# Fanzhong Kong

Seeking 2019 Summer SDE Internship

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## EDUCATION

**University of Michigan, Ann Arbor, MI**                                      Sep. 2018 – Dec. 2019
*Master of Computer Science*                                                              *GPA: N/A*

**University of Michigan, Ann Arbor, MI**                                      Sep. 2016 – Apr. 2018
*Bachelor of Computer Science*                                                      *GPA: 3.87/4.00*

## SKILLS

*Languages:*    C++, Python, JavaScript, Java, HTML, SQLPlus, MySQL, Sqllite3, PyTorch

## EXPERIENCE

**Umich Transportation Research Institute – JavaScript, Git**                 Sep. 2018 – Current
*Software Developer,* Web Based Data Analysis Tools
- Used jsPDF and html2canvas JS libraries to enable the user to download generalized charts & tables of the website
- Applied sessionStorage to cache the user query and small size data on the client to simplify the website's workflow

**HASCO Vision Technology Co. – Python, Git**                               May 2018 – Aug. 2018
*SDE Internship,* Dynamic Trajectory of Vehicle
- Built kinematic model & GUI to predict the forward trajectory of the vehicle through Scipy & PyQt5
- Used Mean Shift & B-Spline Non-rigid Image Registration Algorithm to obtain the car trajectory from the camera
- Reduce the measurement error within 5% by comparing various methods by experiments and adjusting parameters

**Umich Database Research Group – Python, Java, JavaScript, Git**             May 2017 – Apr. 2018
*Research Assistant,* Code Completion System Group *under Prof. Michael Cafarella*
- Built a REST API server on a Linux server with the Atom plug-in, which enables simultaneous requests
- Improve the accuracy to 48% by developed machine learning features & machine-readable dictionary
- Used Jupyter Notebook to train the LSTM (PyTorch) with tips on AWS with GPU to speed up the process

**Umich Biomechanics Physiology Lab – C++, Git**                             Mar. 2017 – Sep. 2017
*Software Developer,* 3DSSPP (an MFC software used by Ford and other research groups) Group
- Modified user interface based on *openGL* to add buttons, backgrounds, geometric figures
- Improving program efficiency by reducing redundant loops and modifying data structures
- Added similar functions by modifying the inheritance tree to avoid duplicated code

## PROJECTS

**B+ Tree implementation – C++**
- Developed a B+ tree that supports efficient insert, delete, search range operations with full-split, redistribute-first
- Applied templates to support the index of generalized types

**File Index Server – C++**
- Implemented a multi-threaded, secure file server with multi-user privilege control through socket programming
- Applied the hand-by-hand, read-write lock to guarantee the consistency of the file system

**Relational Database Management – Java, SQLPlus**
- Used JDBC to access database to access and modify data with least data delivery principle
- Drew ER diagram to design the table schema and avoid duplicate data storage

**Journey with the Ghost (Game) – C# (Unity)    ([Video about the game](#))**
- Developed a puzzle, scroll game including 6 chapters, 78 scripts through Unity (ranked the second in showcase)
- Used delegate function & trigger to recover the game objects status automatically to save the development time

**Wiki search engine – Python, HTML, JavaScript, mySQL**
- Developed a scalable, integrated, web search engine with Flask, Jinjia libraries
- Used distributed computing (MapReduce) to speed up ranking process and avoid memory overflow by Hadoop
- Separated the index ranking from the search engine server to enables engine scalability

See more about personal projects in https://kongfanzhong.github.io/personal-website-kfz/