

# Peiyao Sheng

Second-year Graduate, Computer Science

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📄 [simplespy.github.io](https://github.com/simplespy)

## Education

- Sept 2019 – **M.S., Computer Science.**  
Present University of Illinois, Urbana-Champaign
- Sept 2015 – **B.S., Computer Science and Technology.**  
June 2019 ACM Honors Class (an elite CS program for top 5% talented students)  
Zhiyuan College, Shanghai Jiao Tong University, China

## Publication

- FC 2021 (Submitted) **Peiyao Sheng**, Gerui Wang, Kartik Nayak, Sreeram Kannan, Pramod Viswanath. *“BFT Protocol Forensics”*. Financial Cryptography and Data Security.
- FC 2021 (Submitted) **Peiyao Sheng**, Bowen Xue, Sreeram Kannan, Pramod Viswanath. *“ACeD: Scalable Data Availability Oracle”*. Financial Cryptography and Data Security.
- ASRU 2019 **Peiyao Sheng**, Zhuolin Yang, Yanmin Qian. *“GANs for Children: a Generative Data Augmentation Strategy for Children Speech Recognition”*. IEEE Automatic Speech Recognition and Understanding Workshop.
- ISCSLP 2018 **Peiyao Sheng**, Zhuolin Yang, Huhu, Tian Tan, Yanmin Qian. *“Data Augmentation using Conditional Generative Adversarial Networks for Robust Speech Recognition”*. International Symposium on Chinese Spoken Language Processing (ISCSLP).

## Research Experience

- Jan 2020 – **Coordinated Science Lab**, at University of Illinois at Urbana-Champaign.  
Present Research Assistant, advised by *Prof. Pramod Viswanath*
- Worked on a scalable data availability oracle for blockchains.[[Paper](#)]
- Proposed ACeD, integrated coding-theoretic designs inside of Merkle tree commitments to guarantee efficient and tamper-proof reconstruction. Achieved constant communication efficiency and storage overhead.
  - Implemented ACeD in 6000 lines of Rust code, integrated the functionality as a smart contract into Ethereum demonstrating up to 10,000 tps in throughput and 6000x reduction in gas cost on the testnet Kovan. [[Code](#)]
- Worked on forensic support for BFT protocols.[[Paper](#)]
- Formalized the forensic support to provide irrefutable evidence when bad behaviors happen in BFT protocols. Proved that well-known protocols like PBFT, HotStuff, and VABA have strong forensic support. Proved an impossibility result for protocols which can tolerate half corruptions (e.g. in a synchronous network).
- Sept 2018 – **Security Lab**, at University of Illinois at Urbana-Champaign.  
Dec 2018 Visiting Research Intern, advised by *Prof. Bo Li*

Worked on a privacy-preserving advertisement recommendation contract system.

- 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 – **SpeechLab**, at Shanghai Jiao Tong University.

Mar 2018 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. Obtained a relative 6% to 10% Word Error Rate (WER) reduction upon an advanced acoustic model.

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## Professional Experience

### Industry Experience.

Spring 2019 Research Intern, Urban Computing Group, **SenseTime**, China

### Teaching Assistant.

Fall 2019 CS107, **Data Science Discovery**

Spring 2018 MS208, **Compilers**

Summer 2017 MS106, Principle and Practice of Computer Algorithms

Spring 2017 MS105, Data Structures

Fall 2017 CS122, C++ Programming

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## Honors and Awards

### 2019 Outstanding Graduates

Excellent graduates in Shanghai Jiao Tong University

### 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.