

Kanwarpal Brar

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Education

University of Waterloo

Waterloo, Ontario, Canada

Bachelor of Computer Science (BCS)

2020 - 2025

- **CGPA: 3.84/4.0**
- **Courses:** Data Structures & Algorithms, Operating Systems, Object-Oriented Programming, Distributed Systems, Concurrency, Databases

Work Experience

Carta

Waterloo, Ontario

Payments Software Engineering Co-op

Sept 2024 - Dec 2024

- Averted **\$5000+** in potential regulatory penalties within first **2 weeks** by implementing financial compliance controls with **Django + React**
- Managed **\$5M+** monthly leading international banking integration expansion, leveraging **Python, gRPC**, and **Domain Driven Design**
- Architected highly scalable **Microservices** on **AWS** with **Docker** and **Kubernetes**, enabling robust and fault-tolerant fintech operations
- Slashed network overhead **50%** by implementing centralized money movement **permissions** controls, enhancing security and performance
- Accelerated team feature development time **40%** through flexible runtime permission system, enabling rapid implementation of new controls

University of Waterloo

Waterloo, Ontario

Distributed Systems Research Assistant

May 2024 - Aug 2024

- Transformed platform through comprehensive benchmarking of **Serverless** frameworks, informing design of high-performance framework
- Delivered **200+** requests/second per node by deploying & optimizing **Kubernetes** clusters with **KNative** Serving, ensuring consistent loading
- Cut cold-start latency by **20%** through targeted autoscaling and node configuration tuning, increasing platform responsiveness
- Designed architectural changes to improve resource utilization by **15%**, detailed in a comprehensive technical research report

Carta

Waterloo, Ontario

Backend Software Engineering Co-op

Jan 2024 - Apr 2024

- Accelerated OCX report generation speed **10%** using an O(n) complexity cell management system with **Apache POI + Java**, streamlining results
- Enhanced AI-powered search accuracy by **6%** via refined prompt engineering for report queries & real-world use-cases
- Eliminated **3000+** tickets by streamlining Ownership Report permissions in **Django**, collaborating cross-functionally with product leaders
- Slashed user wait times by **10%** through optimizing ownership report queries in **Spring**, enhancing system responsiveness

Arctic Wolf Networks

Waterloo, Ontario

Software Developer Co-op

May 2023 - Aug 2023

- Slashed response times by **25%** by implementing a concurrent **Go** monitoring system for **Prometheus** metrics on an **Apache Kafka** wrapper
- Attained **100%** accuracy in identifying test gaps with a reflection-based **Golang** unit test verifier for an **Apache Kafka** wrapper
- Expedited development by creating a forward/backward compatible Kafka Serialization system using **SchemaVer** and **Avro**

Genesys Cloud Services

Markham, Ontario

Full Stack Software Developer Co-op

Sept 2022 - Dec 2022

- Slashed hosting costs by **5%** by migrating a monolithic scheduling API to an end-to-end serverless architecture with **Python + Flask + Lambda**
- Compressed codebase size by **30%** and enhanced maintainability through a documented **Python + Flask + OpenAPI** service for scheduling

Cloudspark Labs

Toronto, Ontario

Software Engineering Intern

Jan 2022 - Apr 2022

- Crafted scalable **RESTful** and event-driven microservices for web applications using **Microsoft Azure**, meeting evolving user demands
- Spearheaded the creation of Licensing, Notification, and Auth microservices with **TypeScript, Nest.JS**, and **CosmosDB**, for a startup MVP

Projects

Location-Based Social Discovery App

[github.com](#)

Personal Project

2025

- Boosted event attendance by building a geolocation-based app with **Kotlin** and **Firebase**, simplifying user discovery of local gatherings
- Implemented **MVVM**, Repository, and Singleton design patterns to ensure modular, maintainable architecture for future expansions

Event-Driven Data Aggregation App

[github.com](#)

Personal Project

2025

- Architected robust backend with **Go + Gin**, implementing **CQRS** and **Event Sourcing** for consistent real-time data updates
- Delivered **sub-200ms** query response times through concurrent processing with **Goroutines** and optimized **Event Sourcing** architecture
- Crafted responsive cross-platform experience with **React Native + Google Maps SDK**, enabling dynamic location-based features

Skills

Programming Languages:

Python, Java, Go, TypeScript, JavaScript, C++, Kotlin, C#, C

Frameworks & Libraries:

Spring Boot, Django, Flask, Gin, Node.js, Express.js, React, React Native

Databases & Storage:

SQL, PostgreSQL, MongoDB, Redis, Elasticsearch, Hadoop, Spark, HBase

Infrastructure & DevOps:

AWS, Azure, Kubernetes, Docker, Terraform, CI/CD, GitHub Actions, Jenkins, CircleCI, Datadog, Linux, Git

Integration & Messaging:

Kafka, ZooKeeper, gRPC, REST APIs, GraphQL, Protocol Buffers, Avro

System Design:

Microservices, Distributed Systems, OAuth2.0, OpenAPI/Swagger, CQRS, Event Sourcing, Unit Testing