Dr. Kai Zhang

Scientist in Energy & Transport | Singapore PR

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kaiattum.github.io/online-cv/

kaizhangattum

kaiATtum

Resume PDF

LANGUAGES

Chinese (Native)

English (Professional)

German (Professional)

INTERESTS

Trecking

Skiing

Cooking

ABOUT THEME

How to use?

CAREER PROFILE

I am currently a operational research scientist at Institute of High Performance Computing (IHPC), Agency for Science, Technology and Research (A*STAR), Singapore.

- Advanced knowledge in data analytics, numerical modelling & optimisation, software development
- 8 years R&D experience in energy and transport sector
- Led and delivered 3 research projects and 1 industry project
- 20+ publications in top-tier journals and conferences

EDUCATION

Ph.D. in Energy Ecomics
2016 - 2020

Technical University of Munich

Doctorate study in energy economics forusing on energy system modeling, pricing mechanisms, game theory

- Dissertation: Spot Pricing Principles in Distribution Grids: From Local Market Organization to Multi-regional Coordination
- Advisor: Prof. Dr. Thomas Hamacher

MSc in Electrical Engineering
2013 - 2016

Technical University of Munich

Master courses focusing on embeded system and control engineering

- Master Thesis: “Charging Demonstrator for Ancillary Service Provision in Smart Grids”
- Advisor: Prof. Dr. Thomas Hamacher

BSc in Electrical Engineering
2010 - 2013

University of Duisburg-Essen

Bachelor courses focusing on nano engineering and information technology

- Bachelor Thesis “Überprüfen und Entwicklung des PowerModuls 2.0 (Validation and development of power moduals 2.0)”
- ADVISOR: Prof. Dr. Roland Schmechel

EXPERIENCES

Scientist
2022 - Present

Agency for Science, Technology and Research (A*STAR), Singapore

Sceintist in energy and transport domain, conducting research on topics in energy system planning, operation, simulation and optimisation model development. Role includes:

- Principle investigator - Project “Optimisation for battery swapping station integration in electricity market”
- Contributor - Project “SITEM - Singapore Integrated Transport and Energy Model”

Research Fellow
2020 - 2022

Tumcreate Ltd, Singapore

Project lead for project “Platform for Integrated Microgrid Operation”

- Project conceptualisation, planning & management
- Research in networked microgrids studies & model development & software architecture design & development
- Managed a team of 5 researchers from Tumcreate, EDF singapore, SIT & NTU
- Supervision of internships & junior researchers

Research Associate
2015 - 2020

Tumcreate Ltd, Singapore

Researcher in electricity distribution system modeling & distributed optimisation, market mechanisms and game theory

- Supervision of 7 master thesis
- Publication of 10+ scientic papers, book chapters

Student employee
2014 - 2015

Infineon Technology, Germany

Software development for object detection (reverse engineering department)

Intern
2012 - 2013

HELLA, Germany

Software development for driving assistance system

PROJECTS

Complete list

BSCS - Business models development and validation for battery swapping station integration into Singapore electricity market.

SITEM - Singapore Integrated Transport and Energy Model

PRIMO - Platform for Integrated Microgrid Operation

MESMO - Open-source Platform for Multi-Energy System Modelling & Optimisation

PUBLICATIONS

Selected articles and book chapters:

- A Framework for Multi-Regional Real-Time Pricing in Distribution Grids
  K, Zhang, S. Hanif, C. M. Hackl and T. Hamacher
  IEEE Transactions on Smart Grid, vol. 10, no. 6, pp. 6826-6838, Nov. 2019
- Decomposition and Equilibrium Achieving Distribution Locational Marginal Prices Using Trust-Region Method
  S. Hanif, K, Zhang, C. M. Hackl, M. Barati, H. B. Gooi and T. Hamacherr
  IEEE Transactions on Smart Grid, vol. 10, no. 3, pp. 3269-3281, May 2019
- Coordinated Market Design for Peer-to-Peer Energy Trade and Ancillary Services in Distribution Grids
  K, Zhang, S. Troitzsch, S. Hanif and T. Hamacher
  IEEE Transactions on Smart Grid, vol. 11, no. 4, pp. 2929-2941, July 2020
- Transactive energy in an urban environment: A case study of local generation and flexibility potentials in a Singaporean urban district
  K, Zhang, S. Troitzsch, S.-Y. Zhang, E. S. P. Teh, L. Subramanian, and T. Massier
  Frontiers in Energy Research, vol. 9, Frontiers, Mar. 2021, ISSN: 2296-598X
- Distributionally Robust Co-optimized Offering for Transactive Multi-energy Microgrids
  K, Zhang, Troitzsch, S., Han, X
  International journal of electrical power and energy systems, Dec 2022
- Transition towards affordable electricity: Tools and methods
  S. Troitzsch, S. Hanif, T. Massier, K. Zhang, B. A. Bhatti, A. Ahmed and M. J. Alam.
  MDPI, E. Constable, Ed., Jun. 2022, vol. 7, ch. 2

SKILLS & PROFICIENCY

Python

Matlab

C++/C

Labview

SQL