Eindhoven, September 4, 2025

SEN ZHAN

Electrical Engineering Ph.D. with 5 years' experience in mathematical optimization and electric power system planning, operation, and markets

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EXPERIENCE

Eindhoven University of Technology Eindhoven, Netherlands
Postdoc Researcher 2024 – present

- Developed and deployed optimization algorithms on cloud controlling 9 home batteries, achieving measurable peak shaving in real-world operation
- Developed a data-driven approach for battery electrochemical and thermal dynamics modeling enabling real-time control

Ph.D. Researcher 2020 – 2024

- Designed real-time optimization algorithms for distribution grid congestion management using measurements as feedback
- Conducted large-scale distribution grid simulation studies to validate optimization and control algorithms
- Collaborated with industrial partners to investigate the heat pump hosting capacity for a social housing company
- Supervised 6 B.Sc./M.Sc. graduation/internship projects

SEWPG European Innovation Center Aarhus, Denmark
Intern Algorithm Engineer 2019 – 2020

- Developed algorithms for optimal siting and electrical layout of offshore wind farms

EDUCATION

Eindhoven University of Technology Eindhoven, Netherlands
Ph.D., Electrical Engineering 2020 – 2024

- Dissertation: Integrating offline and online feedback optimization for distribution system management

Technical University of Denmark Lyngby, Denmark
M.Sc., Sustainable Energy 2018 – 2020

- Thesis: Distributionally robust chance-constrained flexibility planning for integrated energy system

Zhejiang University Hangzhou, China
B.Eng., Energy & Environment Systems Engineering 2014 – 2018

SKILLS

Optimization · Modeling & Simulation
Mathematical decomposition
Stochastic Programming
Data Analytics · Machine Learning
Risk Management · Power Flow

Python · Julia · Matlab · Git
Latex · CI/CD · PythonAnywhere

Gurobipy · cvxpy· JuMP · YALMIP
Scikit-learn · Pandas · Numpy
Matplotlib · PyBaMM
Pandapower · power-grid-model

English · proficient
Dutch · elementary (A2)
Mandarin · native

Driver's license B

EU long-term resident (right to work without visa/sponsorship)

PROJECTS

No-Gizmos: Grid Optimization for Large-Scale Integration of Solar and Wind Power Using Storage and Software (2024 - present, with TU/e)

- Dutch consortium project targeting renewable integration via battery control
- Contributed to development and deployment of control algorithms for residential batteries with academic and industrial partners

Grid Edge Control (2020 - 2024, with TU/e)

- Dutch consortium project on distributed optimization for grid applications
- Developed feedback-based methods in collaboration with DSOs

SELECTED PUBLICATIONS

1. **S. Zhan**, N. G. Paterakis, W. van den Akker, A. van der Molen, J. Morren, and J. G. Slootweg, "Distributed online feedback optimization for real-time distribution system voltage regulation," IEEE Trans. Power Syst., 2025.

2. **S. Zhan**, J. Morren, W. van den Akker, A. van der Molen, N. G. Paterakis, and J. G. Slootweg, "Robustness assessment of primal-dual gradient projection-based online feedback optimization for real-time distribution grid management," Electr. Power Syst. Res., vol. 242, 2025.

3. **S. Zhan**, J. Morren, W. van den Akker, A. van der Molen, N. G. Paterakis, and J. G. Slootweg, "Fairness-Incorporated online feedback optimization for real-time distribution grid management," IEEE Trans. Smart Grid, vol. 15, no. 2, pp. 1792-1806, 2024.

4. **S. Zhan**, J. Morren, W. van den Akker, A. van der Molen, N. G. Paterakis, and J. G. Slootweg, "Multi-timescale coordinated distributed energy resource control combining local and online feedback optimization," Electr. Power Syst. Res., vol. 234, 2024.

5. H. Zhang, **S. Zhan**, K. Kok, and N. G. Paterakis, "Establishing a hierarchical local market structure using multi-cut Benders decomposition," Appl. Energy, vol. 363, 2024.

A full list of publications is available at
https://scholar.google.com/citations?user=1RB8BJ4AAAAJ

PRESENTATIONS

2024 Power Systems Computation Conference (PSCC), Paris
2023 4th Power Grid Model Meet-up, Enexis, Den Bosch
2023 IEEE Powertech, Belgrade
2022 IET APSCOM, Hong Kong
2022 IEEE SEST, Eindhoven

AWARDS

2025 **Best student paper award**
IEEE Euro. Energy Market Conf.

2022 **Best student paper award**
IET APSCOM Hong Kong

PROFESSIONAL SERVICE

Peer reviewer for top IEEE Transactions and Elsevier journals in power system optimization and operation

REFERENCE

Available upon request