Yang DENG (Marco)

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ACADEMIC QUALIFICATIONS

The Hong Kong Polytechnic University (PolyU), Hong Kong, Sep 2020 - Sep 2024
Ph.D. in Computer Science, Advisor: Prof. Dan Wang (*ACM Distinguished Scientist*)

TongJi University, Shanghai, China, Sep 2014 - Jun 2017
M.Eng. in Software Engineering

Nanjing University of Aeronautics and Astronautics (NUAA), China, Sep 2010 - Jun 2014
B.S. in Software Engineering

PROFESSIONAL EXPERIENCE

Hong Kong RTH-ITF Postdoc, The Hong Kong Polytechnic University, Hong Kong Nov 2024 - Present
Topic: i) AI evaluation platform and foundation model for the energy system; ii) Knowledge-driven Smart Energy Management with Heterogeneous Energy Systems.
Advisor: Prof. Dan Wang (HKUST-AIS), Prof. Chen Jason Zhang (PolyU-COMP)

Visiting Researcher, The University of Osaka, Osaka, Japan Jul 2025 - Aug 2025
Department: Graduate School of Information Science and Technology
Project: Integration of reinforcement learning and model predictive control for HVAC control at scale.
Collaborator: Prof. Onoye Takao (*Vice President*), Prof. Taniguchi Ittetsu, and Dr. Dafang Zhao

Senior Machine Learning Engineer, DawnLight (start up), Shanghai, China Apr 2020 - Jun 2020
Co-Founder: Feifei Li
Project: Clinical decision support system

Machine Learning Engineer, DADA Group Ltd, Shanghai, China Sep 2019 - Apr 2020
Department: Big Data Department
Project: AI-based projects related to logistics

Machine Learning Engineer, Huawei Corporation, Shanghai, China Jun 2017 - Jun 2019
Department: Wireless Network Department
Project: AI-based algorithms in 4G wireless scenarios

SELECTED PROJECTS

(1) BaiTest: A Platform for AI Evaluation in Smart Buildings May 2023 - Oct 2025
(Hong Kong ITF project: ITS/056/22MX, 4.025 $M)

- **Overview:** The idea is based on my *BuildChecks* paper published in ACM e-Energy'2022. BaiTest focuses on building a large-scale machine-learning model evaluation platform for the smart building community, and the goal is to promote the penetration of AI in buildings; Responsible for the proposal, including preliminary experiments, materials, and presentation slides; Leading a four-person R&D team. A demo recorded at Jun 2024.
- **Achievements:** i) Published two demo papers, two poster papers, and two full papers. ii) Three awards from PolyU and the ACM SIGEnergy community. iii) Invited to give a talk at the Hong Kong Computer Society.

(2) Engineering Parameter Calibration for 4G LTE Base Station May 2018 - Jun 2019
(As the engineer in Huawei Shanghai Institute; Total funding for this project: 100M RMB)

- **Overview**: lead the sub-project of Antenna azimuth prediction, i) designed an computer vision-based prediction solution based on Convolutional Neural Network (CNN) for modeling the actual azimuth of the antenna. ii) developed a gray-box algorithm combining the NN model and expert experience.
- **Achievements**: i) Responsible for the patent; ii) Huawei Ingenuity Award, 2018

(3) Logo&Mask Recognition of Delivery Man for COVID-19 Jan 2020 - Apr 2020
(As the engineer in DADA Group Ltd)

- **Overview**: development of this feature related to the company's image. i) designed CNN-based classification neural networks and the analysis of model interpretability. ii) Quickly launched in a week to respond to COVID-19.

PUBLICATIONS

// 1. Conference and journal paper, ACM e-Energy and ACM BuildSys belong to ACM SIGEnergy. (∗: corresponding author, #: co-first authors)

1. [**ACM e-Energy 2026**] Kaiyuan Zhai, Jiacheng Cui, Zhehao Zhang, Junyu Xue, **Yang Deng**, Kui Wu, and Guoming Tang. "CaberNet: Causal Representation Learning for Cross-Domain HVAC Energy Prediction", *one of the THREE accepted papers in Fall cycle*
2. [**ACM BuildSys 2025**] Dafang Zhao,**Yang Deng**, Toshihiro Suzuki, Ittetsu Taniguchi, and Takao Onoye. "HVAC Aggregation for Multi-priority Demand Flexibility:Lessons learn on On-site Experiments"
3. [**NIPS 2025**] Xiaoyang Zhang, He Fang, **Yang Deng**, and Dan Wang. "Unveiling the Uncertainty in Embodied and Operational Carbon of Large AI Models through a Probabilistic Carbon Accounting Model"
4. [**Knowledge-Based Systems**] Fang He, Jiaqi Fan, **Yang Deng***, Xiaoyang Zhang, Dan Wang. "MetaCloze: A Schema-guided Automated Building Metadata Model Generation System via Information Extraction"
5. [**Knowledge-Based Systems**] Fang He, Jiaqi Fan, **Yang Deng***, and Ka Tai Lauo. "Smart Metering Data Enhancement in Sustainable Buildings via Knowledge graph-guided Graph Neural Networks".
6. [**IJCAI 2025**] Fang He, Jiaqi Fan, **Yang Deng**, and Dan Wang. "Weather Foundation Model enhanced Decentralized Photovoltaic Power Forecasting through Spatio-temporal Knowledge Distillation".
7. [**ACM Transactions on Sensor Networks (TOSN)**] **Yang Deng**, Rui Liang, Jiaqi Fan, Yaohui Liu, Xiaoyang Zhang, Fang He, Ao Li, Dan Wang, and Dafang Zhao. "Concept Drift-aware Time-Series Generation for Online Building Load Forecasting: An Automated Data Augmentation Paradigm".
8. [**ACM BuildSys 2024**] Yufei Zhang, **Yang Deng**, Rui Liang, Dan Wang, and Andrew Sonta. "A Data-driven Framework for Occupant-centric Demand Flexibility Potential Evaluation at Scale",
9. [**ACM BuildSys 2024**] **Yang Deng**, Rui Liang, Jiaqi Fan, and Dan Wang. "AugPlug: An Automated Data Augmentation Model to Enhance Online Building Load Forecasting", *Best Paper Candidate*
10. [**ACM BuildSys 2023**] **Yang Deng**, Rui Liang, Dan Wang, Ao Li, and Fu Xiao. "Decomposition-based Data Augmentation for Time-series Building Load Data",
11. [**Applied Energy**] Li Ao, Chong Zhang, Fu Xiao, Cheng Fan, and **Yang Deng**. "Large-scale comparison and demonstration of continual learning for adaptive data-driven building energy prediction", Applied Energy 347 (2023): 121481.
12. [**ACM e-Energy 2022**] **Yang Deng**, Jiaqi Fan, Hao Jiang, Fang He, Dan Wang, Ao Li, and Fu Xiao. "Behavior testing of load forecasting models using BuildChecks",
13. [**ACM e-Energy 2021**] He Fang, **Yang Deng**, Yanhui Xu, Cheng Xu, Dezhi Hong, and Dan Wang. "Energon: A Data Acquisition System for Portable Building Analytics",
14. [**IEEE MDM 2019**] Xiaolei Di, Yu Xiao, Chao Zhu, **Yang Deng**, and Weixiong Rao. "Traffic congestion prediction by spatiotemporal propagation patterns",

// 2. Some interesting demos, posters, workshop papers, and patents. (∗: corresponding author, #: co-first authors)

1. [**ICML 2025, CO-BUILD**] Rui Liang, **Yang Deng**#, Donghua Xie, and Dan Wang. "Enabling Time-series Foundation Model for Building Energy Forecasting via Contrastive Curriculum Learning", *invited oral presentation*
2. [**ACM BuildSys 2024, Demo**] **Yang Deng**, Donghua Xie, Rui Liang, and Dan Wang. "BuildProg: Program Generation for Testing ML-based Building Load Forecasting models via LLM and Prompt Engineering",
3. [**ACM BuildSys 2024, Poster**] **Yang Deng**, Yaohui Liu, Rui Liang, Dafang Zhao, Ittetsu Taniguchi, Samson Tai, and Dan Wang. "Towards ML-based Model Predictive Control for HVAC Control in Multi-Context Buildings at Scale via Ensemble Learning",
4. [**ACM e-Energy 2024 Demo**] **Yang Deng**, Donghua Xie, Jingyun Zeng, Rui Liang, Yufei Zhang, Jiaqi Fan, Samson Tai, and Dan Wang. "Towards deploying ML-based Load Forecasting Models for Building HVAC System: an AI Evaluation Platform", *PRSC 2024 Best Presentation Award*
5. [**ACM e-Energy 2024 Poster**] Rui Liang, **Yang Deng**, Dan Wang. "Probabilistic Building Load Forecasting via Conditional Diffusion Model", *Best poster award Runner-up*
6. [**ACM BuildSys 2023, Poster**] **Yang Deng**, Rui Liang, Jiaqi Fan, Ao Li, and Dan Wang. "Towards a Benchmark for ML-based Building Load Forecasting Model Selection for a Target Building",

7. [**Patent**] Dan Wang, **Yang Deng** and Samson Tai. "Intelligent Building Artificial Intelligence Model Evaluation Platform",

AWARDS

Research and University

· Best Ph.D. Forum Presentation Award at ACM BuildSys 2024, Hangzhou, China
· Best Presentation Award at the 2nd PolyU Research Student Conference (PRSC 2024)
· Best Poster Runner Up - ACM e-Energy 2024, Singapore
· National 2nd Prize, National Postgraduate Mathematics Contest in Modeling, China, 2016

In Industry Period

· HUAWEI Ingenuity Award (for the contribution of the project of Engineering Parameter Calibration), Mar 2019
· Ranked 14/1646, "Future Challenge–Helping Balloons Navigate the Weather", Alibaba Tianchi Big Data Competition, 2018
· Ranked 6/204, "Network Signal coverage simulation" the 7th "Shannon cup" Huawei Wireless Algorithm Competition, 2019

PROFESSIONAL SERVICE

TPC member	ICNC, 2026 PolyU COMP - HKUST (GZ) INFH Research Student Conference, 2025
Reviewer	Energy Informatics Review, Applied Energy, ACM Transactions on Sensor Networks (TOSN), IEEE Transactions on Mobile Computing (TMC), Journal of Computer Applications, IEEE ICA3PP, IEEE Globecom 2025
Advisor	Global AI Challenge (hosted by Hong Kong Electrical and Mechanical Services Department, 2022)
Others	Member of Hong Kong Computer Society (HKCS)

MENTORING AND TEACHING EXPERIENCE

Supervision of final-year undergraduate capstone projects (PolyU COMP)

· Hao Jiang (class of 2018), "A Case Study on Building Cooling Load Forecasting Model Evaluation", Score: A-
· Jiaqi Fan (class of 2018, currently a PhD student in PolyU), "A measurement study for building cooling load forecasting model evaluation", Score: A-
· Rui Liang (class of 2019, currently a PhD student in PolyU), "Boosting Load Forecasting Model Evaluation through Data Generation", Score: A
· Yang Shen (class of 2020), "A measurement of the interpretability of the load forecasting models", Score: A-

My fellow research assistants in BaiTest project (ITS/056/22MX)

· Donghua Xie, Sep 2023 - Oct 2025, responsible for i) GUI and front-end development, and ii) the pre-train foundation model implementation in the building energy field.
· Jingyun Zeng, Sep 2023 - Sep 2024, responsible for ML modeling and back-end development.

Teaching assistant: Led tutorials, graded homework and exams, and provided guidance on programming.

· PolyU - COMP3121 (Fall 2020, Fall 2021) Social and Collaborative Computing
· PolyU - COMP1411 (Spring 2021, Spring 2022, Spring 2023) Introduction to Computer Systems
· PolyU - COMP1002 (Fall 2023) Computational Thinking and Problem Solving
· Tongji - C++ Programming Language (Spring 2015)