

WANXIN LI

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EDUCATION

University of Delaware

Newark, DE, USA

- Ph.D. in Transportation Engineering 9/2018 - 5/2022 (expected)
 - Advisor: Prof. Mark Nejad
- M.S. in Computer Science 9/2015 - 5/2017

Chongqing University

Chongqing, China

- B.S. in Computer Science 9/2011 - 6/2015

RESEARCH INTERESTS

Security and privacy in distributed systems, including blockchain networks, connected and autonomous vehicular networks and Internet of Things

PUBLICATIONS (citations: 109, h-index: 5)

Peer-reviewed Journal Papers

- J1. An Attribute-based Cryptosystem for Electronic Health Records Management with A Hybrid Blockchain-Edge Architecture
H. Guo, **W. Li**, M. Nejad and C. Shen
IEEE Transactions on Network and Service Management. (impact factor: 3.9) - under review
- J2. ZK-BFT: A Zero-knowledge and Byzantine Fault Tolerant Consensus for Permissioned Blockchain Networks
W. Li, C. Meese, M. Nejad and H. Guo
IEEE Transactions on Network Science and Engineering. (impact factor: 5.2) - under review
- J3. A Hierarchical and Location-aware Consensus Protocol for IoT-Blockchain Applications
H. Guo, **W. Li** and M. Nejad
IEEE Transactions on Network and Service Management. (impact factor: 3.9) - under review
- J4. Traffic Prediction using Artificial Intelligence: Review of Recent Advances and Emerging Opportunities
M. Shaygan, C. Meese, **W. Li**, X. Zhao and M. Nejad
Transportation Research Part C: Emerging Technologies. (impact factor: 8.1) - under review
- J5. Proof-of-Event Recording System for Autonomous Vehicles: A Blockchain-based Solution
H. Guo, **W. Li**, M. Nejad and C. Shen
IEEE Access, Vol. 8, pp. 182776-182786, 2020. (impact factor: 3.4)
DOI: [10.1109/ACCESS.2020.3029512](https://doi.org/10.1109/ACCESS.2020.3029512)
- J6. Privacy-Preserving Traffic Management: A Blockchain and Zero-Knowledge Proof Inspired Approach
W. Li, H. Guo, M. Nejad and C. Shen
IEEE Access, Vol. 8, pp. 181733-181743, 2020. (impact factor: 3.4)
DOI: [10.1109/ACCESS.2020.3028189](https://doi.org/10.1109/ACCESS.2020.3028189)

Peer-reviewed Conference Papers

- C1. BlockFed: Blockchain-secured Online Federated Learning for Traffic Flow Prediction
C. Meese, H. Chen, **W. Li**, S. Asif, C. Shen and M. Nejad
IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing (CCGrid), Taormina, Italy, May 16-19, 2022. - under review
- C2. A Location-based and Hierarchical Framework for Fast Consensus in Blockchain Networks
H. Guo, **W. Li** and M. Nejad
IEEE International Conference on Hot Information-Centric Networking (HotICN), Nanjing, China, November 25-27, 2021. - in press
- C3. P-CFT: A Privacy-preserving and Crash Fault Tolerant Consensus Algorithm for Permissioned Blockchains
W. Li, C. Meese, M. Nejad and H. Guo
IEEE International Conference on Hot Information-Centric Networking (HotICN), Nanjing, China, November 25-27, 2021. - in press
- C4. Location-aware Verification for Autonomous Truck Platooning Based on Blockchain and Zero-knowledge Proof
W. Li, C. Meese, Z. Zhong, H. Guo and M. Nejad
IEEE International Conference on Blockchain and Cryptocurrency (ICBC), Sydney, Australia, May 3-6, 2021. (acceptance rate: 18%)
DOI: [10.1109/ICBC51069.2021.9461116](https://doi.org/10.1109/ICBC51069.2021.9461116)
- C5. Blockchain-enabled Identity Verification for Safe Ridesharing Leveraging Zero-Knowledge Proof
W. Li, C. Meese, H. Hao and M. Nejad
IEEE International Conference on Hot Information-Centric Networking (HotICN), Hefei, China, December 12-14, 2020.
DOI: [10.1109/HotICN50779.2020.9350858](https://doi.org/10.1109/HotICN50779.2020.9350858)
- C6. Attribute-based Multi-Signature and Encryption for EHR Management: A Blockchain-based Solution
H. Guo, **W. Li**, E. Meamari, M. Nejad and C. Shen
IEEE International Conference on Blockchain and Cryptocurrency (ICBC), Toronto, Canada, May 2-6, 2020. (acceptance rate: 21%)
DOI: [10.1109/ICBC48266.2020.9169395](https://doi.org/10.1109/ICBC48266.2020.9169395)
- C7. Access Control for Electronic Health Records with Hybrid Blockchain-Edge Architecture
H. Guo, **W. Li**, M. Nejad and C. Shen
IEEE International Conference on Blockchain (Blockchain), Atlanta, USA, July 14-17, 2019. (acceptance rate: 15%)
DOI: [10.1109/Blockchain.2019.00015](https://doi.org/10.1109/Blockchain.2019.00015)
- C8. A Blockchain-based Architecture for Traffic Signal Control Systems
W. Li, M. Nejad and R. Zhang
IEEE International Congress on Internet of Things (ICIOT), Milano, Italy, July 8-13, 2019. (acceptance rate: 26%)
DOI: [10.1109/ICIOT.2019.00018](https://doi.org/10.1109/ICIOT.2019.00018)

Technical Reports

- T1. Snow Plow Route Optimization in Delaware
M. Li, A. Faghri, D. Yuan, **W. Li** and Q. Li
Delaware Department of Transportation (DelDOT), Rpt. DCT-269, 110 pp, April 2018.

Manuscripts in Preparation

- M1. Blockchain-enabled Bidirectional and Privacy-preserving Authentication for Safe Ridesharing
W. Li, C. Meese, M. Nejad, Z. Zhong and H. Guo
IEEE Transactions on Network Science and Engineering. (impact factor: 5.2)

- M2. Aggregated Zero-knowledge Proof and Blockchain-Empowered Authentication for Autonomous Truck Platooning
W. Li, C. Meese, M. Nejad and H. Guo
IEEE Transactions on Intelligent Transportation Systems. (impact factor: 2.5)

PRESENTATIONS & POSTERS

- P1. P-CFT: A Privacy-preserving and Crash Fault Tolerant Consensus Algorithm for Permissioned Blockchains
IEEE International Conference on Hot Information-Centric Networking (HotICN), Nanjing, China, November 27, 2021.
- P2. Blockchain-enhanced Traffic Management Approach
Department of Civil and Environmental Engineering, University of Delaware, Newark, DE, USA, Fall 2021.
- P3. Location-aware Verification for Autonomous Truck Platooning Based on Blockchain and Zero-knowledge Proof
IEEE International Conference on Blockchain and Cryptocurrency (ICBC), Sydney, Australia, May 5, 2021.
- P4. A Blockchain and Zero-Knowledge Proof Inspired Approach for Privacy-Preserving Traffic Management
International Workshop on Cyber-Physical Systems and Cyber-Resilience, Session IV: Blockchain Applications, Newark, DE, USA, March 11, 2021.
- P5. Frontiers in Blockchain for Secure Information Sharing in Connected Vehicle Environments
Department of Civil and Environmental Engineering, University of Delaware, Newark, DE, USA, October 13, 2020.
- P6. Attribute-based Multi-Signature and Encryption for EHR Management: A Blockchain-based Solution
IEEE International Conference on Blockchain and Cryptocurrency (ICBC), Toronto, Canada, May 4, 2020.
- P7. Blockchain: From Digital Currencies to Industrial Innovations
Shandong Agricultural University, Tai'an, China, December 30, 2019.
- P8. A Blockchain-based Architecture for Traffic Signal Control System
Department of Civil and Environmental Engineering, University of Delaware, Newark, DE, USA, October 30, 2019.
- P9. Introduction to Hyperledger Fabric
Department of Computer and Information Sciences, University of Delaware, Newark, DE, USA, October 18, 2019.
- P10. A Blockchain-based Architecture for Traffic Signal Control Systems
IEEE International Congress on Internet of Things (ICIOT), Milano, Italy, July 9, 2019.
- P11. Defending Traffic Signal Control Systems from Spoofing Attacks: A Blockchain Approach
International Workshop on Cyber-Physical Systems and Cyber-Resilience, Session IV: Blockchains, Newark, DE, USA, March 20, 2019.
- P12. A GIS-based Approach for Snow and Ice Removal Route Optimization to Improve Winter Maintenance Operations Management
Transportation Research Board (TRB) 98th Annual Meeting, Poster Session: 1567, Washington, DC, USA, January 18, 2019.

RESEARCH EXPERIENCE

University of Delaware

Newark, DE, USA

- Research Assistant - Mobility of the Future Lab

9/2018 - Present

- Project: Artificial Intelligence Enhanced Integrated Transportation Management System (AI-ITMS), Federal Highway Administration. *This project is in collaboration with Intelligent Automation Inc., Jacobs Engineering Group Inc. and Delaware Department of Transportation.
- Project: An Artificial Intelligence Based System for Advanced Freeway Data Collection and Analysis, U.S. Department of Transportation. *This project was in collaboration with Intelligent Automation Inc.
- Project: An Artificial Intelligence (AI) Traffic Data Analysis Tool for Advanced Freeway Traffic Management, U.S. Department of Transportation. *This project was in collaboration with Intelligent Automation Inc.
- Research Assistant - Delaware Center for Transportation 11/2016 - 4/2018
 - Project: Snow Plow Route Optimization in Delaware, Delaware Department of Transportation.

Chongqing University

Chongqing, China

- Undergraduate Student Researcher 10/2013 - 10/2014
 - Project: Intelligent Environmental Data Collection based on Parrot AR.Drone, Chongqing University Student Research and Training Program (SRTP).

TEACHING EXPERIENCE

University of Delaware

Newark, DE, USA

- Guest Lecturer
 - CIEG646: Convex Optimization Fall 2020
 - CISC859: Distributed Ledger Technology (Blockchain) Fall 2019
 - CIEG667: Convex Optimization Fall 2019
- Teaching Assistant
 - CIEG451: Transportation Engineering Laboratory Spring 2020
- Undergraduate Student Research Mentoring Spring 2020
- Junior Graduate Student Research Mentoring Fall 2020 - Fall 2021

HONORS & AWARDS

- COE Award Nominee for Graduate Student Excellence in Research, College of Engineering, University of Delaware, May 2021.
- Professional Development Award for Graduate Students, Office of Graduate and Professional Education, University of Delaware, February 2019.
- Outstanding Undergraduate Leadership Award, Chongqing University, June 2015.
- Yangtze Power Scholarship for Academic Excellence, China Yangtze Power Co., Ltd., April 2014.

PROFESSIONAL DEVELOPMENT TRAINING

- Involvement in grant proposal writing for National Science Foundation and Federal Highway Administration.
- Evidence-based Tips for High Quality and Inclusive Teaching, College of Engineering, University of Delaware, February 2021.

- International Teaching Assistant Training Program, English Language Institute, University of Delaware, Winter 2019.
- Fundamentals of Peer Review, Elsevier Researcher Academy, September 2019.
- Fundamentals of Manuscript Preparation, Elsevier Researcher Academy, February 2019.

SERVICES TO PROFESSION

- Journal Reviewer:
 - IEEE Access
 - IEEE Internet of Things Journal
 - Information Processing & Management
- Conference Reviewer:
 - IEEE International Conference on Blockchain
 - International Congress on Blockchain and Applications

REFERENCES

- Available on request