

YUYANG (RAIN) ZHAO

5th year Computer Science and Statistics

647-831-4398 ◇ rainzhao2000@gmail.com

LinkedIn: rain-zhao ◇ GitHub: rainzhao2000 ◇ Site: rainzhao.com

SUMMARY OF QUALIFICATIONS

- 5 years of object oriented programming among C++, C#, Java, Kotlin, TypeScript
- 3 years of concurrent programming among C, Java, Kotlin, Node.js
- 3 years of machine learning and data analysis among PyTorch, NumPy, scikit-learn, R, Hadoop, Spark
- 3 years of front-end web development among React, Angular, Vue, HTML5, JavaScript, CSS
- 3 years of back-end web development on RESTful and gRPC services among Spring, Node.js, PHP
- 2 years of reactive programming among RxJs, Spring WebFlux, Kotlin Flow
- 2 years of experience among Kafka, SQL, non-relational databases, AWS Lambda, CDK, S3, EC2, RDS
- Working knowledge of operating systems, compilers and CPU architecture among MIPS and ARM
- Studying computer vision, image processing, and graphics
- Fast learner, resourceful, collaborative, leader, proactive, diligent

EDUCATION

University of Waterloo, Waterloo ON

September 2018 - Present

Candidate for Bachelor of Computer Science

Candidate for Bachelor of Mathematics (Statistics)

WORK EXPERIENCE

Autonomic, Palo Alto, CA - Software Engineer

September - December 2022

- Joined Message Connectivity team to work on scalable MQTT and gRPC services talking to 9 million IoT vehicles
- Worked on Java and Kotlin Spring services using reactive and concurrent programming with Kafka event streaming
- Performed load tests, built unit tests, service monitors, Prometheus metrics, alerting and Grafana charts
- Configured services with Kubernetes to speed up rolling restarts and use canary deployment
- Received outstanding rating for adapting quickly, exceeding expectations, presenting Kotlin coroutines at learn/share

Royal Bank of Canada, Toronto ON - Software Developer

January - April 2022

- Joined agile team to work on mortgage application web portal
- Back-end: REST microservices in Spring, JDBC, MongoDB, OpenAPI, GraphQL, JUnit and integration testing
- Front-end: Angular, NgRx, Jest unit and Cypress end-to-end testing
- Alleviated workload imbalances in the team by voluntarily becoming the team's first full stack developer
- Increased company wide developer knowledge on React and IndexedDB by researching and presenting to developers

Homecare Hub, Toronto ON - Full Stack Developer

May - August 2021

- Joined the dev team to revamp elderly care web marketplace
- Built a search bar component using Vue.js, REST API with PHP MVC back-end, Google Maps API, cookies
- Refactored front-end from PHP to Vue.js components and Vuex, and upgraded Bootstrap CSS and JQuery

Bank of Montreal, Toronto ON - Developer

September - December 2020

- Joined agile team with focus on mobile/online banking and digital enrollment
- Worked on RESTful microservices in Spring Boot
- Fixed code smells, improved unit test coverage by writing JUnit tests and Angular unit tests

Loopio Inc, Toronto ON - Software Developer in Test

May - August 2020

- Joined agile team in development work and automated testing of SAAS product
- Built homepage UI in React, MVC back-end REST APIs in PHP, OpenAPI, SQL
- Wrote PHP/React unit tests, API tests, Web Driver (Selenium) automated browser tests

- Created and presented test automation utilities using Jest and Puppeteer for running web component tests and screenshot testing
- Wrote Node.js scripts to automate screenshot organization and comparison using Pixelmatch

ACADEMIC AND SIDE PROJECTS

Object Oriented Board Game

December 2019

- Received grade of 97% on group project implementing the board game Catan
- Study and implementation of interfaces, classes, inheritance, encapsulation, composition, Template Method, Observer and MVC design patterns in C++
- Created UML diagrams, documentation, coded game objects and game logic
- Abstract classes and template classes were used to achieve polymorphism and multiple observer inheritance
- Design followed practice of separation of concerns, reduced coupling, increased cohesion

RBC Battlesnake Tournament

March 2022

- Came in top 3 in snake AI competition
- Lead team in research and development of AI using flood fill and A-star search algorithms
- Implemented in Node.js, using worker pool for concurrency and hosted on AWS EC2

Bitcoin Price Prediction

November - December 2021

- Lead a team to build distributed computing jobs for analyzing the Bitcoin blockchain to predict Bitcoin price
- Used Python and PySpark to parse raw blockchain data into transaction metrics over time to generate dataset
- Applied Spark MLlib tools like PCA and Linear Regression estimators to perform dimensionality reduction and prediction of Bitcoin price given the transaction metrics
- Received a mark of 95% on course project

Color Space Approximation

December 2020 - December 2021

- Built a custom neural network with custom gradient descent using a differentiable tricubic interpolator in NumPy to reverse engineer an intermediate color space mapping
- Applied trilinear interpolation, linear models and curve fitting in R and SciPy to generate LUTs and color matrices
- Modeled color mappings between camera/film profiles

HonkForSublet Web and Database Application

May - August 2021

- Lead group project to build sublet web marketplace in Node.js, React, MySQL that resulted in 100% grade
- Designed ER diagrams, relational diagrams and SQL schema
- Setup AWS RDS with Node.js and SQL scripts for database migrations, backup, and web scraping
- Implemented React front-end and HTTP controllers and models for CRUD operations with database

Class Kaggle Competition

January - April 2021

- Applied machine learning to predict the number of likes for a Twitter tweet given a labeled dataset of tweets
- Trained a Gated Recurrent Unit neural network using PyTorch in Jupyter Notebook with plots in matplotlib
- Training and hyper-parameter tuning with k-fold cross validation done on Google Colab and AWS EC2
- Beat TA's best score and received a mark of 90% on course project

Web Pivot Table

2018 - present

- Part time work on pivot table web component product for data analysis/reporting in Vue.js and React
- Helped migrate compute to AWS Lambda, storage to S3 and DynamoDB, sign-up/log-in through Cognito

ACADEMIC ACHIEVEMENTS

University of Waterloo President's Scholarship of Distinction (95%+ admission average)

CEMC CCC Junior Certificate of Distinction (top 25%)