

## Curriculum Vitae

[Liu], [Xuan]  
[Nanjing University]  
[Computer Science]

### Education

#### **Nanjing University, Nanjing, China**

Bachelor of Science in Computer Science

Expected in June 2020

GPA: 90/100

**Major Courses:** Software Testing 96%, Software Quality Assurance 95%, General Physics 94%, Numerical Method 92%, Computer Systems 91%, Assembly Language Programming 90%, Calculus I (Band One) 92%, Basics of Programming 89%, Foundations of Computer Networks 88%, Data Structures 87%

### Research/Laboratory Experience

#### **A Lock using Voiceprint Recognition**

2018

*Environment: C++/Matlab/ Raspberry Pi*

- Developed a well-made lock, which could identify voice print with those stored in the system
- Extracted MFCC as speaker feature parameter and used Gaussian mixture model (GMM) as speaker recognition model. Meanwhile, using a linear combination of multiple Gaussian components to represent the distribution of speaker samples in the acoustic feature space
- Used the MFCC-GMM model and the Raspberry Pi to make locks that can be used to identify voiceprints
- Used the voiceprint recognition to solve the cocktail party problem and filter out the noise of the rest of the environment
- Published the result and datasets we created

#### **Road Simulation**

Sep. 1<sup>st</sup> 2018-present

*Environment: C++/python/car simulator*

- The simulated road is our team's own use of drones to capture road data and identify and track pedestrians, motor vehicles and non-motor vehicles to help autopilot vehicles make action choices
- My Innovative operations for pedestrian tracking are listed below
- Do non maximum suppression on straight lines which gained from the last step to extract both sides of the zebra crossing
- RANSAC filters the appropriate match and calculates the new stabling matrix, and Stabling
- Using KNN method to do foreground background separation, in order to get the foreground mask
- The paper of this research is still being written and is expected to be released in the first half of next year

#### **Image-Based Reconstruction for Building Information Modeling**

Oct. 1<sup>st</sup> 2018-present

*Environment: C++/python*

- Our group introduced an instance segmentation method of images to further understand the semantic information in the image reflecting the environment and simultaneously estimate the height information.
- Establish a three-dimensional Cartesian coordinate system, solve two-dimensional image points out of three-dimensional coordinates, and project two-dimensional images into a three-dimensional Cartesian system.

- Get the semantics of the construction site with the help of the vanishing point and the Manhattan line, and calculate the building height
- Using unity3D reconstruct the buildings.

### **Recommender System Using Knowledge Graph**

**June 2018-Sep. 2018**

*Environment: Windows/python*

- Datasets were provided by Meituan company in China.
- Use the user's scoring data on the movie to personalize the movie for the user
- Cleaning data, creating negative examples, selecting model, doing model fusion, calculating F-1 score and generating the reasons of recommending.
- Using xdeepfm model and waterflow model to calculate the predicted score that a user may score a film.
- This research produces a complete project and a webpage for using. The webpage is <http://193.112.96.116:8000/KGRS2/>

### **MINI X86 Emulator, AKA NEMU, 2017**

*Environment: Linux/C*

- Built a simple but complete full-system x86 emulator that resembles simplified QEMU, including DRAM, cache, IA-32 segmentation and paging with TLB, interrupt and exception, 6 devices and 2 types of I/O.
- Used software logic to simulate CPU core that supports most common used x86 instructions in protected mode
- Created a small monitor with a simple debugger to enable single step debugging and to examine the memory and the registers
- Completed most of the core codes except some library and configuration code

## **Work Experience**

### **Sinovation Ventures, Developer**

**July 2018-Sep. 2018**

- To create recommender system for users
- To reconstruct and optimize the source code of spark, achieving 30% performance gain on average on benchmark
- Volunteered to organize diverse team-building activities

## **Honors & Awards**

Chairman of Nanjing University Basketball Association 2018

People's Scholarship for two consecutive years 2016-2018

Outstanding Individual of Social Activities, Nanjing University 2016

Basketball League Runner-up (main player), Nanjing University 2016

## **Skills**

Programming experience with C, C++, Java, Python, SQL, Assembly language

Solid knowledge of object-oriented programming, algorithms and computer systems

Playing leading roles in multiple groups and managing to be a good leader and team player