

# Yang DENG (Marco)

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## ACADEMIC QUALIFICATIONS

<b>The Hong Kong Polytechnic University (PolyU), Hong Kong,</b> Ph.D. in Computer Science, Advisor: Prof. Dan Wang ( <i>ACM Distinguished Scientist</i> )	Sep 2020 - Sep 2024
<b>Tongji University, Shanghai, China,</b> M.Eng. in Software Engineering	Sep 2014 - Jun 2017
<b>Nanjing University of Aeronautics and Astronautics (NUAA), China,</b> B.S. in Software Engineering	Sep 2010 - Jun 2014

## PROFESSIONAL EXPERIENCE

<b>Hong Kong RTH-ITF Postdoc</b> , The Hong Kong Polytechnic University, Hong Kong 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)	Nov 2024 - Present
<b>Visiting Researcher</b> , The University of Osaka, Osaka, Japan 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 ( <i>Vice President</i> ), Prof. Taniguchi Ittetsu, and Dr. Dafang Zhao	Jul 2025 - Aug 2025
<b>Senior Machine Learning Engineer</b> , DawnLight (start up), Shanghai, China Co-Founder: Feifei Li Project: Clinical decision support system	Apr 2020 - Jun 2020
<b>Machine Learning Engineer</b> , DADA Group Ltd, Shanghai, China Department: Big Data Department Project: AI-based projects related to logistics	Sep 2019 - Apr 2020
<b>Machine Learning Engineer</b> , Huawei Corporation, Shanghai, China Department: Wireless Network Department Project: AI-based algorithms in 4G wireless scenarios	Jun 2017 - Jun 2019

## PUBLICATIONS

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

- [**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*
- [**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”
- [**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”
- [**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”
- [**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”.
- [**IJCAI 2025**] Fang He, Jiaqi Fan, **Yang Deng**, and Dan Wang. “Weather Foundation Model enhanced Decentralized Photovoltaic Power Forecasting through Spatio-temporal Knowledge Distillation”.
- [**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”,

## 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.

## AWARDS

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### 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

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<b>TPC member</b>	ICNC, 2026 PolyU COMP - HKUST (GZ) INFH Research Student Conference, 2025
<b>Reviewer</b>	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, WWW 2025
<b>Advisor</b>	Global AI Challenge (hosted by Hong Kong Electrical and Mechanical Services Department, 2022)
<b>Others</b>	Member of Hong Kong Computer Society (HKCS)

## MENTORING AND TEACHING EXPERIENCE

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### 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)