

Shuai Lu's Resume

Lecturer (tenure track)

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Working Experience

- **9/2021-Now**, Lecturer, School of Electrical Engineering, Southeast University, Nanjing, China

Education

- **12/2018-12/2019**, Visiting Scholar, School of Electrical Engineering and Telecommunications, University of New South Wales, Sydney, Australia
Supervisor: Professor Zhaoyang Dong, IEEE Fellow
- **09/2016-06/2021**, Ph.D. Student, Electrical Engineering, Southeast University, Nanjing, China
Supervisor: Professor Wei Gu, IET Fellow
- **09/2012-06/2016**, B.E., Smart Grid Information Engineering, School of Automation, Nanjing University of Science and Technology, Nanjing, China

Research Areas

- Modeling, simulation, and optimization of Integrated Energy System; Operations research; Data-driven methods in smart grid.

Membership and Professional Service

- Member of IEEE
- Reviewer for *IET Renewable Power Generation*, *IEEE Transactions on Power Systems* (**2020 Outstanding Reviewer**)/*Smart Grid/Sustainable Energy*, *IEEE Systems Journal*, *Renewable & Sustainable Energy Reviews*, *Applied Energy*, *International Journal of Electrical Power & Energy Systems*, *Information Fusion*, *Artificial Intelligence Review*, *Journal of Modern Power Systems and Clean Energy* (**2019 Excellent Reviewer**)

Selected Publications (*Corresponding Author)

I have published more than 30 SCI/EI papers in top journals. My papers have been cited more than 1000 times, and my h-index is 17 (data from Google Scholar).

- [1] **Shuai Lu**, Wei Gu, Shixing Ding, *et al.*, "Data-Driven Aggregate Thermal Dynamic Model for Buildings: A Regression Approach," *IEEE Transactions on Smart Grid*, vol. 13, no. 1, pp. 227-242, Jan. 2022.
- [2] **Shuai Lu**, Wei Gu, Ke Meng *et al.*, "Thermal Inertial Aggregation Model for Integrated Energy Systems," *IEEE Transactions on Power Systems*, vol. 35, no. 3, pp. 2374-2387, May, 2020.
- [3] **Shuai Lu**, Wei Gu, Cuo Zhang *et al.*, "Hydraulic-Thermal Cooperative Optimization of Integrated Energy Systems: A Convex Optimization Approach," *IEEE Transactions on Smart Grid*, vol. 11, no. 6, pp. 4818-4832, Nov. 2020.
- [4] **Shuai Lu**, Wei Gu, Ke Meng *et al.*, "Economic Dispatch of Integrated Energy Systems With Robust Thermal Comfort Management," *IEEE Transactions on Sustainable Energy*, vol. 12, no. 1, pp. 222-233, Jan. 2021.
- [5] **Shuai Lu**, Wei Gu, Suyang Zhou *et al.*, "High-Resolution Modeling and Decentralized Dispatch of Heat and Electricity Integrated Energy System," *IEEE Transactions on Sustainable Energy*, vol. 11, no. 3, pp. 1451-1463, Jul, 2020.
- [6] **Shuai Lu**, Wei Gu, Suyang Zhou *et al.*, "Adaptive Robust Dispatch of Integrated Energy System Considering Uncertainties of Electricity and Outdoor Temperature," *IEEE Transactions on Industrial Informatics*, vol. 16, no. 7, pp. 4691-4702, Jul, 2020.

- [7] **Shuai Lu**, Wei Gu, Jinhui Zhou *et al.*, “Coordinated dispatch of multi-energy system with district heating network: Modeling and solution strategy,” *Energy*, vol. 152, pp. 358-370, Jun 1, 2018.
- [8] Shixing Ding, Wei Gu, **Shuai Lu***, *et al.*, “Cyber-attack against heating system in integrated energy systems: Model and propagation mechanism,” *Applied Energy*, vol. 311, 118650, 2022.
- [9] **Shuai Lu**, Guannan Lou, Wei Gu, *et al.*, “Optimal dispatch with flexible uncertainty set for multi-energy systems: an IGDT based two-stage decision framework,” *CSEE Journal of Power and Energy Systems*, 2021.
- [10] Jun Tang, Ming Ding, **Shuai Lu***, *et al.*, “Operational Flexibility Constrained Intraday Rolling Dispatch Strategy for CHP Microgrid,” *IEEE Access*, vol. 7, pp. 96639-96649, 2019.
- [11] **Shuai Lu**, Wei Gu, Shuai Yao, *et al.*, “Dispatch of Integrated Energy Systems Considering Thermal Dynamics of Thermal Energy Storage,” *IEEE PES General Meeting 2020*.
- [12] Wei Gu, **Shuai Lu**, Zhi Wu *et al.*, “Residential CCHP microgrid with load aggregator: Operation mode, pricing strategy, and optimal dispatch,” *Applied Energy*, 2017, pp. 173-186.
- [13] Wei Gu, **Shuai Lu**, Jun Wang, *et al.*, “Modeling of the Heating Network for Multi-district Integrated Energy System and Its Operation Optimization,” *Proceedings of the CSEE*, vol. 37, no. 5, pp. 1305-1315, 2017. (In Chinese).
- [14] Wei Gu, **Shuai Lu**, Shuai Yao, *et al.*, “Hybrid time-scale operation optimization of integrated energy system,” *Electric Power Automation Equipment*, vol. 39, no. 8, pp. 203-213, 2019. (In Chinese).
- [15] Chengzhi Zhu, **Shuai Lu**, Jinhui Zhou, *et al.*, “Day-ahead economic dispatch of integrated energy system based on electricity and heat balance in different time scales,” *Electric Power Automation Equipment*, vol. 38, no. 6, pp. 138-143, 2018. (In Chinese).
- [16] Wei Gu, Jun Wang, **Shuai Lu**, *et al.*, “Optimal operation for integrated energy system considering thermal inertia of district heating network and buildings,” *Applied Energy*, vol. 199, pp. 234-246, Aug 1, 2017.
- [17] Suhan Zhang, Wei Gu, **Shuai Lu**, *et al.*, “Dynamic Security Control in Heat and Electricity Integrated Energy System with An Equivalent Heating Network Model,” *IEEE Transactions on Smart Grid*, vol. 12, no. 6, pp. 4788-4798, Aug 1, 2021.
- [18] Shuai Yao, Wei Gu, **Shuai Lu**, *et al.*, “Dynamic Optimal Energy Flow in the Heat and Electricity Integrated Energy System,” *IEEE Transactions on Sustainable Energy*, vol. 12, no. 1, pp. 179-190, Jan 1, 2021.
- [19] Jun Wang, Wei Gu, **Shuai Lu**, *et al.*, “Optimal operation for integrated energy system considering thermal inertia of district heating network and buildings,” *Applied Energy*, vol. 199, pp. 234-246, Aug 1, 2017.
- [20] Zihang Qiu, Wang Zhang, **Shuai Lu**, *et al.*, “Charging rate based battery energy storage system model in wind farm and battery storage cooperation bidding problem,” *CSEE Journal of Power and Energy Systems*, 2022.

Patents (authorized)

- [1] Wei Gu, **Shuai Lu**, *et al.*, Integrated energy system optimization method based on heating grid and home thermal inertia, US011016455B2. (US Patent)
- [2] Wei Gu, **Shuai Lu**, Jun Wang, *et al.* An operation method of multi-region integrated energy system based on operation optimization model, CN201610876606.0. (China Patent)
- [3] Wei Gu, **Shuai Lu**, Zhao Luo, *et al.* Operation method of CCHP microgrid based on two-stage coordinated optimization and control, CN201611149138.3. (China Patent)
- [4] Wei Gu, **Shuai Lu**, Zhao Luo, *et al.* A robust optimization-based operation method of the CCHP microgrid, CN201611149137.9. (China Patent)

Projects

- PI, “Research on modeling and optimization of energy-carbon flows in integrated energy system for carbon trading” supported by the **State Grid Corporation of China**, 2022-2023, ¥1,696,000 (about \$259,093).
- PI, “Research on multi-level dispatch of regional multi-energy systems considering flexible resources” supported by the **China Southern Power Grid Company Limited**, 2022-2024, ¥1,500,000 (about \$229,151).
- Participating in the “Joint R&D and demonstration of collaborative energy management and operation optimization technology of urban smart energy networks in ‘One belt, one road’ countries” supported by the **National Key Research and Development Program of China**, 2020-2023, ¥21,600,000 (about \$3,296,502).
- Participating in the “Research on the theory and method for the coordinated operation of multi-carrier energy systems in the context of energy market” supported by the **National Science Foundation of China**, 2019-2022, ¥2,600,000 (about \$396,801).
- Participating in the “The joint optimization, planning, and operation control technology of heat and power for wind power accommodation” supported by the **National Support Program for Science and Technology**, 2015-2018, ¥17,790,000 (about \$2,715,035).