

DAN LI

Assistant Professor

Department of Industrial and Systems Engineering, University of Washington
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EDUCATION

Georgia Institute of Technology • Atlanta, GA <i>Ph.D. • Industrial Engineering • Minor: Machine Learning</i>	2016 – 2021
Georgia Institute of Technology • Atlanta, GA <i>M.S. • Statistics</i>	2015 – 2020
Tsinghua University • Beijing, China <i>B.S. • Mechanical (Automotive) Engineering</i>	2011 – 2015

WORK EXPERIENCE

Assistant Professor – Department of Industrial and Systems Engineering University of Washington, Seattle, WA	Jun 2025 – Present
Assistant Professor – Department of Industrial and Systems Engineering University of Wisconsin-Madison, Madison, WI	Aug 2024 – Jun 2025
Assistant Professor – Department of Industrial Engineering Clemson University, Clemson, SC	Aug 2021 – Aug 2024

RESEARCH INTERESTS

- Applied statistics for cyber-physical security and resilience
- Online anomaly detection
- Complex systems modeling
- Machine learning and AI application in IoT-enabled systems

GRANTS AND AWARDS

📁 Grants

NSF CAREER Understanding the Cyber-Physical Resilience of Continuous Critical Manufacturing \$ 555,504 PI: Dan Li	2024 – 2029
NSF CICI UCSS: Human-Centered Cybersecurity in Robotic Surgery (HCCRS) - Coordinating the Human and Cyber Infrastructure for Cybersecurity \$ 599,982 PI: Jackie Cha, Co-PI: Dan Li, Share: 50%	2023 – 2026
NSF EPSCoR Subaward LLP-FM Early Career Seed Grants on Future Factories \$ 25,000 PI: Dan Li	2022 – 2023
Prisma Health Usability-driven Anomaly Identification for Physiological Sensors in Training \$ 20,000 PI: Jackie Cha, Co-PI: Dan Li, Share: 50%	2023 – 2024

🏆 AWARDS

Dean's Professorship College of Engineering and Applied Sciences, Clemson University	2024
Best Application Paper Award IISE Transactions, Data Science, Quality, and Reliability Focus	2023
Best Track Paper Award Data Analytics and Information Systems (DAIS), IISE Annual Conference	2021
Best Student Paper Finalist Quality Control and Reliability Engineering, IISE Annual Conference	2021
Tandon Faculty First Look Fellowship The NYU Tandon School of Engineering	2021
Best Student Paper Finalist DAIS, IISE Annual Conference	2020
Student Travel Grant NSF I-Corps Program, Venturelab	2020
Best Student Paper Award Energy Systems, IISE Annual Conference	2019
Best Student Paper Runner-up DAIS, IISE Annual Conference	2019
Best Student Poster (Second Prize) Student Poster Competition, Georgia Tech Cybersecurity Summit	2019
Outstanding Thesis Award Tsinghua University	2015
Undergraduate Fellowship Tsinghua University	2011-2015

PUBLICATIONS

📄 Journal Papers Under Review or In Preparation

1. Ayush Mohanty, Paritosh Ramanan, **Dan Li**, and Nagi Gebraeel, Federated Interdependency Learning for Root Cause Analysis of Anomalies in Nonlinear Dynamic Systems, *The Thirty-Ninth Annual Conference on Neural Information Processing Systems (NuerIPS 2025)*, Under Review.

2. Holden Duffie, Patrick Fuller, **Dan Li**, Alfredo Carbonell, and Jackie S. Cha, Identification of Cybersecurity Risks and Vulnerabilities in Robotic-Assisted Surgery, *Human Factors : The Journal of the Human Factors and Ergonomics Society*, Under Review.
3. Navid Aftabi, Abhishek Hanchate, Satish T Bukkapatnam, and **Dan Li**, DynaMark-RL: A Reinforcement Learning Framework for Dynamic Watermarking in Industrial Machine Tool Controllers, *IIEE Transactions*, In Preparation.
4. Amirhossein Kiani, Navid Aftabi, Raphael Stern, and **Dan Li**, Quantifying the impacts of data integrity attacks on RL-based traffic signal control, *Transactions on Intelligent Transportation Systems*, In Preparation.
5. Navid Aftabi, **Dan Li**, and Paritosh Ramanan, A Variational Autoencoder Framework for Robust, Physics-Informed Cyberattack Recognition in Industrial Cyber-Physical Systems, *Reliability Engineering & System Safety*, In Preparation.
6. Chenyu Xu, Licheng Liang, Wuyang Chen, Xiaoyu Zhuang, Zipeng Guo, **Dan Li**, Chi Zhou and Hongyue Sun, Ambient Drying Modeling and Analysis in Carbon-Negative Biomass Manufacturing, *ASME Journal of Manufacturing Science and Engineering*, In Preparation.

Journal Papers Published or Accepted

1. Jason West, Charanjit Singh, Jackie Cha, and **Dan Li**, s-DResNet: An Adversarial Domain Residual Adaptation Network for Mental Workload Detection in Robotic Assisted Surgeries, *IIEE Transactions on Healthcare Systems Engineering*
2. Navid Aftabi, **Dan Li**, and Thomas Sharkey, An Integrated Cyber-Physical Framework for Worst-Case Attacks in Industrial Control Systems, *IIEE Transactions*, DOI:10.1080/24725854.2024.2439856.
3. Xianjian Xie, Xiaochen Xian, **Dan Li**, and Andi Wang, Adversarial Client Detection via Non-parametric Subspace Monitoring in the Internet of Federated Things, *IIEE Transactions*, DOI:10.1080/24725854.2024.2367224.
4. Ahmad KoKhahi, and **Dan Li**, GLHAD: A Group Lasso-based Hybrid Attack Detection and Localization Framework for Multistage Manufacturing Systems, *ASME Journal of Computing and Information Science and Engineering (JCISE)*, DOI: 10.1115/1.4063862.
5. **Dan Li**, Nagi Gebraeel, Kamran Paynabar, and A.P. Sakis Meliopoulos, An Online Approach to Cyberattack Detection and Localization in Power Systems, *IEEE Transactions on Power Systems*, DOI: 10.1109/TPWRS.2022.3167024.
- Winner of Best Track Paper Award in DAIS
- Finalist of Best Student Paper Award in QCRE
6. **Dan Li**, Kamran Paynabar, and Nagi Gebraeel, A Degradation-Based Detection Framework Against Covert Attacks in SCADA Systems, *IIEE Transactions*, DOI: 10.1080/24725854.2020.1802537.
- Best Application Paper in Data Science, Quality, and Reliability, *IIEE Transactions*
- Finalist of Best Student Paper Competition in DAIS
7. **Dan Li**, Nagi Gebraeel, and Kamran Paynabar, Detection and Differentiation of Replay Cyberattack and Equipment Faults in SCADA Systems, *IEEE Transactions on Automation Science and Engineering*, DOI: 10.1109/TASE.2020.3013760.
- Winner of Best Student Paper Award in Energy Systems
- Runner-up of Best Student Paper Award in DAIS
- Second Prize of Student Poster Competition, Georgia Tech Annual Cybersecurity Summit
8. Ana María Estrada Gómez, **Dan Li**, and Kamran Paynabar, An Adaptive Sampling Strategy for Online Monitoring and Diagnosis of High-dimensional Streaming Data, *Technometrics* DOI: 10.1080/00401706.2021.1967198
- Winner of QSR Best Student Paper Competition, INFORMS
- Winner of SPES + Q&P Student Paper Award
9. Paritosh Ramanan, **Dan Li**, and Nagi Gebraeel, Decentralized Blockchain based Cyber Attack Detection on Large Scale Power Systems, *IEEE Transactions on Systems, Man, and Cybernetics: Systems* DOI: 10.1109/TSMC.2021.3104087
10. Kavya Ashok, **Dan Li**, Deepak Divan, and Nagi Gebraeel, Online Detection of Inter-turn Winding Faults in Single-Phase Distribution Transformers Using Smart Meter Data, *IEEE Transactions on Smart Grid* DOI: 10.1109/TSG.2021.3102101.

Conference Papers Published or Accepted

1. **Dan Li**, Paritosh Ramanan, Nagi Gebraeel, and Kamran Paynabar, Deep Learning based Covert Attack Identification for Industrial Control Systems, 19th *IEEE International Conference on Machine Learning and Applications (ICMLA)*, 2020, DOI: 10.1109/ICMLA51294.2020.00075.

2. Kavya Ashok, **Dan Li**, Deepak Divan, and Nagi Gebraeel, Distribution Transformer Health Monitoring using Smart Meter Data, *Proceedings of 2020 IEEE PES Innovative Smart Grid Technologies Conference (ISGT)*, DOI: 10.1109/ISGT45199.2020.9087641.

PRESENTATIONS

☑ Invited Seminars

The 12th Quality & Reliability Science and Technology Symposium	July 2024
Integrated Cyber-physical Security and Resilience of IIoT-Enabled Manufacturing Systems	
IEEE Workshop: Reliable and Resilient Digital Manufacturing 2024	April 2024
Integrated Cyber-physical Security and Resilience of IIoT-Enabled Manufacturing Systems	
Tsinghua University	Dec 2023
Integrated Cyber-Physical Security and Resilience of Critical Manufacturing	
Virginia Tech	Nov 2022
Cyberattack Detection and Localization for Industrial Cyber-Physical Systems and Critical Infrastructures	
Wayne State University	Oct 2022
Online Cyberattack Detection for Industrial Cyber-Physical Systems and Critical Infrastructures	
NSF EPSCoR USC-WVU Workshop	Aug 2022
Real-Time Cyberattack Identification in Multistage Manufacturing Systems	
University at Buffalo REU Seminar	Jul 2022
Online Cyberattack Detection for Industrial Cyber-Physical Systems and Critical Infrastructures	
Clemson School of Computing Seminar	Mar 2022
Online Cyberattack Detection for Industrial Cyber-Physical Systems and Critical Infrastructures	
HKUST Invited Seminar	Sep 2021
Online Cyberattack Detection for Industrial Cyber-Physical Systems and Critical Infrastructures	

🏢 Conference Presentation

ICQSR 2023 (Invited)	June 2023
Cyber-Physical Risk Assessment for Worst-Case Attacks in Industrial Control Systems	
INFORMS Annual Meeting 2022 (Invited)	Oct 2022
Cyberattack Detection In Multi-stage Manufacturing Systems	
IISE Annual Conference 2022 (Invited)	May 2022
Cyberattack Detection in Multi-Stage Manufacturing Systems	
INFORMS Annual Meeting 2021 (Invited)	Nov 2021
An Online Approach To Cyberattack Detection And Localization In Smart Grid	
IEEE CASE 2021 (Invited)	Aug 2021
Detection and Differentiation of Replay Attacks and Equipment Faults in SCADA Systems	
IISE Annual Conference 2021 (Invited)	May 2021
An SGL-Based Cyberattack Detection and Localization in Smart Grids	
IISE Annual Conference 2021	May 2021
Deep Learning-Based Covert Attack Identification for Industrial Control Systems	
IEEE ICMLA 2020	Dec 2020
Deep learning based covert attack identification for industrial control systems	
INFORMS Data Mining Workshop 2020	Nov 2020
An SGL-Based Cyberattack Detection and Localization in Smart Grids	
INFORMS Annual Meeting 2020	Nov 2020
An Online Approach to Cyberattack Detection and Localization in Smart Grids	
IISE Annual Conference 2020	May 2020
Online Detection and Localization Against Cyberattacks on Smart Grid	
IISE Annual Conference 2020	May 2020
A Degradation-Based Detection Framework Against Covert Attacks in SCADA Systems	
INFORMS Annual Meeting 2019	Oct 2019
A Degradation-Based Detection Framework Against Covert Cyberattacks in SCADA Systems	
INFORMS Annual Meeting 2019	Oct 2019
Detection and Differentiation of Replay-Attack and Equipment Faults in SCADA Systems	
IISE Annual Conference 2019	May 2019
Detection and Distinction of Replay-Attack and Equipment Faults in SCADA Systems	
IISE Annual Conference and Expo 2018	May 2018
Detection and Differentiation of Replay-Attack and Equipment Faults in SCADA Systems	

STUDENT ADVISING AND MENTORSHIP

- Ph.D. student advised (1): Navid Aftabi

- M.S. student advised (3): Junyi Wu (UW-Madison), Jason West (Clemson), Philip Samaha (thesis committee, University of South Carolina)
- Undergraduate student on undergraduate research project (4): Chloe Crozier, Sumanth Pandiri, Matthew Werner, Janhavi Deshpande
- Undergraduate student career advice (14)

TEACHING EXPERIENCE

- **IE 8930** High Dimensional Data Analysis Spring 2024
Level: Graduate; Class size: 5-10; Teaching Evaluation: 4.63/5, College: 4.20/5, Department: 4.26/5
- **IE 8930** High Dimensional Data Analysis Spring 2022
Level: Graduate; Class size: 5-10; Teaching Evaluation: 4.67/5, College: 4.17/5, Department: 4.11/5
- **IE 8090** Model Systems Under Risks Fall 2023
Level: Graduate; Class size: 50-60; Teaching Evaluation: 4.24/5, College: 4.23/5, Department: 4.21/5
- **IE 8090** Model Systems Under Risks Fall 2022
Level: Graduate; Class size: 50-60; Teaching Evaluation: 4.32/5, College: 4.13/5, Department: 4.29/5
- **IE 4610** Quality Engineering Fall 2023
Level: Undergraduate; Class size: 60-90; Teaching Evaluation: 3.99/5, College: 4.23/5, Department: 4.21/5
- **IE 4610** Quality Engineering Fall 2021 (Hybrid)
Level: Undergraduate; Class size: 60-90; Teaching Evaluation: 3.66/5, College: 4.13/5, Department: 4.28/5
- **IE 4040** Creative Inquiry: AI for Cyber-Physical Security Fall 2022 - Spring 2023
Level: Undergraduate, Class size: 4-6, Teaching Evaluation: 4.48/5, College: 4.13/5, Department: 4.30/5

PROFESSIONAL SERVICE

- Associate Editor** ASME Journal of Computing and Information Science in Engineering (JCISE) 2024-Present
- Board Member** IISE Quality Control and Reliability Engineering (QCRE) Division 2022-2024
- Guest Editor** ASME Journal of Computing and Information Science in Engineering (JCISE) 2022-2024
Special Issue on Cybersecurity in Manufacturing
- Panelist** National Science Foundation 2021-2024
ENG/CMMI (2022 - 2024) • ENG/ECCS (2021)
- Panelist** IISE 2022 QCRE Student Interaction Session Oct 2022
- Session Chair** INFORMS and IISE Annual Conferences
 - QCRE Best Student Paper Competition, *IISE 2024*
 - Data Science for Cyber-Physical Security and Resilience *INFORMS 2024*
 - Recent Advances in Cyber-Physical Security Part I, *INFORMS 2023*
 - Recent Advances in Cyber-Physical Security Part II, *INFORMS 2023*
 - QCRE Student Poster Competition and Interaction, *IISE 2023*
 - QCRE Best Student Paper Competition, *IISE 2023*
 - Data Science for Cybersecurity in Industry 4.0, *INFORMS 2022*
 - Data-science for Securing Industrial Cyber-Physical Systems, *INFORMS 2022*
 - Recent Advances in IIoT Cybersecurity *IISE 2021*
 - Data Analytics for Cyber-Physical Systems, *INFORMS 2021*
 - Statistical Methods for Cybersecurity of Cyber-Physical Systems, *INFORMS 2020*
 - Crime Prediction, Prevention, and Control, *IISE 2018*

Journal Referee

- Operations Research • IISE Transactions • Technometrics • Journal Of Quality Technology (JQT) • IEEE Transactions on Automation Science and Engineering (TASE) • IEEE Transactions on Industrial Informatics (TII)
- IEEE Transactions on Power Systems (TPS) • IEEE Transactions on Reliability (TR) • IEEE Transactions on Network Science and Engineering (TNSE) • IEEE Transactions on Services Computing (TSC) • IEEE Access
- ASME Journal of Manufacturing Science and Engineering • Computers and Industrial Engineering (CAIE)
- INFORMS Journal on Data Science (IJDS) • Quality and Reliability Engineering International

Conference and Competition Referee

- IISE QCRE Best Student Paper Competition 2025 • IISE DAIS Best Paper Competition 2025 • IISE Annual Conference 2025 • INFORMS 2023 QSR Best Paper Competition • QCRE Golomski Award 2023 • IISE ENRE Best Paper Competition 2023 • IISE Annual Conference 2023 • IEEE CASE 2023 • INFORMS 2022 DMDA Workshop • INFORMS 2022 QSR Student Paper Competition • QCRE Golomski Award 2022 • IISE 2022 Doctoral Colloquium Dissertation Pitch Competition • IISE 2022 DAIS best paper competition • IISE Annual Conference 2022 • IEEE CASE 2022

Departmental Service

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|---------------------------------------|---------------------|
| • ISyE Faculty Affairs Cluster Member | Aug 2023 - present |
| • Department Seminar Coordinator | Aug 2023 - Aug 2024 |
| • Awards Committee | Aug 2022 - Aug 2024 |
| • Faculty Search Committee | Sep 2022 - Jan 2023 |

PROFESSIONAL DEVELOPMENT

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| • Active Learning Faculty Learning Community | 2022-2023 |
| <i>Office of Teaching Effectiveness and Innovation, Clemson University</i> | |
| • NSF ENG CAREER Workshop | 2022 |
| • IISE New Faculty Colloquium | 2022 |
| • INFORMS New Faculty Colloquium | 2021 |
| • CIRTL Associate Teaching Certificate | 2020 |
| <i>Center for the Integration of Research, Teaching and Learning</i> | |