Kefan Cao

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TECHNICAL SKILLS

Programming / Scripting	Python, C++, C, C#, Java, Kotlin, GoLang, Typescript, Javascript, SQL, Racket/Lisp, Haskell, R, Bash
Tools / Technology	React.js, Node.js, AWS, MySQL, HTML/CSS, Bootstrap, Git, LaTex, Firebase, UML, Neo4j, New Relic

EXPERIENCE

Capital One
Software Engineering Intern   Jan, 2022 - Apr, 2023
- Built the infrastructure utilizing various technology and services such as **AWS Lambda, AWS Observability, New Relic, and React.js**.
- Designed a core stability monitoring infrastructure that enabled a detailed client-side view of important services like QuickCheck.
- Core monitoring service enabled data analytics on user activity to allow behaviour analysis and improved site reliability.

Cisco Systems
Software Engineering Intern   Jan, 2022 - Apr, 2022
- Collaborated with the Cisco Spitfire team to ensure stable feature release for the Ip-in-Ip Encapsulation/Decapsulation tunnels.
- Influenced and enabled over **30%** of the inactive functions for a part of the internal Layer 3 forwarding information base.
- Improved the run time of a traffic generator by **50%** and increased the connection speed for distributed storage.
- Replaced manual verification by designing a system for router CLI verification using Google's **TextFSM** Technology.

Waterloop, Hyperloop Team
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
System Integration Coordinator   Apr, 2021 - Aug, 2021
- Saved the company **$3000**/quarter by designing a script automation for report generation using **SQL**, eliminating temp workers.
- Reduced quarterly report time by one week for HR managers by implementing a **Python** application to process employee data.
- Articulated and expressed research through data mining to examine project management ideologies for national associations.

PROJECTS

PDFNotate, Android PDF Viewer/Editor   Click for GitHub
- An Android application that allows users to undo/redo, annotate, highlight, erase, and save PDF files from an Android device.
- Able to scale and rotate by applying efficient affine matrix concatenation for graphic transformation of annotations and highlights.
- Employs serialization/deserialization techniques to ensure data persists after the application is closed or out of view.

CanDraw, A Desktop Drawing App   Click for GitHub
- A desktop drawing application that allows users to draw complex shapes and graphics on all platforms.
- Developed using **Kotlin** and employs the model-view-controller pattern to dynamically update selected properties.
- Designed a custom encoding and decoding scheme to allow users to save and load drawings with its own file format.

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 features such as Google's page rank algorithm and jpeg image compression.
- Implemented multiple scripts demonstrating a minimal loss, 4 to 1, audio compression using Fourier Transforms.

River Deliver, Founder (2020 Summer Company Winner)   Jul 2020 - Aug 2020
- A grocery delivery/errands company, winner of a $3000 Entrepreneurship Fund from a pool of 70 applicants.
- Developed a fully functional ordering web app using **React, Firebase, and Email.js** to attract over 100 users per month. Hello

EDUCATION

University of Waterloo, Computer Science (Data Science)   **GPA: 93%**   **Sept 2020 — May, 2024**
Courseworks: Machine Learning, Database Systems, Operating Systems, Object-Oriented Design - 100%, Advanced Algorithms Design - 100%, Functional Program Design - 96%, Sequential Programs - 99%, Linear Algebra - 97%, Probability - 95%, User Interfaces - 90%

AWARDS & HONORS

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