ASHMITA MITTAL

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Education

University of Waterloo, ON, Canada	Sep 2020 - *Present*
Bachelor of Computer Science (Honours), Specialization in Human computer interaction (HCI), Co-op	May 2025

Skills

Languages: Java, C++, C, Python, JavaScript, TypeScript, Kotlin, HTML/CSS, Racket, Cypher
Frameworks: AWS, Cloud Development Kit, React, Preact, Flask, Django, MERN, Bootstrap
Tools: Neo4j, Android SDK, SQL, Selenium, Beautiful Soup, Linux, Git, Jinja, NumPy

Work Experience

Amazon Web Services (AWS) — May – Nov 2024
Software Development Engineer Co-Op — Vancouver, BC

- Optimized RabbitMQ broker performance by developing a metric collector API, which reduced CPU load and **improved memory efficiency by 10x** than the existing metric agent, leveraging AWS CDK, EC2, Docker, and VPC networking
- Achieved **$2 million in savings** by designing a financial metrics dashboard to identify cost-saving opportunities and anomalies in AmazonMQ cost infrastructure
- Enhanced budgeting precision with an automated cost-tracking system for accurate project evaluations using CDK and Lambda

Data² (USA Inc.) — Sep – Dec 2023
Software Engineering Co-Op

- Co-invented a **patent-pending** for advancements in large language models, AI agents, and knowledge graph technology
- Engineered a dynamic entity and evidence loader for knowledge graphs by integrating **Generative AI** technologies (LLMs, llamaIndex, LangChain, AWS Bedrock, OpenAI), enhancing knowledge graph (Neo4j) creation efficiency
- Utilized front-end graph visualization tools, rapidly prototyping user interfaces for enhanced data representation

Royal Bank of Canada — Jan – Apr 2023
DevOps Developer Co-Op — Toronto, ON

- Contributed to an updated Renovate repo to RBC's **open-source community**, achieving **100%** adoption across tech teams
- Streamlined Renovate deployments using OCP templates, integrating GitHub Apps, and secret and config management
- Optimized **CI/CD** pipeline stage data collection for the DORA dashboard and integrated it with Elasticsearch

Migrations.ml Inc. — May – Aug 2022
Software Developer Co-Op — Toronto, ON

- Designed microservice for real-time credit risk inference (**950** issuers) with **JAX**, **NumPy**, and **pandas**
- Developed compact chart.js visuals for **9000** corporate bonds, showcasing credit analytics
- Built a responsive **gRPC/protobuf** API for React frontend, optimizing data models with Alembic for **Google Cloud SQL**

Microsoft - Azure & Artificial Intelligence Fundamentals — May – Aug 2021
Project Team Member — Waterloo Experience (WE) Accelerate Program - Waterloo, ON

- Employed **Azure** and **AI** fundamental skills to propose enhanced accessibility solutions addressing important **global issues**
- Suggested an **80%** more efficient AI-powered solution, outperforming competitor alternatives in real-time response
- Collaborated on a solution leveraging AI and **ML** for architect assistance in designing inclusive aesthetics for new projects

Nodwin Gaming — May – Aug 2021
Software Developer Co-Op — India

- Elevated user satisfaction with the DreamHack 2021 **website prototype** optimizing event management and admin features
- Contributed to a robust **Django** backend and integrated data collection API for an anti-cheat league mobile app
- Architected a data-querying dashboard interface for league admins to access player details seamlessly

Projects

- **CriticCove** (*Android SDK - Kotlin*) 🔗
  Collaborated on app development for writing and sharing media critiques and reflections
- **Sudoku Puzzle Image Solver** (*Python*) 🔗
  Transformed Sudoku puzzle images into solved boards with OpenCV and AI search techniques
- **Battle Snake Tournament** | *Python* 🔗
  Applied A* search algorithm for food search and opponent detection, ensuring optimal decision-making in a team
- **Dreamhack project** | *React & Flask* 🔗
  Developed a prototype for an esports tournament player's ticket booking
- **Research Assistant** (University of Waterloo - Political Science) — Mis/Disinformation Research Project