Feng Ye

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PRINCIPAL INTERESTS

Distributed control and optimization, smart grid, remote state estimation, control system theory, federated learning, privacy preserving, cyber security.

ACADEMIC BACKGROUND

University of Victoria, Victoria, BC, Canada — Oct. 2022 - Oct. 2023
Visiting Ph.D. Student, Electrical and Computer Engineering

- Research in privacy preserving and security of federated learning under direction of Prof. Lin Cai (Canadian Academy of Engineering (CAE) Fellow, IEEE Fellow).
- Research interests: distributed coordination, federated learning, privacy preserving, and cyber security.

Southeast University, Nanjing, Jiangsu, China — Sept. 2019 - Jun. 2024
Ph.D., Control Science and Engineering

- Ph.D. research in privacy preserving and security of control systems under direction of Prof. Xianghui Cao.
- Research interests: smart grid, distributed optimization, remote state estimation, privacy preserving, and cyber security.
- Dissertation title: Research on Privacy-Preserving Method for Distributed Economic Dispatch in Microgrids.

Northeastern University, Shenyang, Liaoning, China — Sept. 2015 - Jun. 2019
B.S., Electrical Engineering and Automation

- Focus areas: electrical engineering, power system analysis, and automatic control theory.

PUBLICATIONS

Journal Articles

1. **F. Ye**, X. Cao, M.-Y. Chow, and L. Cai, Privacy-Preserving Average Consensus: Fundamental Analysis and a Generic Framework Design, *IEEE Transactions on Information Theory*, vol. 70, no. 4, pp. 2870-2885, 2024.
2. **F. Ye**, X. Cao, Z. Cheng, and M.-Y. Chow, CASL: A Novel Collusion Attack against Distributed Energy Management Systems, *IEEE Transactions on Smart Grid*, vol. 14, no. 6, pp. 4717-4728, 2023.
3. **F. Ye**, Z. Cheng, X. Cao, and M.-Y. Chow, A Random-Weight Privacy-Preserving Algorithm With Error Compensation for Microgrid Distributed Energy Management, *IEEE Transactions on Information Forensics and Security*, vol. 16, pp. 4352-4362, 2021.
4. **F. Ye**, X. Cao, L. Cai, and M.-Y. Chow, False Noise Attack Detection for Differentially-Private Distributed Control of Microgrids, Submitted to *Automatica* as Regular Paper, in revision (*Provisionally rejected - may be resubmitted as Regular Paper* for the 1st round of peer review).
5. Z. Cheng, **F. Ye**, X. Cao, and M.-Y. Chow, A Homomorphic Encryption-Based Private Collaborative Distributed Energy Management System, *IEEE Transactions on Smart Grid*, vol. 12, no. 6, pp. 5233-5243, 2021.

Conference Proceedings

1. **F. Ye**, Z. Cheng, X. Cao, and M.-Y. Chow, A Random-Weighted Privacy-Preserving Distributed Algorithm for Energy Management in Microgrid with Energy Storage Devices, *2020 2nd IEEE International Conference on Industrial Electronics for Sustainable Energy Systems (IESES)*, Cagliari, Italy, 2020, pp. 249-254.
2. N. Hang, **F. Ye**, Z. Cheng, X. Cao, and M.-Y. Chow, Simulating and Evaluating Privacy Issues in Distributed Microgrids: A Cyber-Physical Co-Simulation Platform, *47th Annual Conference of the IEEE Industrial Electronics Society(IECON)*, Toronto, ON, Canada, 2021.

RESEARCH EXPERIENCE

Theory and method of design and analysis of industrial Internet topology for system control

Main Participant, Project of National Natural Science Foundation of China *Jan. 2021 - Dec. 2023*

- Designed a collusion attack against distributed energy management systems based on the microgrid network topology, which undermines the economic utility of microgrids.
- Designed a novel false data injection attack detection method for distributed energy management systems based on the microgrid network topology, which can detect malicious devices in microgrids while preserve the data privacy of each device.

Study on the security control of cyber-physical systems under communication interference attacks

Project Assistant, Project of Outstanding Young Scholarship of Jiangsu Province Jan. 2020 - Jun. 2021

- Designed a novel privacy-preserving economic dispatch algorithm for distributed energy management system in microgrids.
- Designed the multiplying-noise-based general privacy-preserving average consensus framework appropriate for three representative average consensus algorithms.

Distributed collaborative design of scheduling and control in the wireless multichannel cyber-physical systems

Project Assistant, Project of National Natural Science Foundation of China *Sept. 2019 - Dec. 2019*

- Developed the collaborative design of remote state estimation and wireless channel selection, enhanced the estimation accuracy.

SPECIAL ACHIEVEMENTS

Selected Awards

- *People's Choice Award, Workshop on Future Ubiquitous Networks 2023-Spring*, IEEE Victoria Section Joint VTS/ComSoc Chapter, Canada, May 2023
- *Meritorious Winner Award, Mathematical Contest in Modeling*, the Consortium for Mathematics and Its Applications, USA, Apr. 2018
- *Honorable Mention Award, Mathematical Contest in Modeling*, the Consortium for Mathematics and Its Applications, USA, Apr. 2017
- *Outstanding Student Cadres Award*, Northeastern University, Sept. 2017

Scholarships

- *Ph.D. Candidate 83791 Qiuzhen Scholarship*, Southeast University, China, 2024
- *Ph.D. Candidate Third-Class Scholarship*, Southeast University, China, 2022
- *Ph.D. Candidate Second-Class Scholarship*, Southeast University, China, 2021
- *Postgraduate Student Second-Class Scholarship*, Southeast University, China, 2019
- *National Encouragement Scholarship*, Ministry of Education, China, 2017
- *Undergraduate Student Third-Class Scholarship*, Northeastern University, China, 2017

PROFESSIONAL SERVICE

Peer Reviewer

- *Automatica*, 2022 – present
- *IEEE Transactions on Automatic Control*, 2022 – present
- *IEEE Transactions on Information Forensics and Security*, 2023 – present
- *IEEE Transactions on Industrial Electronics*, 2023 – present
- *IEEE Transactions on Industrial Informatics*, 2020 – present
- *IEEE Transactions on Control of Network Systems*, 2020 – present
- *IEEE Internet of Things Journal*, 2023 – present
- *IEEE Network Magazine*, 2023 – present
- *IEEE/CAA Journal of Automatica Sinica*, 2022 – present