

# Peiyao Sheng

✉ [psheng2@illinois.edu](mailto:psheng2@illinois.edu)  
📄 [simplespy.github.io](https://github.com/simplespy)

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## 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

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## Publications

- Preprint **Peiyao Sheng, Gerui Wang, Kartik Nayak, Sreeram Kannan, Pramod Viswanath.** *“Player-Replaceability and Forensic Support are Two Sides of the Same (Crypto) Coin”*, Under review.
- CCS 2021 **Peiyao Sheng, Gerui Wang, Kartik Nayak, Sreeram Kannan, Pramod Viswanath.** *“BFT Protocol Forensics”* **Best Paper Award Runner-Up**, ACM Conference on Computer and Communication Security.
- 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.

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## 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.
  - 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 – **Secure Learning 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. 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.

## 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

## Honors and Awards

- 2021 **ACM CCS Best Paper Award Runner-Up**
- 2020 **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
- 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**