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# Kefan Cao

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## TECHNICAL SKILLS

**Programming Languages**  Python, C++, C, Go, Typescript, Javascript, C#, Java, Kotlin, SQL, Racket, R, Bash
**Tools & Technology**  GraphQL, MySQL, React.js, Node.js, HTML/CSS, AWS, GCP, Git, LaTex, Firebase, Neo4j, New Relic

## EXPERIENCE

**Terrace.fi - YCombinator S22, DeFi Trading**  **New York, New York**
Quantitative Software Engineer  **May, 2023 - Aug, 2023**

- Engineered various custom strategies and algorithms to detect **arbitrage** opportunities across different exchanges.
- Integrated Coinbase and Binance APIs for real-time order book streaming and trading on Terrace using **Golang**.
- Designed an optimal algorithm utilizing **machine learning** techniques to determine **cost-efficient** order execution routes.
- Instrumented an API in **GraphQL** that provides the transaction cost for different execution speeds on 9 different blockchains.

**Capital One**  **Toronto, Ontario**
Software Engineer  **Jan, 2023 - Apr, 2023**

- **Won first place** in a company hackathon of more than 300 engineers by pioneering a **machine learning** incident resolution system.
- Led a team of engineers to implement an **advanced observability architecture** which I proposed to director level stakeholders.
- Enabled core observability tool support for **Go** and **Javascript** in Canada through **New Relic** and **distributed tracing**.

**Cisco Systems**  **Ottawa, Ontario**
Software Engineer  **Jan, 2022 - Apr, 2022**

- Ensured stable and consistent feature release for Ip-in-Ip Encapsulation/Decapsulation tunnels through Agile methodologies.
- Achieved a **200%** speed-up on a traffic generator and increased the connection speed of said generator by **50%**.
- Implemented an automatic testing workflow in **C** for router CLI verification which completely relieved manual testing.

**Waterloop, Hyperloop Team**  **Waterloo, Ontario**
Software Engineer  **Aug, 2021 - Dec, 2021**

- Independently designed a built-in self testing interface used on the hyperloop pods to reduce electrical testing time by **40%**.
- Employed systems design techniques in a command-line tool that allowed engineers to take measurements with high scalability.
- Collaborated with other team members to rigorously test the firmware using tools and technologies including **C++, Python, and Git**.

**Strauss Event & Association Management**  **Winnipeg, Manitoba**
System Integration Coordinator  **Apr, 2021 - Aug, 2021**

- Saved the company **$3000**/quarter by replacing temp workers with a **Python** script for automated report generation.
- Reduced quarterly report time by one week for HR managers by implementing a **Python** application to process employee data.

## PROJECTS

**kefancao.com,** Numerical Methods Research  **https://kefancao.com**
- A portfolio website demonstrating past projects and some numerical methods research I've done! Code in **Python, C++**
- Provides a brief mathematics overview to everyday technology such as Google's page rank algorithm and jpeg image compression.
- Implemented multiple scripts demonstrating a minimal loss, 4 to 1, audio compression algorithm using Fourier Transforms.

**QuickChat,** Real-time Chat Application  **https://github.com/Kefancao/quickChat**
- A chat room web app that allows users to join a room with a room key both anonymously or as a sign-in user.
- Developed a real time chat application utilizing technologies including **React and Firebase**.
- Provides optional authentication methods including Google Sign-in or Username and Password from the webapp.

**River Deliver,** Founder (2020 Summer Company Winner)
- A grocery delivery/errands company, winner of a $3000 Entrepreneurship Fund from a pool of 300 applicants.
- Developed a fully functional web service using **React, Firebase, and Email.js** to attract over 500 users per month.

## EDUCATION

**University of Waterloo,** Computer Science **(GPA 93%)**  **2020-2024**
**Courseworks:**  Machine Learning, Databases, Security, Networks, Operating Systems, Algorithms, Statistics, Calculus, Probability
**Extracurriculars:** Varsity Rowing, Intramural Hockey, Tennis Club

## AWARDS & HONORS

2022  Ontario Entrepreneurship Award ( **$3,000** ); President's Scholarship ( **$2,000** ); International Experience Award ( **$2,500** )