

# Peiyao Sheng

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

## Education

- Sept 2021 – **Ph.D., Computer Science.**  
Present University of Illinois, Urbana-Champaign
- Sept 2019 – **M.S., Computer Science.**  
May 2021 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

## Publications

- CCS 2021 Peiyao Sheng, Gerui Wang, Kartik Nayak, Sreeram Kannan, Pramod Viswanath. *“BFT Protocol Forensics”*.
- FC 2021 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.

## Research Experience

- Jan 2020 – **Coordinated Science Lab**, at University of Illinois at Urbana-Champaign.  
Present Research Assistant, advised by *Prof. Pramod Viswanath*
- Worked on forensic support for BFT protocols. [Paper]
- Formally characterized the ability of consensus protocols to cryptographically identify malicious actors, when a security breach has occurred. Proved that well-known protocols like PBFT, HotStuff, and VABA have strong forensic support. Proved an impossibility result for Algorand and protocols tolerating half corruptions.
  - An implementation of forensic module on top of Diem blockchain has been submitted as a Diem Improvement Proposal (DIP). [Proposal]
- 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]

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

2020 **ACM-ICPC Mid-Central USA Regional Contest** *2nd place*

Team *UIUC D*, Zhuolin Yang, Peiyao Sheng, Hanxuan Chen

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.**