YANG DENG

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APPOINTMENTS

Hong Kong RTH-ITF Postdoc, The Hong Kong Polytechnic University — Nov 2024 - Present
AI evaluation platform and foundation model for the building energy system.

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

Development Intern, Envision Energy, Shanghai — Mar 2017 - Jun 2017
Develop the back-end services for wind turbines.

Development Intern, Emotibot Technologies Ltd, Shanghai — May 2016 - Sep 2016
Development of the Knowledge Graph of Corpus of texts

ACADEMIC QUALIFICATIONS

The Hong Kong Polytechnic University (PolyU), Hong Kong, — Sep 2020 - Sep 2024
Ph.D. in Computer Science, Advisor: Dr. 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

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 of this project 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 widespread adoption of AI techniques in buildings.
- **Responsibilities:** 1) During the project application phase, I was responsible for proposal writing (including preliminary experiments) 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.
- **Current progress (by Oct 2024):** 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.
- **Short-term plans:** i) integrating BaiTest into the existing building HVAC (Heating, ventilation, and air conditioning) monitoring system of Hong Kong EMSD, and ii) providing control rules recommendations for Huace International Building in Hengqin, Zhuhai.

(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

 # Note: ACM e-Energy and ACM BuildSys are two conferences belong to ACM SIGEnergy

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", KNOSYS-D-25-02292. (*corresponding author)
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". (*corresponding author)
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", TOSN-2025-0073.
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 and posters about AI evaluation in smart building energy systems:

1. **[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",
2. **[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",
3. **[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
4. **[ACM e-Energy 2024 Poster]** Rui Liang, **Yang Deng**, Dan Wang. "Probabilistic Building Load Forecasting via Conditional Diffusion Model", Best poster award Runner-up
5. **[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

Reviewer	Energy Informatics Review (EIR, The ACM SIGEnergy newsletter)
	ACM Transactions on Sensor Networks (TOSN)
	IEEE Transactions on Mobile Computing (TMC)
	IEEE ICA3PP
	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