周羿宏 (Yihong ZHOU)

牛津大学 · 博士后研究员

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个人主页 | 谷歌学术 (引用: 313) | ORCID

教育背景

爱丁堡大学 博士 2021/11–2025/09

研究方向：分布式能源与电网灵活性 (Unlocking Grid Flexibility of Distributed Energy Resources)

导师: Prof Thomas Morstyn, Prof Gareth Harrison, Dr Wei Sun

答辩委员: Prof Pierre Pinson (领域顶尖学者), Prof Daniel Friedrich

牛津大学 *访问博士生* 2024/04–2025/04

爱丁堡大学 理学硕士 2020/09–2021/09

专业: 人工智能 均分: 80.4/100 (Distinction)

** 注：Distinction 为英国学位最高等级，分数线为 70/100*

华北电力大学 工学学士 2016/09–2020/07

专业: 电气工程及其自动化 均分: 90.63/100

工作经历

牛津大学 *博士后研究员* 2025/06–至今

- 项目: SAGEflex (Safeguarded AI Agents for Grid-Edge Flexibility)，由英国 ARIA 资助；研发面向电网边缘灵活性的大规模安全人工智能

爱丁堡大学 *助教* 2022/01–2023/05

- 负责课程: (1) 数据分析与机器学习; (2) 分布式能源与智能电网

爱丁堡大学 *研究助理* 2022/02–2022/07

- 为苏格兰边境委员会 (Scottish Borders Council) 提供智能本地能源系统方案的可行性评估

华北电力大学 *研究助理* 2019/08–2020/07

- 设计用于管理家庭能源资源和电动汽车集群的机器学习算法

获奖荣誉

- 2025: **Top 3 Best Note Paper (最佳短论文前三名)**, ACM e-Energy Conference (能源互联网领域顶会), 荷兰.
- 2023: **EUSA 杰出教学奖提名**, 爱丁堡大学全校级提名
- 2021: **工程学院奖学金**, 爱丁堡大学

发表论文

一、主要代表作 (第一 / 唯一通讯 / 共同第一作者)

同行评议期刊

[J1] **Yihong Zhou (本人)**, Y. Xia, H. Yang, and T. Morstyn. "Strengthened and faster linear approximation to joint chance constraints with wasserstein ambiguity." *INFORMS Journal on Computing*, 2026. doi: 10.1287/ijoc.2024.1073. arXiv:2412.12992. **[运筹学 UTD24 顶刊] [新锐 1 区 TOP]**

[J2] **Yihong Zhou (本人)** and T. Morstyn. "Grid-Intelligent AI Data Centres for Primary Response." *IEEE Transactions on Industry Applications*, 2026. doi: 10.1109/TIA.2026.3678552. **首个在真机 GPU 验证的数据中心一次调频工作** **[JCR Q1]**

[J3] A. Paredes, **Yihong Zhou (本人)**†, J.A. Aguado, and T. Morstyn. "Independent Aggregators securing End User Wasserstein Distributionally Robust Flexibility through Bilevel Incentives." *Applied Energy*. 2026. († 通讯作者) **[新锐 1 区 TOP] [JCR Q1]**

[J4] H. Deng*, **Yihong Zhou (本人)***, T. Morstyn, and Y. Wang. "Supervised Reinforcement Learning for the Coordination of Distributed Energy Resources." Accepted by *Electric Power Systems Research*, special issue for Power Systems Computation Conference (PSCC), 2026. (* 共同一作) **[JCR Q2]**

[J5] **Yihong Zhou (本人)**, C. Essayeh, and T. Morstyn. "Aggregated feasible active power region for distributed energy resources with a distributionally robust joint probabilistic guarantee." *IEEE Transactions on Power Systems*, 2024. **[新锐 1 区 TOP] [JCR Q1]**

[J6] **Yihong Zhou (本人)**, C. Essayeh, S. Darby, and T. Morstyn. "Evaluating the social benefits and network costs of heat pumps as an energy crisis intervention." *iScience* 27(2), 2024. **[Cell 子刊 / JCR Q1]**

[J7] **Yihong Zhou (本人)**, C. Essayeh, and T. Morstyn. "A novel surrogate polytope method for day-ahead virtual power plant scheduling with joint probabilistic constraints." *Electric Power Systems Research* 234, 2024. (PSCC Special Issue) **[JCR Q2]**

[J8] **Yihong Zhou (本人)**, Z. Ding, Q. Wen, and Y. Wang. "Robust load forecasting towards adversarial attacks via Bayesian learning." *IEEE Transactions on Power Systems* 38(2), 2022. **[新锐 1 区 TOP] [JCR Q1]**

[J9] **Yihong Zhou (本人)**, C. Essayeh, and T. Morstyn. "Datasets of Great Britain primary substations integrated with household heating information." *Data in Brief* 54, 2024. **[JCR Q3]**

会议、预印本与技术报告

[CP1] **Yihong Zhou (本人)**, A. Paredes, C. Essayeh, and T. Morstyn. "Evaluating and Comparing the Potentials in Primary Response for GPU and CPU Data Centers." *IEEE PES General Meeting (PESGM)*, 2024. [IEEE PES 年会 / 顶会]

[CP2] **Yihong Zhou (本人)**, H. Yang, and T. Morstyn. "FICA: Faster Inner Convex Approximation of Chance Constrained Grid Dispatch with Decision-Coupled Uncertainty." arXiv:2506.18806. (500x 计算加速). 拟投 *IEEE Transactions on Power Systems*.

[CP3] **Yihong Zhou (本人)**, H. Zeng, and T. Morstyn. "GradMAP: Gradient-Based Multi-Agent Proximal Learning for Grid-Edge Flexibility." arXiv:2604.24549. (1000 个智能体、无参数共享、嵌入三相交流潮流约束，单张 GPU 约 15 分钟训练).

[CP4] **Yihong Zhou (本人)**, D. Cope, J. Foerster, and T. Morstyn. "JAX-Based Batched AC Power Flow for GPU Acceleration and AI Ecosystem Integration." arXiv:2605.14103. 在审 *IEEE Power Engineering Letters*. (2000 节点英国输电网 AC 潮流 14 倍以上加速).

[CP5] **Yihong Zhou (本人)**, A. Paredes, C. Essayeh, and T. Morstyn. "AI-focused HPC data centers can provide more power grid flexibility and at lower cost." arXiv:2410.17435. 拟投 *Applied Energy*.

[CP6] **Yihong Zhou (本人)**, et al. "Assessment of options for a smart, resilient and low-carbon multi-vector energy system in the Scottish Borders." Published by *EnergyREV*, UK, July 2023. [英国 EnergyREV 智库报告]

二、合作发表论文

[Co1] F. Michelon, **Yihong Zhou (本人)**, and T. Morstyn. "Large language model interface for home energy management systems." *ACM e-Energy*, 2025. **[ACM 能源互联网顶会]**

[Co2] A. Paredes, **Yihong Zhou (本人)**, J.A. Aguado, and T. Morstyn. "Optimal Reliability Thresholds for Stochastic Flexibility Aggregators in European Reserve Markets." Accepted by *Electric Power Systems Research*, 2026. **[JCR Q2]**

[Co3] T. Morstyn, **Yihong Zhou (本人)**, and I. Whitfield. "Multiscale Grid Intelligence to Fight AI Data Centre Grid Defection: Unlocking a Faster, Cheaper and Cleaner On-Grid AI Rollout" *IEEE Energy Sustainability Magazine*, 2025. doi: 10.1109/ESM.2025.3628276. **[IEEE 新刊]**

[Co4] A. Paredes, **Yihong Zhou (本人)**, C. Essayeh, et al. "Exploiting Data Centres and Local Energy Communities Synergies for Market Participation." *IEEE ISGT Europe*, 2024.

[Co5] Y. Xia, **Yihong Zhou (本人)**, I. Savelli, and T. Morstyn. "Bilevel Transmission Expansion Planning with Joint Chance-Constrained Dispatch." arXiv:2505.11273. 在审 *IEEE Transactions on Smart Grid*.

[Co6] Y. Zhou, **Yihong Zhou (本人)**, T. Morstyn, and Y. Wang. "Decision-focused Learning for Local Energy Communities Management Under Uncertainty." 在审 *IEEE Transactions on Smart Grid* (第二轮).

[Co7] J. Hu, H. Zhou, **Yihong Zhou (本人)**, et al. "Flexibility prediction of aggregated electric vehicles and domestic hot water systems in smart grids." *Engineering* 7(8), 2021. **[JCR Q1]**

[Co8] H. Zhou, **Yihong Zhou (本人)**, et al. "LSTM-based energy management for electric vehicle charging in commercial-building prosumers." *Journal of Modern Power Systems and Clean Energy (MPCE)* 9(5), 2021. **[JCR Q1]**

[Co9] H. Zhou, **Yihong Zhou (本人)**, et al. "Real-time Optimization Scheduling Strategy for Aggregated Electric Vehicles Supported by Artificial Intelligence Technology." *Power System Technology (*电网技术*)*, 2021. [中文核心]

专利与知识产权

- **专利申请** (2026 年 1 月提交; **第一发明人**): 围绕 "AI 数据中心为电网提供快速一次调频服务的方法" 的专利申请，已由牛津大学创新中心 (OUI) 向英国知识产权局 (UKIPO) 提交，并由 J A Kemp LLP 提供专业专利支持

学术活动与社会服务

受邀报告与研讨会组织

- 2026: 受邀参与, "Sustainability and Safety at the Frontier of AI Workshop", Royal Academy of Engineering (英国皇家工程院), London
- 2026: 圆桌嘉宾 (Panelist), "Reinventing Future Electricity Markets with AI", IEEE PES 国际年度会议, 香港
- 2026: 分会主席 (Special Session Chair), "AI-Enabled Optimization for Integrated Energy and Transportation Systems in Smart Cities", IEEE I&CPS Asia, 昆明

- 2026: 分会主席 (Special Session Chair), "Key Technologies for Collaborative Planning and Operation of Source-network-load-storage in New-Type Power Systems", IEEE EI^2 2026, 上海
- 2025: 面向产业界报告, "Large Language Models, Home Energy Management Systems, and Virtual Power Plants", EcoFlow
- 2025: **会议主席与组织者**, Oxford Workshop on Safeguarded AI Agents for Grid-Edge Flexibility, 牛津大学 Saïd 商学院
- 2025: 分会主席 (Session Chair), GW4 Exeter Workshop, 埃克塞特大学
- 2025: 特邀讲座, 华北电力大学, 北京
- 2024: 口头报告, Power Systems Computation Conference (PSCC / 电力系统计算会议), 巴黎

学术兼职

- **期刊/会议审稿人**: *Joule* (Cell 旗下能源旗舰子刊), *Nature Communications* (Nature 子刊), *IEEE Transactions on Power Systems*, *IEEE Transactions on Smart Grid*, *IEEE Transactions on Energy Markets, Policy and Regulation*, *IEEE Transactions on Industry Applications*, *IEEE Transactions on Industrial Informatics*, *Electric Power Systems Research* 等
- **会议审稿人**: Power Systems Computation Conference (PSCC), IEEE Power & Energy Society General Meeting (PESGM)
- **学生指导**: 协助指导 3 名博士生, 5 名硕士/本科毕业设计 (牛津大学)
- **实验室服务**: 电力系统架构实验室 (Power System Architecture Lab) 服务器与代码库管理员