

# ZIHUA LIU

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## EDUCATION

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**Carnegie Mellon University, School of Computer Science**  
Master of Science in Intelligent Information Systems, GPA:4.00/4.33

August 2018 - December 2019

**Peking University**  
Bachelor of Science in Computer Science, GPA:3.60/4.00

September 2014 - July 2018

## INTERNSHIP EXPERIENCE

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**Shannon.AI**  
*Software Engineering Intern*

April 2018 - June 2018

- Built the framework of the company's financial question answering system which transformed user's natural language question into SQL query for structured data generation including data spreadsheet and data charts.
- Implemented key word tagging, dependency tree parsing and named entity recognition with Python for question decomposition and SQL query construction.

**Microsoft Research**  
*Research Intern*

April 2017 - February 2018

- Designed time series insights and pivot table recommendation with C# in project Auto-Insights, which is a research framework for automatic mining and recommendation of various insights from multi-dimensional data.
- Implemented prefix isotonic regression algorithm for unimodality insight that decreased the response speed 50 times compared with the classical isotonic regression.
- Developed Fast R-CNN model with Python for data table recognition in Excel worksheet. Conducted feature engineering on extracted data tables and implemented deep learning inference model with C# for table classification among column-major tables, row-major tables and pivot tables.

## SELECTED PROJECTS

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**Thoracic Disease Classification and Report Generation**

Fall 2018

- Applied Densenet-121 as image-encoder for multi-label thoracic disease classification on ChestXray-14 dataset and achieved state-of-the-art performance with average AUROC score of 0.83. Implemented weighted loss and oversampling to handle unbalanced data.
- Built an image-attended 2-layer LSTM decoder for report generation with scaled dot-product attention. Obtained BLEU-1 score of 0.42 and ROUGE score of 0.33.

**RISC-V Instruction Set Architecture Simulator**

Fall 2017

- Implemented a simulator with C++ which simulated the execution process including file parsing, instruction fetching, instruction decoding and system calls of a given ELF file based on RISC-V instruction set architecture.
- Designed data structures to simulate the computer hardware like registers, memory, program counter, etc and translated each instruction in RISC-V ISA to the execution process on the simulative hardware.

**AQI Detector**

Spring 2017

- Developed an IOS application with Swift3 indicating the real-time air quality index (AQI) in the users respective location.
- Built a website from scratch with HTML and PHP, for online visualization of air quality map and real-time photos.

## SKILLS

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**Programming Languages**  
**Platforms & Tools**

Python, C/C++, C#, Java, HTML/CSS, JavaScript, Swift, Assembly, SQL  
Linux, Windows, AWS, Git, Tensorflow, Pytorch, OpenCV