Peiyao Sheng

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🏠 simplespy.github.io

Education

Sept 2021 – Present | **Ph.D., Computer Science.**
University of Illinois, Urbana-Champaign

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

Sept 2015 – June 2019 | **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

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.

Research Experience

Jan 2020 – Present | **Coordinated Science Lab**, at University of Illinois at Urbana-Champaign.
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 –
Dec 2018 **Secure Learning Lab**, at University of Illinois at Urbana-Champaign.
Visiting Research Intern, advised by *Prof. Bo Li*

- Worked on a privacy-preserving advertisement recommendation contract system.

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

Professional Experience

Industry Experience.

Summer 2021 Research Intern, Kaleidoscope Blockchain, US

- Worked on building a tokenized telco marketplace, called kaleidoscope. It was designed to connect network applications with network infrastructures in a decentralized manner. We've built a demo where consumers can book network instances from the marketplace, and the blockchain ensures the payment and service according to the service-level agreement posted on chain.

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

- Worked on network architecture search.

Teaching Assistant.

Spring 2022	ECE598, Principles of Blockchains
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

2022	**Chainlink Labs Fellowship Honorable Mention**	
2021	**ACM CCS Best Paper Award Runner-Up**	
2020	**ICPC Mid-Central USA Regional Contest**	*2nd place*
2019	**Outstanding Graduates in Shanghai Jiao Tong University**	
2017	**Kai Yuan Scholarship**	*Top 2%*
2017	**Meritorious Winner in MCM/ICM**	*Top 10%*
2015, 2016	**Academic Excellence Scholarship**	*1st place*
2016, 2017	**Zhiyuan Honorary Scholarship**	