Xia CHEN

Research Associate

+49 15780959659
xia.chen@iek.uni-hannover.de
Linkedin|Website

A researcher with academic & industry engineering experience in developing data-driven solutions.

Proficient in predictive modeling, data-based value proposition, AI in science, advanced machine learning assistance in human-computer interaction, uncertainty analysis, and causal inference for decision-making support.

Research & Work Experience

2020/07 – Current *(Anticipated graduation: 02.2024)*	**Ph.D. Candidate, Technische Universität Berlin/Leibniz Universität Hannover, Germany** • Dissertation Title: *'Beyond Predictions - A Knowledge-integrated Machine Learning Framework for Augmented Intelligence in Decision Making'*; Supervised by Prof. Dr.-Ing. Philipp Geyer. • Participated in German Research Foundation (DFG) project FOR 2363*: 'Evaluation of building design variants in early phases on the basis of adaptive detailing strategies'*. • Served as lecturer for the courses: *'Data Sciences for Energy-Efficient Design*' (TUB) and *'Data Sciences for Design and Engineering'* (LUH).
10/2017 – 12/2019	**Research Assistant, FCN institute of E.ON Energy Research Center, Aachen, Germany** • Energy time-series data analysis & algorithm research (forecasting, clustering). • Economic analysis of German Energy Transition Innovation projects. • Participated in full-stack development for projects: *'Virtual Energy System Laboratory'* and *'Junior Professorship for Energy Resource and Innovation Economics'* (JERI).
11/2016 - Current	**Co-founder, Joinergy Co. Ltd. (Jiaonengwang)**, **Shanghai, PR China** • Specialized in AI solutions and data-driven consulting within the energy digitalization and power market, and sustainability domains. • Received funding from: Technology Entrepreneurship Foundation for Graduates (EFG), Shanghai, 2019; Tongji Eagles Foundation, Business Incubator of Tongji University Science Park, Tongji University, Shanghai, 2019; Talent Start-up Leadership Program, Suzhou, 2019.

Social Commitment

08/2020 - Current	**CINB (Association of Chinese Engineers for Sustainable Construction e.V.)** Executive Committee Member
06/2016 - Current	**CEED (Association Chinese Engineers for Renewable Energy in Germany e.V.)** Executive Committee Member

Education

10/2015 - 12/2018	**RWTH Aachen University, Aachen, Germany** Master of Science in Sustainable Energy Supply Technology
09/2014 - 09/2015	**Beuth Hochschule für Technik Berlin, Berlin, Germany** Bachelor of Engineering in Building Engineering Technology, (Dual Bachelor Program)
09/2011 - 09/2015	**Tongji University, Shanghai, PR China** Bachelor of Engineering in Building Facility Intelligence Technology, Faculty of Chinese-German University of Applied Sciences (CDHAW)

Technical Competency

02/2021	• Top 5% in *M5 (Makridakis Competitions) time-series forecasting competition*, Kaggle
07/2021	• Finalist of *Siemens 'Hello Future' innovation challenge 2021*, Digitally-enabled Applications for Smart Districts, Berlin, Germany

Technical Skills

Programming & Deployment	• Expertise in Python and R with knowledge of mainstream frameworks regarding Data Science, Machine Learning, and Deep Learning (Pytorch) • Knowledge of configuring different systems (Windows, Linux), servers (Google Colaboratory, Amazon AWS), and environments
Web Development Software	• Full-stack development: HTML with JavaScript and CSS, Vue, PHP, Python (Django) • Autodesk suite, knowledge in Revit, AutoCAD; Sketchup, EnergyPlus; Citavi, LaTeX • Adobe suite, expertise in Photoshop, After Effect, Premiere, Illustrator, Dreamweaver, INDESIGN

Publications

Peer-reviewed Articles in International Journals or Open-source Platforms

- Chen, X., Singh, M.M., & Geyer, P. (2022). Utilizing domain knowledge: robust machine learning for building energy performance prediction with small, inconsistent datasets. Under review by Energy and Buildings. arXiv preprint arXiv:2302.10784.

- Chen, X., Teng, X., Chen, H., Pan, Y. & Geyer, P. (2022). Toward reliable signals decoding for electroencephalogram: A benchmark study to EEGNeX. Under review by Biomedical Signal Processing and Control. arXiv preprint arXiv:2207.12369.

- Chen, X., Abualdenien, J., Singh, M. M., Borrmann, A., & Geyer, P. (2022). Introducing causal inference in the energy-efficient building design process. Energy and Buildings, 277, 112583. https://doi.org/10.1016/j.enbuild.2022.112583

- Chen, X., & Geyer, P. (2022). Machine assistance in energy-efficient building design: A predictive framework toward dynamic interaction with human decision-making under uncertainty. Applied Energy, 307, 118240.

- Chen, X., Guo, T., Kriegel, M., & Geyer, P. (2022). A hybrid-model forecasting framework for reducing the building energy performance gap. Advanced Engineering Informatics, 52, 101627.

- 陈夏，张怡卓，蔡晓烨．欧盟-德国建筑碳中和前沿［Ｊ］．暖通空调，２０２２，５２（３）：２５-３８．Chen X., Zhang Y., & Cai X. (2022). Frontiers of carbon neutrality in EU-German building sector, Heating Ventilating & Air Conditioning, TU-023; X322.

- Geyer, P., Singh, M.M. & Chen, X., (2021). Explainable AI for engineering design: A unified approach of systems engineering and component-based deep learning. arXiv preprint arXiv:2108.13836.

Peer-reviewed Articles in Conference Proceedings

- Chen, X., & Geyer, P. (2023). Sustainability recommendation system for building design alternatives under multi-objective scenarios. In 30th International Workshop on Intelligent Computing in Engineering, EG-ICE 2023, London, UK.

- Chen, X., & Geyer, P. (2023). Pathway toward prior knowledge-integrated machine learning in engineering. In 18th International IBPSA conference and Exhibition, Building Simulation 2023, Shanghai, China.

- Guo, T., Chen, X., Geyer, P., & Kregel, M. (2023). Performance investigation of different topology organizations in district heating systems with component-based machine learning. In 18th International IBPSA conference and Exhibition, Building Simulation 2023, Shanghai, China.

- Wang, S., Chen, X., & Geyer, P. (2023). Feasibility Analysis of POD and Deep-autoencoder for Indoor Environment CFD Prediction. In 18th International IBPSA conference and Exhibition, Building Simulation 2023, Shanghai, China.

- Chen X., Cai X., Kümpel A., Müller D., & Geyer P., (2022). Dynamic Feedforward Strategy Development for Building Heating System based on AI Forecasting and Simulation. In Passive and Low Energy Architecture, PLEA 2022, Santiago de Chile, Chile.

- Chen X., Saluz U., Staudt J., Margesin M., Lang W., & Geyer P. (2022). Integrated data-driven and knowledge-based performance evaluation for machine assistance in building design decision support, In 29th International Workshop on Intelligent Computing in Engineering, EG-ICE 2022. Aarhus, Denmark.

- Chen, X., Guo, T., & Geyer, P. (2021). A hybrid-model forecasting framework for reducing the building energy performance gap. In 28th International Workshop on Intelligent Computing in Engineering, EG-ICE 2021. Berlin, Germany, 2021, special issue on Advanced Engineering Informatics.

- Chen, X., Singh, M.M. & Geyer, P. (2021). Component-based machine learning for predicting representative time-series of energy performance in building design. In 28th International Workshop on Intelligent Computing in Engineering, EG-ICE 2021. Berlin, Germany.

Berlin, June. 08. 2023