

# Helen(Haoqing) Tian

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## EDUCATION

### Computer Science and Statistics University of Waterloo

09/2016 – 04/2020

Waterloo, Ontario

#### Courses

- Artificial Intelligence
- Distributed System
- Data Structure and Algorithms
- Data Analysis
- Linear Regression Models
- Machine Learning
- Computational Statistics
- Object-Oriented Software Development
- Applied Probability
- Software Design and Architecture

### School of Computing (exchange student) National University of Singapore

01/2019 – 05/2019

Singapore

#### Experience

- Participated in National Data Science Challenge
- Operating System
- Database Management
- Non-parametric Statistics

## WORK EXPERIENCE

### Computer Technician Fusion IT / Kumatech Inc.

05/2019 – 08/2019

Montreal, Quebec

#### Achievements

- Assembled computers and corresponding peripheral devices, installed and configured appropriate drives and tested proper functionality for over 30 costumers.
- Communicated remotely with costumers to understand, document, resolve or escalate IT issues such as permissions, connectivity, hardware problems, configuration, etc.
- Monitored clients computers remotely using ConnectWise and provided IT technical assistance and support for incoming queries and issues related to the computer systems, software, and hardware.

### Software Developer Tele-Construction Engineering Corporation

01/2018 – 04/2018

China

#### Achievements

- Updated and maintained the official website and identified 3 queries for improvement in the current SQL database.
- Performed daily maintenance of databases including reviewing and optimizing SQL queries, DB access management, monitoring and backup activities.
- Participated in designing the service-tracking mobile application with different versions for clients, engineers and administrators.
- Collaborated with engineering teams in various geographic locations to diagnose and resolve 15 design issues and customer reported problems.

## SKILLS

C/C++

Python

Java

SQL

Git

Linux/UNIX

HTML/CSS/JavaScript

React/Vue.js

Node.js

Express

Android Studio

R

Data Analysis

## PERSONAL PROJECTS

### Loans Simplified Android Application (01/2020 – 04/2020) ↗

- Designed the android application to simplify the loans based on the social network, written in Java by Android Studio.
- Applied the layered architecture, state, observer and adapter design patterns in the application.
- Achieved the functional properties for sign in, sign up, search, contact list, add loans, accept loans, connect to the wallet, settings, display the balance and transaction.
- Used firebase as the online database to store the users and loan data, and used its API to modify the data.

### Travelling Salesman Problem (09/2019 – 10/2019)

- Solved the travelling salesman problem using A\* search algorithm, written in python.
- Utilized adjacency list data structures to abstract the problem setting into the completely connected graph.
- Implemented the Kruskal's algorithm for finding the minimum spanning tree in graph of all unvisited cities, and used its cost as the admissible heuristic function in A\* search.
- Achieved the efficient average runtime  $O(n^2 \cdot 2^n)$  for finding the shortest path.

### Uber Pet Application (02/2019 – 04/2019)

- Designed a web application that users have individual accounts and the orders could be placed by matching pet owners' requirements and caretakers' availabilities.
- Designed the responsive UI using HTML, CSS, JavaScript and Bootstrap for users to register, search and place orders.
- Set data on PostgreSQL, which contains users' information eg. ID, password, pet type, hour price, available time.
- Implemented the back-end by Node.js and connected with database using Pool, displayed the results of SQL complex queries and triggers on the web.

### C++ Compiler (09/2018 – 12/2018)

- Created a compiler for a subset of C++, converting C++ code into MIPS code, then into executable binary program.
- Utilized deterministic finite automaton to create the scanner part, which automatically rejected all C++ code containing illegal syntax.
- Implemented a parser to recognized the sequence in the language and a context-sensitive analyzer to catch all remaining compile-time errors.

### Tower of the Sorcerer (05/2018 – 08/2018)

- Designed a rogue-like RPG game written in C++ with a text GUI.
- Implemented random generated enemies, items and character with specific rules for their positions.
- Applied object-oriented patterns to achieve interactions between characters and enemies, created enemies classes with different attack patterns and damages toward characters, and items classes for reward or poison.
- Achieved the movements and actions of character can be controlled by the standard input, and the guild messages displayed on the standard output.