

# James Zhao

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## EDUCATION

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Honours BSc Computer Science, University of Toronto

Sep 2016 – Jun 2020

## PROFESSIONAL EXPERIENCE

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Teaching Assistant: Introduction to Computer Science, University of Toronto

Jan 2020 – Apr 2020

- Assisted students to learn Python, OOP, Linked List, Tree and sorting algorithms in Active Learning lecture

Teaching Assistant: Functional Programming, University of Toronto

Sep 2019 – Dec 2019

- Held office hours to help students debug Haskell and understand continuation, and graded assignments and exams

Web Developer, Dekang Medical, Canada

May 2019 – Jul 2019

- Redesigned a new site and backend for company's appointment booking system
- Increased appointment booking efficiency with the new design that allows doctors to see greater detail about the appointment so diagnosis can be done more quickly and accurately by the time patient arrives

Software Developer, GZAR Inc., China

May 2019 – Jul 2018

- Integrated voice recognition with XunFei API in C so the software can respond to voice commands
- Solved a critical bug in the software that produces undesired camera readings
- Used Unity in C# to refine virtual character's action with the correct camera readings and added new actions

## PROJECTS

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r/place replica

Dec 2019

- Implemented an r/place replica with Node.js deployed on AWS with EC2 and ElastiCache (redis)
- Used Node.js to serve the front end and store the image as bitfield in redis to provide fast initial fetch
- Used socket to make efficient and instantaneous update to the pixels

Distributed Numeric MD5 Breaker

Nov 2019

- Implemented a distributed numeric MD5 breaker with Apache Spark + Scala and bash
- Designed a horizontally scalable algorithm in Scala to efficiently brute-force the pre-image of MD5 hash of numeric values
- It is tested to be able to brute-force the pre-image of any 10-digit number in less than a minute with 600 cores

bit.ly replica

Sep 2019

- Implemented a distributed bit.ly replica using Java and bash
- Used bash scripts to orchestrate workers running multi-threaded Java program to serve requests to clusters
- Implemented a multi-threaded load balancer in Java
- Implemented an indexed database mirrored among workers to store and provide quick access to URL pairs

Tank Battle Royale Online

Mar 2019

- Implemented a Battle Royale style multiplayer tank game in TypeScript
- Implemented a game engine with basic physics needed for this game in TypeScript
- Used Node.js for multiplayer server and used socket, JavaScript and HTML to render the scene
- Used mobile sensors to control the game on phones with responsive design and keyboard + mouse for PC
- Used sqlite3 to store user information and game scores

## SKILLS

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- Languages:** Python, Java, C, bash, C#, Scala
- Web:** JavaScript (TypeScript), HTML, CSS, PHP, AWS, Nodejs, React
- Other skills:** Agile, OOP, Design patterns, Relational Database Design, Machine Learning, Functional Programming