Kai Ye

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EDUCATION

Ph.D. Candidate in Electrical Engineering, Advisor: Prof. Ning Lu Starting 2021
North Carolina State University, College of Engineering, Raleigh, NC, United States

Master of Science in Electrical Engineering and Computer Engineering Dec. 2020
University of Minnesota-Twin Cities, College of Science and Engineering, Minneapolis, MN
GPA 3.90

Bachelor of Science in New Energy Science and Engineering May 2019
The Chinese University of Hong Kong-Shenzhen, School of Science and Engineering, Shenzhen, China
Participated in the integrated BS-MS program with University of Minnesota-Twin Cities
GPA 3.30

Summer Exchange in Electrical Engineering June 2017 - August 2017
Technische Universität Dortmund, Dortmund, Germany

SKILLS

Programming languages: Python, R, MATLAB
Software: Microsoft Office, MATLAB, PyCharm, Windmil, OPENDSS
Operating Systems: Windows, MacOS, Linux

Research Experience

Comprehensive Design of a Residential PV System Master Project
Modeling, Analysis, and Control of Renewable Energy Engineering (EE8744), UMN-Twin Cities

- Revised a grid-connected roof mounted PV system of 30 kW.
- Optimized the orientation, tilt angle, connection, and MPPT control of PV panels.
- Analyzed the reliability of the system with efficiency and economic benefits.

Machine-learning Based Load Disaggregation Sponsored by PNNL and DOE

- Proposed modified S2P algorithm to disaggregate residential HVAC load.
- Deployed transfer learning to improve adaptability and generalizability of the model.
- Validated the superior performance at different locations and aggregation levels.

Mobile Electric Generating Appliance (MEGA) Impact Analysis Sponsored by Gismo Power

- Evaluated the effect of installing PV-powered EV charging stations on the distribution system operation.
- Coordinated the charging of EVs with the electricity generated by the PV panels.
- Reduced EV charging cost, PV curtailment and carbon emissions.

Publications

Ye, Kai, Hyeonjin Kim, Yi Hu, Ning Lu, Di Wu, and P. J. Rehm. "**A Modified Sequence-to-point HVAC Load Disaggregation Algorithm**." In 2023 IEEE Power & Energy Society General Meeting (PESGM), pp. 1-5. IEEE, 2023.

Kim, Hyeonjin, **Kai Ye**, Han Pyo Lee, Rongxing Hu, Ning Lu, Di Wu, and P. J. Rehm. "**An ICA-Based HVAC Load Disaggregation Method Using Smart Meter Data**." In *2023 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT)*, pp. 1-5. IEEE, 2023.

Hu, Rongxing, **Kai Ye,** Hyeonjin Kim, Hanpyo Lee, Ning Lu, Di Wu, and P. J. Rehm. "**Design Considerations of a Coordinative Demand Charge Mitigation Strategy**." In 2023 IEEE Power & Energy Society General Meeting (PESGM), pp. 1-5. IEEE, 2023.

Conference Presentation

"A Modified Sequence-to-point HVAC Load Disaggregation Algorithm"
Best Paper Award session, IEEE PES General Meeting, Orlando, FL, 2023

Interests

Amateur Designer and Photographer

- Worked as student assistant in the Communication and Public Relations Office at CUHK(SZ), authorized for photography and post-processing for over 100 school activities and forums.
- Co-organized the 6th Shenzhen International Industrial Design Fair in 2018, attracted nearly 100k viewers.