# YANG DENG

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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
Thesis: Towards AI Deployment of the Machine Learning-based Forecasting Model in Smart Buildings

**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
Department of Computing
Project: AI evaluation platform and foundation model for the building energy system. large language model (LLM) and pre-trained foundation model for the energy system.
Advisor: Prof. Dan Wang

**Visiting Researcher**, The University of Osaka, Japan Jul 2025 - Aug 2025
Graduate School of Information Science and Technology
Project: Integration of Reinforcement learning and Model predictive control for large-scale HVAC control project.
Collaborator: Prof. Onoye Takao, Prof. Taniguchi Ittetsu, and Dr. Dafang Zhao

**Senior Machine Learning Engineer**, DawnLight (Co-Founder: Feifei Li), Shanghai Apr 2020 - Jun 2020
Clinical decision support system development

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

**Machine Learning Engineer**, Wireless Network Department, Huawei, Shanghai Jun 2017 - Jun 2019
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 e-Energy'22 paper. 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.
- **Responsibilities:** 1) Responsible for proposal, including preliminary experiments, materials, and presentation slides. 2) During the development phase from Sep 2023, I am leading a team of four teammates (weekly meeting note), they are two PhD students and two research assistants.
- **Achievements:** i) Published two demo papers, two poster papers, and two full papers. Three awards from PolyU and ACM SIGEnergy. ii) A video recorded at Jun 2024.

**(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. iii) achieved an MAE of 12 degrees, significantly outperforms industry standards (average error of 16 degrees). iv) responsible for the patent.
- **Award**: Winning the 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.

· **Outcome**: a 67% reduction in manual review workload. Here is part of the code: code1, code2.

## PUBLICATIONS

*// ACM e-Energy and ACM BuildSys are two conferences belong to ACM SIGEnergy*

*// ∗ represents corresponding author and # represents co-first authors*

1. [**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".
2. [**IJCAI 2025**] Fang He, Jiaqi Fan, **Yang Deng**, and Dan Wang. "Weather Foundation Model enhanced Decentralized Photovoltaic Power Forecasting through Spatio-temporal Knowledge Distillation".
3. [**TOSN (ACM Transactions on Sensor Networks)**] **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".
4. [**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",
5. [**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
6. [**ACM BuildSys 2023**] **Yang Deng**, Rui Liang, Dan Wang, Ao Li, and Fu Xiao. "Decomposition-based Data Augmentation for Time-series Building Load Data",
7. [**Applied Energy 2023**] Li Ao, Chong Zhang, Fu Xiao, Cheng Fan, **Yang Deng**, and Dan Wang. "Large-scale comparison and demonstration of continual learning for adaptive data-driven building energy prediction", Applied Energy 347 (2023): 121481.
8. [**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",
9. [**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",
10. [**IEEE MDM 2019**] Xiaolei Di, Yu Xiao, Chao Zhu, **Yang Deng**, and Weixiong Rao. "Traffic congestion prediction by spatiotemporal propagation patterns",
11. [**Journal of Computer Applications 2017**] **Yang Deng**, Chenxi Zhang, and Jiangfeng Li. "Video shot recommendation model based on emotion analysis using time-sync comments", Journal of Computer Applications 37, no. 4 (2017): 1065.

*// Some interesting demos, posters, and workshop papers:*

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",
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",

## 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), a prize of HK$ 2,000

· 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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|---|---|
| **Reviewer** | Energy Informatics Review |
| | ACM Transactions on Sensor Networks (TOSN) |
| | IEEE Transactions on Mobile Computing (TMC) |
| | IEEE ICA3PP |
| | IEEE Globecom 2025 |
| | Journal of Computer Applications |
| **TPC member** | ICNC, 2026 |
| | PolyU COMP - HKUST (GZ) INFH Research Student Conference, 2025 |
| **Advisor** | Global AI Challenge, host by Hong Kong Government (EMSD), 2022, 2025 |

## MENTORING AND TEACHING EXPERIENCE

**Guide capstone project of the final-year undergraduates in COMP department of PolyU**

· 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 our group), "A measurement study for building cooling load forecasting model evaluation", Score: A-
· Rui Liang (class of 2019, currently a PhD student in our group), "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 (BaiTest team)**

· Donghua Xie, Sep 2023 - Oct 2025, recruited by BaiTest project (ITS/056/22MX). He is 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, recruited by BaiTest project (ITS/056/22MX). He is responsible for ML modeling and back-end development.

**Teaching assistant**

· PolyU - COMP3121 (Fall 2020, Fall 2021) Social and Collaborative Computing: Responsible for the tutorials
· PolyU - COMP1411 (Spring 2021, Spring 2022, Spring 2023) Introduction to Computer Systems: Responsible for the homework and Grading the final exam
· PolyU - COMP1002 (Fall 2023) Computational Thinking and Problem Solving: Responsible for the homework and Grading the final exam
· Tongji - C++ Programming Language (Spring 2015): Responsible for guiding the undergraduate student for the program coding