Dongjoo Kim

I. Education

Texas A&M University ***College Station, TX, USA***

Ph.D., in Electrical and Computer Engineering Aug. 2022 - Present

Advisor: Prof. Le Xie

Research Interests: Demand Flexibility, Energy Market, Machine Learning, Data Analytics

Current Project:

Optimized energy storage deployment considering spatial-temporal price differences

Demand flexibility quantification in ERCOT – Technology and policy recommendations

Data-driven estimation of residential EV charging loads for hosting capacity analysis

Machine learning-based fault detection and identification using feeder data

Korea University ***Seoul, Korea***

M.S., in Electrical Engineering Mar. 2013 - Feb. 2015

Thesis: Short-term Load Forecasting using Similarity Analysis with Outlier Detection

Advisor: Prof. Sung-Kwan Joo

Korea University ***Seoul, Korea***

B.S., Electrical Engineering Mar. 2009 - Feb. 2013

Senior Thesis: Cloud amount based Maximum Solar Power Forecasting

Advisor: Prof. Sung-Kwan Joo

II. Professional Experience

KEPCO Research Institute (KEPRI) ***Daejeon, Korea***

Sep. 2016 – Aug. 2022

Senior Researcher, Smart Power Distribution Lab

- Key Projects
  - **Development of DSO System Operating Rules and Operating Technologies for Congestion Management of Distribution Systems**
    - Led DSO-related policy research in Korea
  - **Development of Integrated Energy Metering and Application Service using Smart Metering Technology**
    - Designed architecture for integrated energy metering systems
  - **Development of the Electricity Power Trade Models for EV and Prosumer**
    - Developed algorithms for P2P energy transactions
  - **Development of Smart City Integrated Energy Management System and New Business Model**
    - Developed an optimal energy mix program to achieve national energy goals

Daegu Gyeongbuk Institute of Science & Technology (DGIST) ***Daegu, Korea***

Mar. 2015 – Sep. 2016

Researcher, Wellness Convergence Research Lab.

- Key Project
  - **Integrated Wellness Condition Decision and Recommendation Service Platform Construction for Balanced Wellness Enhancement of the Public**

- Statistical analysis for public wellness data

Korea University (KU) *Seoul, Korea*

Mar. 2013 – Feb. 2015

Graduate Research Assistant, Smart Grid Lab.

- Key Projects
  - **A Study on the Diagnosis and Accuracy Improvement of Load Forecasting Algorithm**
    - Derivation of the accuracy enhancing algorithm of load forecasting using weather sensitivity model
  - **Energy Management System for Virtual Power Plant for Grid Integrated Operation of Distributed Energy Resources**
    - Development of market price forecasting algorithm using power system information
  - **Development of Analysis Methodology for Integrated Electric Railway Systems and Scheduling Optimization**
    - Development of the optimal ESS scheduling algorithm installed in the train station

III. Honors and Awards

- Department of Electrical and Computer Engineering Graduate Merit Fellowship (ECGMF) — Aug. 2022 – Jul. 2023
- R&D Achievement Award by the President of KEPRI — Jun. 2020
- Best Paper Award, the International Conference on Electrical Engineering 2014 — Jun. 2014
- Korea Techno Complex Scholarship — 1st semester, 2014
- BK21Plus Scholarship & General Scholarship from Korea University — 2nd semester, 2013

IV. Publications and Presentations

Working Paper

Dongjoo Kim, and Le Xie "Data-driven Estimation of Residential EV Charging Loads for Hosting Capacity Analysis"

Dongjoo Kim, Subir Majumder, and Le Xie, "A Multi-source Data Repository and Profit-robust Framework for Energy Storage Planning" (**Submitted**)

Journal

[J3] **Dongjoo Kim**, Arun Karngala, Sienna Shi, and Le Xie, "Actionable Measures of Flexible Demand for Virtual Power Plants: Case Studies in Texas", IEEE Electrification Magazine (**To be appeared**)

[J2] Jungsub Sim, Minsoo Kim, **Dongjoo Kim** and Hongseok Kim, "**Cloud Energy Storage System Operation with Capacity P2P Transaction**" Energies, Vol.14, No.2, pp.1-12, Jul. 2021. [Online]

[J1] Kyungnam Park, Jaeik Jeong, **Dongjoo Kim** and Hongseok Kim, "**Missing-Insensitive Short-Term Load Forecasting Leveraging Autoencoder and LSTM**", IEEE Access, vol.8, No.1, pp.206039-206048, Nov. 2020. [Online]

Conference

[C7] **Dongjoo Kim,** Arun Karngala, and Le Xie, "**Estimation of Peak Demand Reduction using Smart Thermostats: A Texas Case Study**", IEEE PES Grid Edge 2025 (**To be appeared**)

[C6] **Dongjoo Kim,** S. Majumder, and Le Xie, "**Line-Post Insulator Fault Classification Model using Deep Convolutional GAN-based Synthetic Images**", 2023 North American Power Symposium (NAPS), Asheville, NC, USA, Oct. 2023 [Online]

[C5] **Dongjoo Kim,** Seongchul Kwon, Jungsung Park, Moonsung Bae and Jonguk Lee, "**Research on the Optimization of the District Energy Mix for Smart City Operation**", 25th International Conference on Electricity Distribution (CIRED), Madrid, Spain, Jun. 2019 [Online]

[C4] **Dongjoo Kim**, Wonsuk Kang and Dongha Lee, "**Day-ahead Maximum Load Forecasting using Similar Day**", Energy Systems Conferences 2016 (ENER 16), London, United Kingdom, Jun. 2016

[C3] **Dongjoo Kim,** Seongbae. Kong, Dosung Kim, Minseok Jang and Jiwon Cha, "**A Study on the Electrical Load**

Forecasting using Relevant Searched Keyword", 2014 Winter Conference of KICS, Jeongseon, Korea, Jan. 2015 (in Korean)

[C2] **Dongjoo Kim**, Seongbae Kong, Youngwook Kim, Minseok Jang, Rakkyung Ko and Sung-Kwan Joo, "**Daily Peak Load Forecasting based on a Statistical Method for Outlier Detection in Historical Data**", International Conference on Electrical Engineering 2014, Jeju, Korea, Jun. 2014

[C1] **Dongjoo Kim,** Seongbae Kong, Youngwook Kim and Sung-Kwan Joo, "**Design of Hardware Prototype for Eliminating Noises from the Voltage Signal for Load**", International Conference on Electrical Engineering 2013, Xiamen, China, Jul. 2013

Press Release

[P2] "Demand Flexibility for the Electric Reliability Council of Texas (ERCOT)" at Blockchain and Energy Research Consortium (BERC) Workshop, April 30, 2024 [Link]

[P1] "Demand Flexibility in Texas", Energizer Newsletter, Texas A&M Energy Institute, August 2024 [Link]

Patent, Granted

Inventor	Title	Country / Number	Date of Grant
Jungsung Park, **Dongjoo Kim**, Seongchul Kwon, Changhoon Shin. Jihoon Yoon, and Jonguk. Lee	Block-Chain based Electricity Power Trading System, Method thereof and Computer Readable Storage Medium having the Method	Korea, 10-1976401	May. 02, 2019
Jungsung Park, Seongchul Kwon, Moonsung Bae, **Dongjoo Kim**, and Changhoon Shin	Integrated Operation Method for Distributed Energy Resource	Korea, 10-2501608	Feb. 15, 2023
Jonguk Lee, Seongchul Kwon, **Dongjoo Kim**, Jungsung Park, and Moonsung Bae	Apparatus and Method for Integrating and Operating Small Power Resources for Operating Virtual Power Plants	Korea, 10-2337089 10-2422850 10-2422851 10-2422852 10-2422853 10-2422849	Jul. 21, 2022
Dongjoo Kim, Jonghee Moon, Seongchul Kwon, Jungsub Shim, and Hongseok Kim	Cloud Type Energy Storage Operating method and System	Korea, 10-2589719	Sep. 11 2023

* **KR**: Korean Intellectual Property Office

Patent, Publication

Inventor	Title	Country / Number	Public. Date
Jungsung Park, Seongchul Kwon, **Dongjoo Kim,** Moonsung Bae and Jonguk Lee	Unified Operation System and Method for Distributed Resources	Korea, 10-2021-0052925	May. 11, 2021
Dongjoo Kim, Seongchul Kwon, Jungsung Park, and Moonsung Bae	Electricity Bidding Transaction Method and Electricity Transaction Control System	Korea, 10-2020-0069702	May. 27, 2022

V. Skills

Python, MATLAB, Microsoft Word/PowerPoint/Excel