

Chenyuan Wu

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EDUCATION

- University of Pennsylvania** PA, US
Ph.D. candidate, Computer and Information Science 2020 - Present
- Thesis: “Towards Full-Stack Adaptivity in Permissioned Blockchains”
 - Advisor: Boon Thau Loo
- Beijing Jiaotong University** Beijing, China
B.E., Electrical Engineering 2016 - 2020
- Ranked top 1 out of 500 students

RESEARCH INTEREST

My research interest mainly lies in distributed data management, consensus protocols, and blockchains. I am especially interested in using machine learning to build the next generation of distributed systems that are adaptive and smart. In pursuit of this goal, I have researched and published across the system stack deployed in untrusted environments, from adaptive transaction management to adaptive Byzantine fault-tolerant consensus and their underlying infrastructure.

PUBLICATIONS

BFTBrain: Adaptive BFT Consensus with Reinforcement Learning

Chenyuan Wu, Haoyun Qin, Mohammad Javad Amiri, Boon Thau Loo, Dahlia Malkhi, Ryan Marcus
USENIX Symposium on Networked Systems Design and Implementation, NSDI 2025

Towards Full Stack Adaptivity in Permissioned Blockchains

Chenyuan Wu, Mohammad Javad Amiri, Haoyun Qin, Bhavana Mehta, Ryan Marcus, Boon Thau Loo
International Conference on Very Large Data Bases, VLDB 2024

BFTGym: An Interactive Playground for BFT Protocols

Haoyun Qin, **Chenyuan Wu**, Mohammad Javad Amiri, Ryan Marcus, Boon Thau Loo
International Conference on Very Large Data Bases, VLDB 2024 Demo

Towards Truly Adaptive Byzantine Fault-Tolerant Consensus

Chenyuan Wu, Haoyun Qin, Mohammad Javad Amiri, Boon Thau Loo, Dahlia Malkhi, Ryan Marcus
ACM SIGOPS Operating Systems Review, SIGOPS OSR 2024

The Bedrock of Byzantine Fault Tolerance: A Unified Platform for BFT Protocols Analysis, Implementation, and Experimentation

Mohammad Javad Amiri, **Chenyuan Wu**, Divyakant Agrawal, Amr El Abbadi, Boon Thau Loo, Mohammad Sadoghi
USENIX Symposium on Networked Systems Design and Implementation, NSDI 2024, Outstanding Paper Award

AdaChain: A Learned Adaptive Blockchain

Chenyuan Wu, Bhavana Mehta, Mohammad Javad Amiri, Ryan Marcus, Boon Thau Loo
International Conference on Very Large Data Bases, VLDB 2023

FlexChain: An Elastic Disaggregated Blockchain

Chenyuan Wu, Mohammad Javad Amiri, Jared Asch, Heena Nagda, Qizhen Zhang, Boon Thau Loo
International Conference on Very Large Data Bases, VLDB 2023

Synthesizing Formal Network Specifications from Input-Output Examples

Haoxian Chen, **Chenyuan Wu**, Andrew Zhao, Mukund Raghathan, Mayur Naik, Boon Thau Loo
IEEE/ACM Transactions on Networking, ToN 2022

Provenance for Probabilistic Logic Programs

Shaobo Wang, Hui Lyu, Jiachi Zhang, **Chenyuan Wu**, Xinyi Chen, Wenchao Zhou, Boon Thau Loo, Susan B. Davidson, Chen Chen

International Conference on Extending Database Technology, EDBT 2020, Best Paper Award

PREPRINTS

On Orchestrating Parallel Broadcasts for Distributed Ledgers

Peiyao Sheng*, **Chenyuan Wu***, Dahlia Malkhi, Michael K. Reiter, Chrysoula Stathakopoulou, Michael Wei, Maofan Yin (*Both authors contributed equally)

ePrint [pdf]

REFERENCE LETTERS

Prof. Boon Thau Loo (boonloo@seas.upenn.edu)

RCA Chair Professor at University of Pennsylvania

Senior Associate Dean, Education and Global Initiatives, Penn Engineering

Prof. Dahlia Malkhi (dahliamalkhi@ucsb.edu)

Professor at UC Santa Barbara

ACM Fellow

Distinguished Scientist at Chainlink Labs

Co-Founder of VMWare Research

Prof. Ryan Marcus (rcmarcus@seas.upenn.edu)

Assistant Professor at University of Pennsylvania

PROFESSIONAL EXPERIENCE

Chainlink Labs

Research Intern

May 2023 - Dec. 2023

Mentor: Dahlia Malkhi

Ticketing regimes for orchestrating parallel broadcasts in distributed systems

Huawei, Central Research Institute

Research Intern, Network Technology Lab

Nov. 2019 - Jan. 2020

Mentor: Delei Yu

Congestion control and performance study of Multipath TCP

TEACHING

CIS Online 553: Networked Systems, University of Pennsylvania

Teaching Assistant

Spring 2022

CIS Online 553: Networked Systems, University of Pennsylvania

Course Designer

Fall 2021

SELECTED AWARDS

NSDI Outstanding Paper Award, USENIX, 2024

VLDB Travel Award, National Science Foundation, 2023

EDBT Best Paper Award, EDBT Association, 2020

Ph.D. Fellowship, University of Pennsylvania, 2020

President's Scholarship (10 out of 15,000), Beijing Jiaotong University, 2019

National Scholarship, Chinese Ministry of Education, 2019

National Scholarship, Chinese Ministry of Education, 2017

Second Prize in the National College Physics Competition, Beijing Institute of Physics, 2017

SERVICE

Journal Reviewer: Transactions on Storage, Transactions on Dependable and Secure Computing

External Reviewer: CIKM 2022, WORDS 2021, CoNEXT 2020

Organizer: Distributed Systems Laboratory Seminar at University of Pennsylvania, Fall 2022, Spring 2023

RECENT TALKS

On Orchestrating Parallel Broadcasts for Distributed Ledgers

UC Davis, Virtual, November 2023

AdaChain: A Learned Adaptive Blockchain

VLDB 2023, Vancouver, August 2023

FlexChain: An Elastic Disaggregated Blockchain

VLDB 2023, Vancouver, August 2023

MENTORING

Haoyun Qin (undergraduate at Penn), 2022 - Present

Bhavana Mehta (Ph.D. student at Penn), 2022 - 2023

Jared Asch (undergraduate at Penn), 2022, now Software Engineer at Five Rings

Heena Nagda (Ph.D. student at Penn), 2022