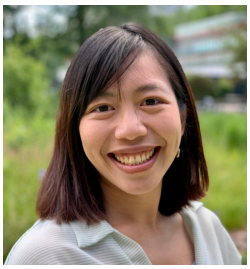

Pei-Yu Wu

Postdoctoral fellow at ETH Zurich AI Center
IVIA Lab Interative Visualization & Intelligence Augmentation and Chair of Circular Engineering for Architecture

Pei-Yu is an interdisciplinary scientist specializing in circular construction, urban informatics, and applied AI. She has experience in creating data-driven tools to support decision-making and promote circular practices in the construction industry. Her research involves collaboration with international partners across academia and industry, earning recognition and funding for its innovative approach. Pei-Yu is committed to advancing knowledge in her field with a blend of goal-oriented personality, systematic thinking, creative problem-solving, and strong R&D project management skills.

Working experience

9/2024 - present	Postdoc at ETH Zurich AI Center Postdoc Fellowship
	• Predictive modelign of building material lifecycles for reuse optimization in urban development
	• SWIRCULAR: a Swiss Digital Circular Construction Ecosystem
2/2020 - 10/2024	Researcher at RISE Research Institutes of Sweden
	• Predictive modeling of moisture damages in Swedish buildings with AI
	• Dynamic EU building stock knowledge hub (BuiltHub), Horizon 2020
	Industrial PhD candidate at RISE Research Institutes of Sweden
	• Predicting hazardous materials in buildings using machine learning
10/2018 - 6/2021	Project engineer at the Engineer without Borders Sweden
	• Construction competence group
	• Engineering consultation at Norconsult, water and sanitation project
5/2015 -6/2016	Research fellow at National Yang Ming Chiao Tung University, Taiwan
	• Design consultation and R&D projects with industry
	• IOT Smart house renovation and exhibition
7/2014 - 12/2014	Intern architect at J.J.Pan and Partners, Architects and Planners, Taiwan
7/2012 - 8/2012	Architectural intern at Origin Architects and Planners, Taiwan

Education

2/2020 - 1/2024	PhD in Building and Environmental Technology, Lund University, Sweden
6/2022 - 7/2022	Exchange at Circular Engineering for Architecture Lab, ETH Zürich, Switzerland
8/2017 - 7/2019	Master in Construction and Design Project Management, Chalmers, Sweden
9/2009 - 1/2015	Bachelor in Architecture, National Cheng Kung University, Taiwan
10/2012 - 7/2013	Exchange in Architecture and Building Engineering, TU Munich, Germany

Research applications

5/2024	• Building-specific renovation plans (Swedish Research Council for Sustainable Developent)
10/2022- 12/2023	• Machine learning for hazardous material assessment (Swedish Energy Agency)
10/2022- 6/2024	• Predicting building damages in existing buildings with AI (County insurance)
10/2022- 12/2023	• Evaluate recycling potential of PVC flooring (Swedish Innovation Agency)

Awards

5/2023 & 2021	Maj och Hilding Brosenius Research Foundation Scholarship
6/2022	Landshövding Nils Hörjels Foundation Scholarship at LTH, Lund University
4/2022	Erasmus+ Mobility Grant, Lund University
7/2019	Best presentation, ASPIRE Forum at Tokyo Institute of Technology
12/2018	Second place, 100H WSP Future Scholarship Competition 2018
4/2017	Avancez Scholarship of Chalmers University of Technology
4/2017	Taiwan Governmental Scholarship for Overseas Study
3/2015	Gold award, Hong Kong Architectural Design Symposium
10/2014	Taiwan Architectural Competition for Students, Excellent Award
9/2014	Taiwan Golden Award for Architecture, Best Newcomer

Contact

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Skills

Machine learning
Data analytics & RAG
Agentic AI design
Python GIS processing
OpenLCA
Illustrator / Photoshop / InDesign
MS Project / Primavera P6

Languages

English
German
Mandarin
Swedish

References

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RISE Research Institutes of Sweden
Adjuct professor Dr. Lund University
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Outreach activities

10/2024	AI+X Summit, Zurich, Switzerland
7/2024	The 9th International Building Physics Conference, Toronto, Canada
11/2023	Reviewer for Journal *Science of The Total Environment*
11/2023	Reviewer for Journal *Environmental Health Perspectives*
9/2023	World Digital Built Environment Summit, Helsinki, Finland
7/2023	Reviewer for Journal *Building and Environment*
6/2023	The 13th Nordic Symposium on Building Physics, Aalborg, Denmark
11/2022	SBEfin 2022 Emerging Concepts for Sustainable Built Environments Conference, Helsinki, Finland
11/2022	Academic Collaboration Chile Sweden Forum, Punta Arenas, Chile
9/2022	Mediterranean Machine Learning Summer School, Milan, Italy
7/2022	Reviewer for Journal *Expert Systems With Applications*
6/2022	Symposiums on Construction Robotics and Computational Design, Zürich, Switzerland
8/2021	The 8th International Building Physics Conference, Copenhagen, Denmark
11/2020	BEYOND 2020 - A Conference for Sustainability, Gothenburg, Sweden
7/2019	ASPIRE Forum at Tokyo Tech on Better Living, Tokyo, Japan
1/2019	International student ambassador at Chalmers University, Gothenburg, Sweden
9/2018	IDEA League Summer School on Environmental footprint assessment at ETH Zürich, Zürich, Switzerland

Qualification

5/2017	Architect, Taiwan

Academic publications

- **Wu, P-Y.**, Johansson, T., Mundt-Petersen S.O., & Mjörnell, K. (2024). Predictive Modeling and Estimation of Moisture Damages in Swedish Building: A Machine Learning Approach. Under review by *Sustainable Cities and Society*.
- **Wu, P-Y.**, Johansson, T., Mundt-Petersen S.O., & Mjörnell, K. (2024). Probabilistic Distributions of Moisture Damages in Swedish Buildings. *Proceedings of the 9th International Building Physics Conference*.
- **Wu, P-Y.** (2024). *Data-driven approaches for predicting hazardous substances in the building stock*. [PhD thesis, Division of Building Physics]. Lund University.
- **Wu, P-Y.**, Sandels, C., Johansson, T., Mangold, M., & Mjörnell, K. (2023). Machine Learning Models for the Prediction of PCB and Asbestos Materials in Buildings. P-Y. Wu, C. Sandels, T. Johansson, M. Mangold, and K. Mjörnell. *Resources, Conservation, and Recycling*, *199*(107253). https://doi.org/10.1016/j.resconrec.2023.107253
- **Wu, P-Y.**, Johansson, T., Sandels, C., Mangold, M., & Mjörnell, K. (2023). Indoor Radon Interval Prediction in the Swedish Building Stock Using Machine Learning. *Building and Environment, 245*(110879). https://doi.org/10.1016/j.buildenv.2023.110879
- **Wu, P-Y.**, Johansson, T., Mangold, M., Sandels, C., & Mjörnell, K. (2023). Evaluating the Indoor Radon Concentrations in the Swedish Building Stock Using Statistical and Machine Learning. *Journal of Physics: Conference Series, 2654*(012086) *https://doi.org/10.1088/1742-6596/2654/1/012086*
- **Wu, P-Y.**, Johansson, T., Mangold, M., Sandels, C., & Mjörnell, K. (2023). Estimating the probability distributions of radioactive concrete in the building stock using Bayesian networks. *Expert Systems with Applications, 222(*119812). https://doi.org/10.1016/j.eswa.2023.119812
- **Wu, P-Y.**, Mangold, M., Sandels, C., Johansson, T., & Mjörnell, K. (2022). Modeling Artificial Neural Networks to Predict Asbestos-containing Materials in Residential Buildings. *IOP Conference Series: Earth and Environmental Science, 1122*(012050). https://doi.org/10.1088/1755-1315/1122/1/012050
- **Wu, P-Y.** (2022). *Predicting hazardous materials in the Swedish building stock using data mining*. [Licentiate thesis, Division of Building Physics]. Lund University.
- **Wu, P-Y.**, Sandels, C., Mjörnell, K., Mangold, M., & Johansson, T. (2022). Predicting the presence of hazardous materials in buildings using machine learning. *Building and Environment*, *213*(108894). https://doi.org/10.1016/j.buildenv.2022.108894
- **Wu, P. Y.**, Mjörnell, K., Mangold, M., Sandels, C., & Johansson, T. (2021). A data-driven approach to assess the risk of encountering hazardous materials in the building stock based on environmental inventories. *Sustainability (Switzerland)*, *13*(7836). https://doi.org/10.3390/su13147836
- **Wu, P-Y.**, Mjörnell, K., Sandels, C., & Mangold, M. (2021). Machine Learning in Hazardous Building Material Management: Research Status and Applications. *Recent Progress in Materials*, *3*(2). https://doi.org/10.21926/rpm.2102017
- **Wu, P-Y.**, Mjörnell, K., Mangold, M., Sandels, C., & Johansson, T. (2021). Tracing Hazardous Materials in Registered Records: A Case Study of Demolished and Renovated Buildings in Gothenburg. *Journal of Physics: Conference Series, 2069*(012234) https://doi.org/10.1088/1742-6596/2069/1/012234
- Sörensson, H., & **Wu, P-Y.** (2019). *Collaborative Learning and Innovation in the Swedish Construction*. [Master thesis, Civil Engineering]. Chalmers University of Technology.