scale
- Collaborated with research teams to translate cognitive science requirements into technical solutions, demonstrating strong communication with non-technical stakeholders

Full-Stack Web Developer July 2025 – Sept 2025

UBC Michael Smith Laboratories Vancouver, BC

- Designed responsive **TypeScript/React** web application for graduate Biochemistry program, driving estimated **40% increase** in user engagement through user-centered design
- Established **CI/CD workflows** and content management systems, reducing update turnaround time by **30%** and improving accessibility for 200+ stakeholders
- Conducted UX research and usability testing to align website functionality with user needs, implementing feedback-driven improvements to navigation and information architecture

Software Engineer Intern Jan 2024 – Mar 2024

TechyWeb Solutions Vancouver, BC

- Developed production-grade **RESTful APIs** in **Python** with comprehensive test coverage, integrating **CI/CD pipelines** via **GitHub Actions** to streamline deployment and ensure code quality
- Collaborated in **Agile teams** using **Git**, **Jira**, and **Confluence** to deliver client-facing features, demonstrating ownership and effective communication with engineers, product managers, and stakeholders

Technical Projects

Your Search Box – **Multi-Modal Search Service** | ***Node.js, TypeScript, React, Next.js, NLP*** Present

- Engineered server-side rendered search platform supporting voice, image, and text inputs using **TypeScript** and **Next.js**, demonstrating mastery of modern frontend frameworks and API contract design
- Architected flexible adapter pattern for headless CMS integration (Shopify/WordPress) with environment-driven configuration, showcasing scalable software design principles

VR Experience Recommendation System | ***Python, TensorFlow, Flask, Machine Learning*** 2025

- Implemented hybrid collaborative filtering and content-based recommendation engine using **TensorFlow** and cosine similarity, achieving **20–25% improvement** in F1 score and precision metrics
- Built **Flask REST API** with batch inference and query caching mechanisms, optimizing response times for high-frequency requests

Healthcare Concept Mapping Toolkit | ***Python, NetworkX, FastAPI, Data Visualization*** 2025

- Developed production-ready toolkit for analyzing complex healthcare datasets through concept mapping, MDS, and hierarchical clustering algorithms
- Created interactive **Plotly** visualizations and **FastAPI** endpoints to surface data-driven insights, transforming qualitative research into quantifiable patterns for decision-makers

CourseInsights – **Survey Analysis Platform** | ***Python, Flask, Pandas, Data Processing*** 2025

- Built full-stack web application to automate course survey analysis, processing CSV responses into structured PDF reports using **Flask** backend and **Pandas** for data transformation
- Streamlined instructor workflows with intuitive UI, demonstrating end-to-end product development from user requirements to deployment

Webability – **Accessibility Widget** | ***JavaScript, CSS, WCAG/ADA Compliance*** 2024

- Developed accessibility widget ensuring WCAG and ADA compliance with features including adjustable font sizes, high-contrast modes, keyboard navigation, and screen reader support
- Designed flexible, user-friendly interfaces with **CSS** to meet diverse accessibility needs while optimizing performance by minimizing JavaScript bundle sizes for fast load times

Technical Skills

- **Languages:** Java, Go, TypeScript, Python, C++, JavaScript, SQL, HTML/CSS
- **Backend & APIs:** RESTful API Design, Express.js, Flask, FastAPI, Node.js, GraphQL, Microservices
- **Frontend Frameworks:** React, Redux, Next.js, Server-Side Rendering, Responsive Design
- **Data & Storage:** SQL (PostgreSQL, MySQL), NoSQL, Cassandra, Elasticsearch, Spark, Data Pipelines
- **Cloud & DevOps:** AWS (EC2, S3), Docker, CI/CD (GitHub Actions), Linux, Slurm, Cloud Architecture
- **ML/AI Frameworks:** TensorFlow, PyTorch, scikit-learn, NetworkX, Plotly
- **Development Tools:** Git/GitHub, Gradle, Jira, Confluence, Agile/Scrum, Test-Driven Development