

# SANAT BHALLA

sanatbhalla.me

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## EDUCATION

University of Waterloo | Waterloo, Canada

Sep 2020 - May 2025 (Expected)

- Candidate for Bachelor of Computer Science (with Software Engineering Specialization)
- President's Scholarship of Distinction
- Member of Computer Science Club, Data Science Club & Blockchain Club

## WORK EXPERIENCE

Quantitative Team Lead (Student Club) | Wat Street, Waterloo

May 2023 – Present

- Leading a research team of 5 to develop Quantitative Strategies using Statistical Analysis and Machine Learning
- Performed a **Cross-Exchange Arbitrage** in the **Crypto Market** monetizing the Volume and Trade discrepancy between multiple exchanges leading up to a **2.5%** return per trade
- Developing a **Market Sentiment Analysis** model in the Crypto Market using **NLP** and other **Machine Learning** Techniques to predict changes in Crypto prices achieving an accuracy of **76%** optimizing the portfolio with up to a **3%** bi-weekly return

Data Engineering Intern (Cloud & Data) | PwC Canada, Toronto

May 2023 – Sep 2023

- Developed and optimized an **ETL Pipeline** using **AWS Glue** and **PySpark** resulting in **30%** reduction in data processing time
- Orchestrated the workflow using **Apache Airflow**, reducing manual intervention by **80%**
- Automated data extraction from on-premises **Oracle Server** and transfer to **AWS S3** reducing operational overhead by **60%**
- Centralized metadata management using **AWS Glue Data Catalog**, improving data discovery efficiency by **50%**

Software Development Intern (Cloud Engineering) | PwC Canada, Toronto

Sep 2022 – Feb 2023

- Partnered with developers and PMs to deliver a web-based CI Tool boosting yearly revenue by **\$1.2M**
- Designed an **Observable Pattern** on the frontend with **React.js** and **MVC Pattern** on the backend with **Nest.js**
- Injected custom **Node.js** microservices to optimize MongoDB queries by **40%**
- Optimized frontend performance by **70%** by restructuring the codebase, leveraging **Pagination** with **React.js**, resulting in faster page load speeds and reduced bounce rate by **25%**
- Architected the application to work in offline mode using **PWA Service Workers** integrating efficient caching techniques

Embedded Software Developer Intern | Ford Motor Company, Waterloo

Jan 2022 – Apr 2022

- Engineered and implemented a new UI framework using **TypeScript** and **React.js** for Ford's In-Vehicle Infotainment Systems in collaboration with a team of 7; reduced system latency by **50%** and boosted user satisfaction score by **35%**
- Developed **C/C++** modules to render **React Native** components on the **Unreal Engine** to increase the screen responsiveness by **55%** compared to the web
- Improved the message parsing and queuing architecture using **Concurrency** on a highly multi-threaded **Distributed System**, reducing processing time by **60%** and improving system scalability by **40%**
- Revised buffer transmission via **ByteStream** using **Flatbuffers** improving Serialization and Deserialization by over **97%**

Data Engineering Intern | Innovapost Inc., Ottawa

May 2021 – Aug 2021

- Designed and implemented an Initial and Delta Load **ELT Pipeline** for data migration, processing **10+ TB** of data achieving a **75%** reduction in data processing time
- Orchestrated data pipeline using **Azure Data Factory** and made **Spark API** calls for multi-dimensional data transformations and reduced processing costs by **25%**
- Redesigned Python APIs introducing Batch Operations to lower RUs per second cutting down costs by **30%**
- Achieved **100%** code coverage testing **30k+** lines of code using **PyTest**, resulting in a **40%** reduction in regression bugs and a **30%** improvement in code quality

## SKILLS

**Languages:** C/C++ | Java | Python | JavaScript | TypeScript | Swift | SQL | R | HTML/CSS

**Libraries & Frameworks:** React.js | React Native | Node.js | Nest.js | Spring Boot | Flask | Django | Docker | Apache Spark

**Tools & Services:** Git | MongoDB | Flatbuffers | JIRA | Azure | AWS | GCP