

# Roshan Munjal

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## Experience

### Google — Software Engineer — Search Infrastructure

Aug 2024 — Present · Sunnyvale, CA

Languages: C/C++, Go

- Core search serving infrastructure.

### Google — Software Engineer — Photos Android

Aug 2022 — Aug 2024 · Mountain View, CA

Languages: Java, Kotlin, SQL, Bash, Tools: Android, SQLite

- Built and instrumented framework to decide which in-app promotions to show users across all major surfaces.
  - \* Designed a dashboard and alerting system to improve production visibility and presented to ~15 people.
  - \* Heavily contributed to the experiment and launch of the framework, debugging key metrics, adding tools & QA instructions, onboarding and resolving questions from external teams.
  - \* Added support for asynchronous promo eligibility verification for users.
- Implemented metric and measured latency and frequency of shifts due to late loading views at cold start.
  - \* Identified the offending views using [SQL](#) scripts and detailed fixes in a 12-page comprehensive analysis document.
- Solved complex bugs that required memory profiling and debugging mutex behavior in various libraries.

### Amazon — Software Engineer Intern — AWS Shield

May 2021 — Aug 2021 · Vancouver, BC (Remote)

Languages: Java, JavaScript, Tools: React, DynamoDB

- Delivered a full-stack feature to keep track of and filter and search for Shield resources in [Java](#) to near-prod.
- Designed [DynamoDB](#) indexes for fast lookups and reduced processing times and RCU usage significantly.

### Autodesk — ML Engineer Intern — AutoCAD Insights

Jan 2021 — Apr 2021 · Toronto, ON (Remote)

Languages: Python, SQL, Tools: PySpark

- Implemented model to recommend novel AutoCAD commands given a user's usage history using [PySpark](#), ALS and metrics like tf-idf. Explored serving recommendations in real time to users.
- Used algorithms such as FPGrowth to provide insight into frequent sub-sequences of commands used in AutoCAD.

### DRW Holdings — Quantitative Research Intern

May 2020 — Aug 2020 · Toronto, ON (Remote)

Languages: Python, Tools: Numpy, Redis, Dash, Jupyter

- Designed a dashboard to track trading statistics like P&L and intraday product spreads with ~5s latency in [Python](#).
  - \* Utilized [Redis](#) to store and cache intermediate results to efficiently compute dashboard metrics.
- Designed visualizations to examine the temporary and permanent price impact of trades in [Jupyter](#) notebooks.
- Implemented proof-of-concept interest rate prediction model using papers and Kalman filtering in [Numpy](#).

### Woodbine Entertainment Group — ML Engineer Intern

Sep 2019 — Apr 2020 · Toronto, ON

Languages: Python, SQL, Tools: Redis, MySQL, GCP

- Developed algorithms in [Python](#) to create bet portfolios for a horse racing app subject to budget, risk, and return.
  - \* Created API to build portfolios using real-time odds in [Redis](#). Back-tested strategies and saved metrics in [MySQL](#).
  - \* In 6 weeks of testing with 100s of users, saw average profit of +4% per race (before track-take of ~19%).
  - \* Back-tested strategies and outputted ROI, variance, losing streaks, and other metrics to [MySQL](#).

## Education

University of Waterloo — B. Math in CS, minor in Statistics — cGPA: 87% (Dean's Honours)

Sep 2017 — Apr 2022

Courses: Algorithms, OS, Databases, Distributed Systems, Stochastic Processes I & II, Machine Learning

## Side Projects

Ray Tracing 🌀 — C++

May 2024 — Present

Jane Street Puzzles 🌀 — Python, C++ <sup>[1]</sup>

Jun 2024 — Present

Technical Blog Posts 📝

Mar 2022 — Present