

# Richard Wu

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## Experience

### Cockroach Labs | Software Engineering Intern

New York, NY

Distributed SQL batch processing framework for CockroachDB (Go).

- **Improved query times by 10-20%** by introducing parallel stddev/variance aggregations and eliminating redundant aggregations.
- **Increased throughput by 2.24x and reduced latencies by 50%** by designing and implementing more efficient SQL joins for interleaved tables ([RFC: git.io/vNgoH](https://github.com/rwu1997/vNgoH)).

### Google | Software Engineering Intern

Mountain View, CA

Hands-on research on the Borg team (C++, Go, R).

- **Streamlined simulation run times by 60x** by optimizing and extending scheduling simulator.
- **Shaved forecast lag from 47 to 7 seconds** by analyzing CPU usage time series and implementing improved load prediction algorithm.

### Shopify | Software Developer Intern

Ottawa, ON

Backend and full-stack work on shipping API (Ruby).

- **Reduced multi-hour shipping updates to 15 minutes** by integrating bulk CSV polling.

## Publication

### NUMA Implementation & Evaluation

**Co-author of paper** on a NUMA-aware scheduling algorithm and their impact on Google workloads.

**Pending review for publication at CCGRID'18.**

## Projects

### BetterSQL optimizer

[git.io/vbaEg](https://github.com/rwu1997/vbaEg)

Prototype SQL query optimizer in OCaml.

### Studbuds.com Tutoring Marketplace

**Founder & lead developer.** Rails web app with live notifications and chat over WebSockets. **250+ users.**

## Awards

### 1st Place, Citadel Data Open

May 2017 & December 2017

Represented the University of Waterloo at the Data Open Championships after placing 1<sup>st</sup> out of 20 teams at the regional qualifiers.

- Employed **regression & classification models** such as penalized linear reg. and random forest to formulate statistically sound [conclusions on US education data](#).

### 1st Place, Hack the North

September 2015

Top 12 teams out of 230+. Built an Android app that anonymously livestreams video to a web interface in a team of 4.

### 6th/6000+, Canadian Senior Math Contest

### 98th percentile, Canadian Open Math Challenge

## Education

### University of Waterloo

Bachelor of Computer Science, Honors, 2020

**GPA: 90%**

- President's Scholarship of Distinction
- Software Engineering Scholarship
- Joe C. Lee Math Entrepreneurial Award
- K.C. Lee Computer Science Scholarship
- Konrad Group Technology Scholarship

## Online

- Machine Learning (Coursera)
- ML with TensorFlow (Google)

## Skills

### Languages

**Go • C++ • Python • SQL • Ruby • R**  
• Bash • C • JavaScript

### Frameworks & Tools

**Linux • scikit-learn • pandas • numpy**  
• matplotlib • TensorFlow • Postgres • Rails