

# ARJUN MISHRA

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## EDUCATION

### University of British Columbia

Bachelor of Science, Computer Science

Vancouver, BC

Sep 2022 – May 2027

- **Awards & Honors:** Work Learn International Undergraduate Research Award, Faculty of Science International Student Scholar, Dean's Honors List, Hack the North 2024 Winner, youCode 2025 1st Place - SAP Stream

## EXPERIENCE

### Undergraduate Research Assistant (HCI/AI)

SOCIUS Lab, UBC

Feb 2025 – Present

Vancouver, BC

- Led end-to-end development of **two full-stack AI applications**, translating research goals into **production systems** deployed on **AWS** and currently used by research stakeholders.
- Drove project progress by managing timelines and milestones directly with the lead professor, presenting weekly demos and incorporating feedback into iterative development cycles.
- Presented technical findings and AI performance metrics to stakeholders through detailed reports and presentations.

### Undergraduate Teaching Assistant

Computer Science Dept., UBC

Sep 2024 – Jun 2025

Vancouver, BC

- Instructed **250+ students** across 2 Winter and 1 Summer term in an **upper-year** Computer Networking course, covering **TCP/IP, DNS, routing protocols, and complex networking concepts**.
- Increased tutorial attendance by **20%** by redesigning the format to be more visual and less code-intensive presentation format, leading to **its adoption across all sections**

## PROJECTS

### AI Accessibility Analyzer | Python, Node.js, Axe-core, Playwright, Gemini 2.5 Pro

Comprehensive WCAG 2.2 AA Compliance Analysis Platform

Jul 2025 - Present

- Engineered a dual-mode AI pipeline with **Gemini 2.5 Pro** and **Axe-core** to automate **WCAG 2.2 AA** compliance analysis from visual and semantic data.
- Selected Gemini 2.5 Pro after **a comparative analysis** against GPT-4.1 and Claude Sonnet/Opus 4, optimizing for the **highest accuracy** in visual UI element identification at **a sustainable operational cost**
- Implemented AI-driven visual analysis for UI elements (color contrast, touch targets), selecting Gemini for its superior cost-accuracy over GPT-4.

### AI Policy Aggregator | React, TypeScript, FastAPI, GPT-4, RAG, ChromaDB, Docker, AWS

Intelligent Policy News Aggregation Platform with Personalized AI Briefings

Feb 2025 - Jun 2025

- Architected and deployed a containerized **AI pipeline on AWS** using **RAG** with **ChromaDB** and **GPT-4** to summarize and rank articles from 4 major policy sources.
- Built an automated web scraping system with query expansion, improving content relevance by **40%**.
- Delivered a production-ready React app with **90%+ test coverage** on critical AI components, enabling scalable rollout via a **CI/CD pipeline**.

### Re-Plate | Next.js, Tailwind CSS, Gemini AI, Python FastAPI

Intelligent Food-Donation Platform | **youCode 2025 — 1st Place, SAP Stream**

Feb 2025

- Integrated **Gemini Vision API** to auto-classify food images and extract text, achieving **100% accuracy** on expiration date recognition in a test set.
- Visualized real-time donor impact analytics (meals served,  $CO_2$  offset) using ApexCharts with a **FastAPI** backend.

### LLM Pro Max | React, Python, RAG, ChromaDB, Langchain, FastAPI

Innovative Codebase Analysis Platform | **Hack the North 2024 Winner**

Sep 2024

- Developed core **RAG pipeline** with Query Expansion techniques and advanced chunking for codebase analysis, achieving **86% query relevancy**.
- Built interactive code dependency graphs using **NetworkX** and **Pyvis**, simplifying software project exploration.

## TECHNICAL SKILLS

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

**AI/ML:** RAG, Langchain, Sentence Transformers, OpenAI (GPT), Gemini, Cohere, ChromaDB

**Frameworks:** React, Node.js, FastAPI, Next.js, Express.js, Flutter

**Developer Tools:** Docker, AWS (App Runner, S3, CloudFront), Git, GitHub Actions, Firebase