

Yun Kyu Yi

Associate Professor, School of Architecture, University of Illinois at Urbana-Champaign

EDUCATION

Ph.D., Architecture,
School of Design, University of Pennsylvania.
M.S., Architecture,
School of Design, University of Pennsylvania.
M.S., Architectural Engineering,
Department of Architectural Engineering, Yonsei University, Korea (South)
B.S., Architectural Engineering
Department of Architectural Engineering, Hong-Ik University. Korea (South)

TEACHING EXPERIENCE

Visiting Professor, Hanbat National University, Daejeon, South Korea
Associate Professor
School of Architecture, University of Illinois at Urbana-Champaign
Assistant Professor
School of Architecture, University of Illinois at Urbana-Champaign
Assistant Professor
Department of Architecture, School of Design, University of Pennsylvania
Lecturer
Department of Architecture, School of Design, University of Pennsylvania

OTHER PROFESSIONAL EMPLOYMENT

Founder and Lead Investigator, Responsive Architecture Lab (RAL), School of Architecture, University of Illinois, Champaign, Illinois
Founder and Investigator, Envitect. LLC, CheongJu, Korea (South)
Founder and Investigator, Envitect. LLC, Delaware, USA
Post-doc, T.C. Chan Center for Building Simulation and Energy Studies, University of Pennsylvania, Philadelphia, Pennsylvania
Researcher, T.C. Chan Center for Building Simulation and Energy Studies, University of Pennsylvania, Philadelphia, Pennsylvania
Researcher, Building Simulation Group (School of Design), University of Pennsylvania, Philadelphia, Pennsylvania

PUBLICATIONS (5 YEARS, SELECTED)

Referred Journals

2024 Kim, You-Jeong, Anis, Manal, and Yi, Yun Kyu, "Integrating Pix2Pix and computational fluid dynamics for enhanced indoor airflow prediction: A case study with wing-walls", Journal of Building Engineering, Volume 91, 2024, <https://doi.org/10.1016/j.jobbe.2024.109517>

- 2024 Kim, YJ., Waegel, A., Hakkarainen, M, Yi, YK, Braham, W. "Understanding HVAC system runtime of U.S. homes: An energy signature analysis using smart thermostat data", Build. Simul. (2024). <https://doi.org/10.1007/s12273-024-1203-9>
- 2023 Wang, Shanshan, Yun Kyu Yi, and Nianxiong Liu. 2023. "The ANN Architecture Analysis: A Case Study on Daylight, Visual, and Outdoor Thermal Metrics of Residential Buildings in China" Buildings 13, no. 11: 2795. <https://doi.org/10.3390/buildings13112795>
- 2023 Yi, Yun K., et.al., " Application of Machine Learning (ML) and Genetic Algorithm (GA) to optimize Window Wing Wall Design for Natural Ventilation," Journal of Building Engineering, Volume 68, 1 June 2023, 106218, <https://doi.org/10.1016/j.jobe.2023.106218>
- 2023 Li, Yaxin, and Yi, Yun K., "Optimal Shape Design using Machine Learning for Wind Energy and Pressure," Journal of Building Engineering, Volume 70, 1 July 2023, 106337, <https://doi.org/10.1016/j.jobe.2023.106337>
- 2021 ShanShan Wang, Yun Kyu Yi, NianXiong Liu, "Multi-objective optimization (MOO) for high-rise residential buildings' layout centered on daylight, visual, and outdoor thermal metrics in China," Building and Environment, 2021,108263, ISSN 0360-1323, <https://doi.org/10.1016/j.buildenv.2021.108263>
- 2020 Wang, B., Yi, Y. K., "Developing an Adapted UTCI (Universal Thermal Climate Index) for the Elderly Population in China's Severe Cold Climate Region," Sustainable Cities and Society. Accepted. <https://doi.org/10.1016/j.scs.2021.102813>.
- 2020 Yi, Y. K., Tariq, A., Park, J., and Barakat, D., "Multi-Objective Optimization (MOO) of a Skylight Roof System for Structure Integrity, Daylight, and Material Cost," Journal of Building Engineering. Volume 34, February 2021, 102056. <https://doi.org/10.1016/j.jobe.2020.102056>.
- 2020 Yi, Y. K., Zhang, Y., and Myung, J., "House style recognition using deep convolutional neural network." Automation in Construction. 118. Oct. 2020, 103307. <https://doi.org/10.1016/j.autcon.2020.103307>.
- 2020 Yi, Y. K. and Kang, B., "Integrating a wind turbine into a parking pavilion for generating electricity," Journal of Building Engineering. 32. Nov 2020, 101471. <https://doi.org/10.1016/j.jobe.2020.101471>.
- 2020 Qiu, Changyu, Y. K. Yi, M. Wang, H. Yanga, "Coupling an artificial neuron network daylighting model and building energy simulation for vacuum photovoltaic glazing," Applied Energy Volume 263, April 2020, 114624. <https://doi.org/10.1016/j.apenergy.2020.114624>.
- 2019 Yi, Y. K., "Building facade multi-objective optimization for daylight and aesthetical Perception," Building and Environment, Volume 156, April 2019, Page 178-190.
- 2019 Shen, P., Braham, W., Yi, Y. K., and Eaton, E., "Rapid multi-objective optimization with multi-year future weather condition and decision-making support for building retrofit," Energy, Volume 172, 1 April 2019, Pages 892-912.
- 2019 Kim, H. and Yi, Y. K., " QuVue Implementation for Decisions Related to High-rise Residential Building Layouts," Building and Environment, Volume 148, 15 January 2019, Pages 116-127.

- 2019 Shen, P., Braham, W., and Yi, Y. K., "The feasibility and importance of considering climate change impacts in building retrofit analysis." *Applied Energy*, Volume 223-234, 1 January 2019, Pages 254-270.

Referred Conferences

- 2024 You-Jeong Kim, Alexandre Waegel, Max Hakkarainen, Yun Kyu Yi, William W. Braham, "Application of Simple 2R2C Model on Large-Scale Smart Thermostat Data" in PLEA Wroclaw, 2024, Poland.
- 2024 Manal Anis, You-Jeong Kim, and Yun Kyu Yi, Younghyun Yu, "Predicting annual hourly daylight performance of buildings using Conditional Generative Adversarial Network (cGAN)" in PLEA Wroclaw, 2024, Poland.
- 2023 Manal Anis, Sumedh Pendurkar, Yun Kyu Yi, Guni Sharon, "Comparison Between Popular Genetic Algorithm (GA)-Based Tool and Covariance Matrix Adaptation - Evolutionary Strategy (CMA-ES) for Optimizing Indoor Daylight," in 18th International IBPSA conference and exhibition, Sept. 4-6, 2023, Shanghai, China.
- 2022 Myung, Junyoung, and Yi, Y. K., "Architectural Survey for the National Register Using Computer Vision," Society of Architectural Historians (SAH) 2022 Annual International Conference, in Pittsburg, PA., (April 27- May1 2022).
- 2019 Yi, Y. K., and Jang, K., "Multi-Objective Optimization on Daylight Control System's Qualitative and Quantitative Performance," In Proceedings of the 16th International IBPSA Conference, Rome, Italy, September 2-4 2019.

PROJECTS (5 YEARS)

- 2024 Yi, Y.K., "Advancing Carbon Emission Standards for Different Building Types," Korea Institute of Civil Engineering and Building Technology, Gyeonggi-Do, Korea, 2024.
- 2024 Yi, Y.K., W. Braham, "Building Modelling, System Evaluation, and Performance Analysis: Ecobee DYD data set 4," Daikin Open Innovation Lab, Silicon Valley, CA., 2024.
- 2023 Yi, Y.K., W. Braham, "Building Modelling, System Evaluation, and Performance Analysis: Ecobee DYD data set 3," Daikin Open Innovation Lab, Silicon Valley, CA., 2023.
- 2022 Yi, Y.K., W. Braham, R. Srinivasan, "Building Modelling, System Evaluation, and Performance Analysis: Ecobee DYD data set 2," Daikin Open Innovation Lab, Silicon Valley, CA., 2022.
- 2021 Yi, Y.K., W. Braham, R. Srinivasan, P. Shen, "White box, Black box, Gray box modelling of building energy use," Daikin Open Innovation Lab, Silicon Valley, CA., 2021.
- 2021 Yi, Y.K., W. Braham, and R. Srinivasan, "Building Modelling, System Evaluation, and Performance Analysis: Ecobee DYD data set," Daikin Open Innovation Lab, Silicon Valley, CA., 2021.
- 2020 Yi, Y. K., Sanders, J., and Tariq, A., "New I-ACT Master Plan Animation," Illinois Center for Transportation, University of Illinois at Urbana-Champaign, IL., 2020.