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Date: 2020.09

Yun Kyu Yi

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

EDUCATION

- 2008 Ph.D., Architecture,
School of Design, University of Pennsylvania.
Dissertation: Integration of Computational Fluid Dynamics (CFD) and Energy Simulation (ES)
for Optimal Energy Form Generation
- 2005 M.S., Architecture,
School of Design, University of Pennsylvania.
- 2001 M.S., Architectural Engineering,
Department of Architectural Engineering, Yonsei University, Korea (South)
- 1995 B.S., Architectural Engineering
Department of Architectural Engineering, Hong-Ik University, Korea (South)

TEACHING EXPERIENCE

- 2016 – pres Assistant Professor
School of Architecture, University of Illinois at Urbana-Champaign
- 2009 – 2016 Assistant Professor
Department of Architecture, School of Design, University of Pennsylvania
- 2007 – 2009 Lecturer
Department of Architecture, School of Design, University of Pennsylvania
- 2003 – 2006 Teaching Assistant
Department of Architecture, School of Design, University of Pennsylvania

OTHER PROFESSIONAL EMPLOYMENT

- 2017-pres Founder and Lead Investigator, Responsive Architecture Lab (RAL), School of Architecture,
University of Illinois, Champaign, Illinois
- 2017-pres Founder and Lead Investigator, Responsive Architecture Lab (RAL), School of Architecture,
University of Illinois, Champaign, Illinois
- 2016-pres Founder and Investigator, Envitect. LLC, CheongJu, Korea (South)
- 2013-2015 Founder and Investigator, Envitect. LLC, Delaware, USA
- 2008-2009 Post-doc, T.C. Chan Center for Building Simulation and Energy Studies, University of
Pennsylvania, Philadelphia, Pennsylvania
- 2005-2008 Researcher, T.C. Chan Center for Building Simulation and Energy Studies, University of
Pennsylvania, Philadelphia, Pennsylvania

2002-2005	Researcher, Building Simulation Group (School of Design), University of Pennsylvania, Philadelphia, Pennsylvania
1997-2000	Construction Manager, Paradise Construction Industrial, Seoul, Korea (South)
1995-1997	Assistant Researcher, Advanced Building Science and Technology Research Center, Yonsei University, Seoul, Korea (South)
1993-1994	Architectural Intern, Mooyoung Architects & Engineers, Seoul, Korea (South)
1992	Architectural Intern, Yae Architects, Cheong-Ju, Korea (South)

HONORS, RECOGNITIONS, AND OUTSTANDING ACHIEVEMENTS (SINCE APPOINTMENT)

2019	Stuart L. and Nancy J. Levenick Sustainability Teaching Fellow, 2019., The Institute for Sustainability, Energy, and Environment (iSEE), UIUC, 2019, \$2,000
2019	NSF-funded Workshop on Architectural Faculty in Environmental Sustainability (WAFES) Travel Fellowship, NSF, 2019, \$1,000.
2017	Paper "Programmable Kiri-Kirigami Metamaterials" highlighted on Advanced Science News, Wiley. (http://www.advancedsciencenews.com/adaptive-architecture-energy-saving-buildings/)
2016-2018	Design Research Initiative Fellowship, FAA, UIUC, 2016-2018, \$50,000

INVITED LECTURES AND PANELS (SINCE APPOINTMENT)

2019.	"Building Simulation and Its Implementation," Illinois Solar Decathlon Guest Lecture, University of Illinois at Urbana-Champaign, Champaign (Nov 7th)
2019.	Session Chair, 16th International IBPSA Conference, Rome, Italy, September 2-4 2019.
2018.	"Building Simulation Beyond Instrumentality," National Organization of Minority Architecture Students, University of Illinois at Urbana-Champaign, Champaign (Feb. 10th)
2017.	"Real-Meter Data," Campus as Lab Workshop, Institute for Sustainability, Energy, and Environment, University of Illinois at Urbana-Champaign, Champaign (September 29)
2017.	Critic, Design studio, School of Architecture, Sungkyunkwan University, Korea. June.

GRANTS RECEIVED (SINCE APPOINTMENT)

2019	Stark, Timothy D., Kriven, Waltraud M., Taylor, Mark S. and Yi, Y.K., Institute's Living Lab Research Seed Funding, UIUC, \$30,000.
2019	Yi, Y.K., Campus Research Board Scholar's Travel Fund, UIUC, 2019, \$1,000
2019	Yi, Y.K., and Kang, B., Institute for Sustainability, Energy, and Environment (iSEE)'s Living Lab Research Seed Funding, UIUC, 2019, \$30,000.
2018	Yi, Y.K., Campus IT Grant, UIUC, \$5,000
2018	Yi, Y.K., Campus Research Board Fund, UIUC, \$15,291

PATENTS, TRADEMARK, AND SOFTWARE (SINCE APPOINTMENT)

2020	Liu, Z. and Yi, Y. K., "TIE (Tensegrity Integration Element) for Rhino," a tool for Rhino CAD, 2020 (https://publish.illinois.edu/tie4rhino/).
2018	United States Patent and Trademark Office ("USPTO") issued a Notice of Allowance for QuVue as a trademark under the University of Illinois Board of Trustees.

2016 Yi, Y. K. and Kim H. "Three-Dimensional Open View Ratio Calculation and Analyzing Method." Patent Number 101670793. October 25, 2016. (Korea)

PUBLICATIONS (SINCE APPOINTMENT)

Referred Journals

- 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.job.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.
- 2019 Yi, Y. K., Ghoreishi, A., and Barakat, D., "Auxetic Structures and Advanced Daylight Control Systems," *Journal of Façade Design & Engineering (JFDE)* , Vol 7 No 1, January 2019, page 63-74.
- 2018 Yi, Yong Kyu, Yi, Yun Kyu, and Jing, L-Y, "Discussion on Sustaining "Olle" without Losing Integrity of Local Identity - Focused on downtown area called Mu-geun-sung at Jeju City-" *Journal of the Korean Institute of Rural Architecture*, Vol. 20, (Aug. 2018), Issue 3, pp 19-26. (Korean)
- 2018 Shen, P., Braham, W., and Yi, Y. K., "Development of a lightweight building simulation tool using simplified zone thermal coupling for fast parametric study." *Applied Energy*, Volume 223, (August 2018), pp 188-214.
- 2018 Yi, Y. K.K, Yin, J., and Tang, Y., "Developing an advanced daylight model for building energy tool to simulate dynamic shading device," *Solar Energy*, vol 163 (2018): pp 140-149
- 2017 Yi, Y. K., and Kim, H., "Universal Visible Sky Factor: A method for calculating the three-dimensional visible sky ratio," *Building and Environment*, vol 123 (Oct): pp 390-403
- 2017 Jihun Kim, Yun Kyu Yi, Ali Malkawi, "Topography integration to wind downscaling," *Building and Environment* 115 (2017) pp 306-315
- 2016 Y. Tang, G. Lin, S. Yang, Y. K. Yi, R. D. Kamien, J. Yin, "Programmable Kiri-Kirigami Metamaterials," *Adv. Mater.*, 27 December 2016, 1604262.
- 2016 Yi, Yun Kyu. "Dynamic Coupling between a Kriging-Based Daylight Model and Building Energy Models," *Energy and Buildings* vol. 128, NO 15 (September 2016): pp 798-808.

- 2016 Yi, Yun Kyu. "Adaptation of Kriging in Daylight Modeling for Energy Simulation," *Energy and Buildings* vol. 111, No 1 (January 2016): pp 479-496.

Referred Conferences

- 2020 Shishegar, N., Boubekri, M., Rogers, W., and Stine-Morrow, E., Yi, Y. (2020). Therapeutic Lighting Design to Decrease Depression in Older Adults, 2020 ACSA Annual Conference, San Diego, CA. March 12-14, 2020.
- 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.
- 2019 Ghoreishi, A., Yi, Y. K., and Barakat, D., "Auxetic Structures and Advanced Daylight Control Systems," PowerSkin Conference 2019, Technische Universität München, Munich, January 17, 2019.
- 2018 Yi, Y. K., "Building Simulation Tools and High Performance Design," ARCC EAAE 2018 Conference in Philadelphia, 2018
- 2017 Yi, Y. K., "Performance-Based 3D Interior Space Layout Optimization," in Passive Low Energy Architecture (PLEA) - Design to Thrive, Edinburgh, UK (July 3-5 2017)

Interview

- 2017 Interview published in the book *Convergence: The Redesign of Design* by Randy Deutsch (AD, 2017)

Consulting Reports

- 2020 Yi, Y. K., ESTUDIO DE ARQUITECTURA, Archbody architects, "Museum of Urbanism and Architecture Competition," Korea.
- 2020 Yi, Y. K., "Moonsan Youth Center Competition CFD study," Paju, Korea.
- 2020 Yi, Y. K., "Yeosu Safety Education and Training Center Competition CFD and daylight study," Paju, Korea.
- 2020 Yi, Y. K., Sanders, J., and Tariq, A., "New I-ACT Master Plan Animation," Rantoul, IL.
- 2019 Yi, Y. K., "Master Plan for Illinois Automated and Connected Track (I-ACT)," Illinois Center for Transportation, University of Illinois at Urbana-Champaign.
- 2019 Yi, Y. K., "BanDaBee Competition Outdoor CFD study," Okchen, Korea.
- 2019 Yi, Y. K., "Dallsung Education and Cultural Center Competition Outdoor CFD study," Daegu, Korea.
- 2017 Yi, Y. K., "TS Building Renovation CFD study", Seoul, Korea.
- 2017 Yi, Y. K., "A Study of the Development of a Prototype of the BIM based Building Envelope's Design System by Building's Energy-Saving Design Element," Ulsan, Korea,

SUMMARY OF INSTRUCTION (SINCE APPOINTMENT)

List of Course Taught

ARCH 573: High Performance + Responsive Architecture (2018 Spring, 2019 Spring and Fall)

A graduate design studio emphasizes the concept that buildings are never inert and static, but buildings should be dynamic and respond to the environment in where they are located. Studio aims to design a building responds to a range of needs within multiple contexts that it is capable of self-modification, regulation, and adaptation. By reacting intelligently to changes of various kinds, architecture can be high-performance building.

ARCH 576: Simulation and Design (2017, and 2019 Fall)

The class introduced environmental technology using state-of-the-art computer simulation models for energy, lighting, and acoustical analysis through hands-on experience.

ARCH 576: Performance and Design: Parametric Integration (2016 Fall, 2018 Fall, 2019 Spring, and 2020 Fall)

The class is an elective class to develop techniques for integrating environmental performance analysis and the design of buildings, with an emphasis on parametric methods.

ARCH 475: Arch Design & Development (Capstone Studio) (2016, 2017, 2018 Fall, and 2020 Summer)

This is a final year studio that emphasis on schematic design and development of a small-scale public building emphasizing the integration of the basic elements of building; materials, details, structure, technology, program, life safety, and universal design.

ARCH 274: Representation (2020 Spring)

This is core class that it is intended for students to develop an understanding of the representation of ideas, values, and meaning in the built environment. Focuses on three topic areas: analysis, technical communication, and modeling.

PhD in Architecture Committee Member

IP = in progress

^ Denotes service as Chair or co-Chair of Committee

2017-pres	^ Keunhyuk Jang, "Dynamic coupling of CFD and Whole building energy simulation," University of Illinois at Urbana-Champaign, IP.
2020-pres	^ Manal Anis, "Responsive biomaterial and design integration," University of Illinois at Urbana-Champaign, IP.
2018-pres	Jonathan Kim, "Historical Operation Data of a Chiller System to Propose an Energy Saving Plan in Real Time," University of Illinois at Urbana-Champaign, IP.
2020	Jaewook Lee, "Integration of Daylight and Building Design for Human Health and Wellbeing," University of Illinois at Urbana-Champaign.
2020	Nastaran Shishegar, "The Promise of Lighting for Improving the Quality of Life in Older Adults: Evaluating the Impacts of Tuning Ambient Illumination on Older Adults' Sleep Quality, Mood, and Cognitive Performance," University of Illinois at Urbana-Champaign.
2020	Grant Mosey, "Quantifying Design Trade-offs in Sustainable Urban-Scale Design Through Multivariate Optimization," University of Illinois at Urbana-Champaign.
2017	Pengyuan Shen, "Whole building retrofit life cycle optimization method integrated with impacts of climate change and its uncertainties," University of Pennsylvania, 2017. Now Assistant Professor at School of Architecture, Harbin Institute of Technology, Shenzhen, China.

Advising visiting Ph.D. student

2019-pres	Shanshan Wang, Visiting Ph.D. student, School of Architecture, Tsinghua University, Beijing, China, 2019.
2019-2020	Bo Wang, Visiting Ph.D. student, Harbin Institute of Technology, Harbin, China, 2019.
2019	Changyu Qiu, Visiting Ph.D. student, Department of Building Services Engineering, The Hong Kong Polytechnic University, Hong Kong, China, 2019.

Directed Readings / Independent Studies

2020	Keunhyuk Jang, "Arch 590: Development of image crawling," Summer 2020. Zhanpeng Liu, "Arch 597: Tensile structure and its application, Spring 2020. Keunhyuk Jang, "Arch 597: SMA responsible shading design 2," Spring 2020.
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- 2019 Keunhyuk Jang, "Arch 597: Indoor quality analysis with CFD," Spring 2019.
 Mayur Mahendrakumar Mistry, "Arch597: Building performance study and design of fenestration for Solar Decathlon House," Summer 2019.
 Dua Barakat, "Arch 597: Multi-Objective Optimization (MOO) of Space Truss for Structure Integrity, Energy Demand, and Material Cost," Spring 2019.
- 2018 DongSeop Shin, "Arch 597: Building Facade Design Optimization with Daylight and Aesthetic Sensibility," Spring 2018.
- 2017 Yang Li, "Arch 597: Self-response Parametric Pavilion Design," Spring 2017.

SERVICE (SINCE APPOINTMENT)

Service to Disciplinary and Professional Societies or Associations

- 2020 Scientific Committee, 5th Annual International Graduate Student Symposium, College of Architecture, Illinois Institute of Technology, Chicago, November 13-14 2020.
- 2019 Reviewer, IEEE (Institute of Electrical and Electronics Engineers) Access.
- 2019-pres Reviewer, Architectural Science Review, Taylor & Francis.
- 2019-pres Reviewer, Applied Energy Journal. Elsevier.
- 2019-pres Reviewer, Journal of Building Engineering, Elsevier.
- 2018 Reviewer, TAD, Taylor & Francis
- 2018 Reviewer, Building Simulation 2019, the Sixteen International Conference of IBPSA, Roma, Italy.
- 2016 Reviewer, Building Simulation 2017, the Fifteenth International Conference of IBPSA, San Francisco, CA, USA.
- 2016 Committee, IAQVEC 2016, the 9th International Conference on Indoor Air Quality, Ventilation and Energy Conservation in Buildings, Seoul, Korea.
- 2016-pres External Affiliated Faculty, Center for Environmental Building & Design, University of Pennsylvania.
- 2015-pres Member, Center for Analyzing Evolved Structures as Optimized Products: Science and Engineering for the Human Habitat. Research group.
- 2015-pres Review Editor in Heating, Ventilation, and Air Conditioning, Journal of Frontiers in Energy Research, Mechanical Engineering and Built Environment, EPFL, Swiss
- 2014-pres Reviewer, Applied Energy, Journal, Elsevier Publications
- 2013-2018 Committee, SPC 209 Energy Simulation Aided Design for Buildings Except Low-Rise Residential Buildings, ASHRAE.
- 2013-pres Member, Korean-American Scientists and Engineers Association
- 2011-pres Reviewer, Building and Environment, Journal, Elsevier Publications
- 2011-pres Reviewer, Automation in Construction, Journal, Elsevier Publications
- 2008-pres Assoc. AIA, American Institute of Architects
- 2008-pres Reviewer, Building Simulation an International Journal, Springer Publications
- 2007-pres Member, International Building Performance Simulation Association (IBPSA).

University / Campus Service

- 2019-2020 Member, NAAB/Assessments Committee

2018-2020	Member, Media Presence Committee
2018-2019	Member, School of Architecture Director search Committee
2018-pres	Faculty Advisor, Student Sustainability Committee (SSC), advising allocation of project funds.
2017-2018	Member, Student Concern Committee
2016-pres	Member, Sustainability Working Advisory Teams (SWATeam), Institute for Sustainability, Energy, and Environment. Committee is charged to recommend steps the campus should take to meet the Illinois Climate Action Plan (iCAP) targets
2016-2018	Fellow, Design Research Initiative
2016-2017	Member, Scholarship and Awards Committee
2016-2017	Member, Search Committee: Fabrication Coordinator