Peiyao Sheng

Senior Undergraduate,Computer Science

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Education

Sept 2015 – Present
B.S., Computer Science and Technology.
ACM Honors Class (an elite CS program for top 5% talented students)
Zhiyuan College, Shanghai Jiao Tong University, China

Publication

ISCSLP 2018
Peiyao Sheng, Zhuolin Yang, Huhu, Tian Tan, Yanmin Qian.*"Data Augmentation using Conditional Generative Adversarial Networks for Robust Speech Recognition"*.11th International Symposium on Chinese Spoken Language Processing (ISCSLP), 2018.

Research Experience

Sept 2018 – Dec 2018
Security Lab, at University of Illinois at Urbana-Champaign.
Visiting Research Intern, advised by *Prof. Bo Li*

Working on a sequential incentive mechanism for blockchains.

- To solve Verifier's Dilemma and increase scalability in blockchain by adapting a peer prediction mechanism as financial incentives.
- To decrease communication cost of the system with online learning method.
- To analyze the performance by instantiating a practical outsourcing system.

July 2018 – Sept 2018
Worked on a privacy-preserving advertisement recommendation contract within Trusted Execution Environment (TEE).

- Implemented a recommendation contract based on Factorization Machine (FM) using Ethereum API web3.
- Achieved privacy-preserving by decrypting data only inside the secure enclave.
- Evaluated the performance on Intel SGX, latency statistics are small with heavy workload, also increase super-linearly with the throughput.

Sep 2017 – Mar 2018
SpeechLab, at Shanghai Jiao Tong University.
Undergraduate Researcher, advised by *Prof. Kai Yu* and *Prof. Yanmin Qian*

- Explored conditional Generative Adversarial Network (cGAN) for data augmentation to improve Automatic Speech Recognition (ASR) in noisy environments.
- Utilized the original paired clean speech as condition to generate data.
- Obtained a relative 6% to 10% Word Error Rate (WER) reduction upon an advanced acoustic model.

Teaching Experience

Teaching Assistant.

Spring 2018 MS208, Compilers

Summer 2017 MS106, Principle and Practice of Computer Algorithms

Spring 2017 MS105, Data Structures

Fall 2017 CS122, C++ Programming

Course Projects

Fall 2017 **Semantic Alignment for Hierarchical Image Captioning**.
A hierarchical adversarial attention based model to generate natural language description of images.

Spring 2017 **Simpiler: Modern Compiler Implementation, Java**.
A concise compiler for C-and-Java-like language to x86 assembly, 2-layer hierarchical Intermediate Representation structure, 14,000+ lines of code.

Spring 2017 **SimpleMIPS: A Prototype of 5-stages Pipelined MIPS Microprocessor, Verilog HDL**.
A simple prototype of 32-bits, Harvard structural and 5-stages pipelined MIPS microprocessor, the coursework of MS108, Computer System-I.

Spring 2016 **Your Simulated Formularized Life-game, C++** .
A visual simulator of a specialized kind of cellular automaton, a group project of the course Introduction of Physics.

Fall 2015 **Lisperarian, C++**.
A Library System supporting multiple OS platforms, a group project of the course C++ Programming.

Honors and Awards

2016-2017 **Kai Yuan Scholarship** *Top 2%*
Excellent scholarship in Zhiyuan College

2017 **Meritorious Winner** *Top 10%*
First Prize in Interdisciplinary Contest In Modeling, 2017

2015, 2016 **Academic Excellence Scholarship** *1st place*
Top 5% students award in Shanghai Jiao Tong University

2016,2017 **Zhiyuan Honorary Scholarship**.
Top students in Zhiyuan college