

WANXIN LI

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EDUCATION

University of Delaware

Newark, DE, USA

- Ph.D. in Transportation Engineering 9/2018 - 5/2022
 - Dissertation: Frontiers in Blockchain for Secure Information Sharing in Next Generation Transportation Systems
 - Advisor: Prof. Mark Nejad
 - GPA: 4.0

- 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 blockchain and its inspired applications such as connected and autonomous vehicular networks, electronic health record and federated learning.

PUBLICATIONS (citations: 171, h-index: 6)

Peer-reviewed Journal Papers (Corresponding author is marked with *)

- J1. 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 and Service Management. (impact factor: 4.2) - under review
- J2. Aggregated Zero-knowledge Proof and Blockchain-Empowered Authentication for Autonomous Truck Platooning
W. Li, C. Meese, H. Guo and M. Nejad
IEEE Transactions on Intelligent Transportation Systems. (impact factor: 6.3) - under review
- J3. A Hybrid Blockchain-Edge Architecture for Electronic Health Record Management with Attribute-based Cryptographic Mechanisms
H. Guo, W. Li*, M. Nejad and C. Shen
IEEE Transactions on Network and Service Management. (impact factor: 4.2) - accepted with revisions
- J4. 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: 4.2) - accepted with revisions
- J5. 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) - accepted with revisions

- J6. 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)
- J7. 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. BFRT: Blockchained Federated Learning for Real-time Traffic Flow Prediction
C. Meese, H. Chen, S. Asif, **W. Li**, C. Shen and M. Nejad
IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing (CCGrid), Taormina, Italy, May 16-19, 2022. - accepted
- 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.
DOI: [10.1109/HotICN53262.2021.9680858](https://doi.org/10.1109/HotICN53262.2021.9680858)
- 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.
DOI: [10.1109/HotICN53262.2021.9680829](https://doi.org/10.1109/HotICN53262.2021.9680829)
- 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 and Service Management. (impact factor: 4.2)

M2. A Bi-level Blockchain-based Federated Learning Architecture for Traffic Prediction

H. Guo, C. Meese, **W. Li***, H. Chen, M. Nejad, C. Shen

IEEE Transactions on Dependable and Secure Computing. (impact factor: 7.3)

M3. BFRT: Blockchained Federated Learning for Real-time Traffic Flow Prediction (Extension Study)

C. Meese, H. Chen, **W. Li**, S. Asif, C. Shen and M. Nejad

IEEE Transactions on Intelligent Transportation Systems. (impact factor: 6.5)

PRESENTATIONS & POSTERS

P1. Frontiers in Blockchain for Secure Information Sharing in Next Generation Transportation Systems

Department of Civil and Environmental Engineering, University of Delaware, Newark, DE, USA, March 23, 2022.

P2. 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.

P3. Blockchain-enhanced Traffic Management Approach

Department of Civil and Environmental Engineering, University of Delaware, Newark, DE, USA, Fall 2021.

P4. 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.

P5. 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.

P6. 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.

P7. 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.

P8. Blockchain: From Digital Currencies to Industrial Innovations

Shandong Agricultural University, Tai'an, China, December 30, 2019.

P9. A Blockchain-based Architecture for Traffic Signal Control System




Department of Civil and Environmental Engineering, University of Delaware, Newark, DE, USA, October 30, 2019.

- P10. Introduction to Hyperledger Fabric
Department of Computer and Information Sciences, University of Delaware, Newark, DE, USA, October 18, 2019.
- P11. A Blockchain-based Architecture for Traffic Signal Control Systems
IEEE International Congress on Internet of Things (ICIOT), Milano, Italy, July 9, 2019.
- P12. 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.
- P13. 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 BlueHalo, Jacobs Engineering Group 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 BlueHalo.
 - 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 BlueHalo.
- 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
 - CIEG667: Convex Optimization Fall 2019

- Junior Graduate Student Research Mentoring Fall 2020 - Fall 2021
- Undergraduate Student Research Mentoring Spring 2020

HONORS & AWARDS

- Civil Engineering Graduate Research Award, College of Engineering, University of Delaware, April 2022.
- 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, 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 Transactions on Network and Service Management
 - IEEE Transactions on Intelligent Transportation Systems
 - IEEE Internet of Things Journal
 - IEEE Access
 - Information Processing & Management
 - Blockchain: Research and Applications
- Conference Reviewer
 - IEEE International Conference on Blockchain
 - International Congress on Blockchain and Applications