

Education

Ph.D. in Building Technology at INES, Aug 2014 - May 2021

The University of North Carolina at Charlotte • Charlotte, NC

Dissertation title: The optimization method of a customized kinetic facade system using regression analysis.

Master of Science in Architecture, Mar 2012 - Feb 2014

Chonnam National University • Gwangju, South Korea

Thesis: A study on the kinetic facade system and the energy performance evaluation of the Kinetic Light Shelf Unit (KLSU) system (Registered Patent).

Bachelor of Architecture, Mar 2007 - Feb 2012

Chonnam National University • Gwangju, South Korea

Professional Experience

Adjunct Professor (2022 Fall)

Course: Building Systems Integration | **ARCH 5305**

Covered Topics: Climate analysis, Whole building energy model, Carbon accounting, Natural ventilation, Energy reduction strategy for Net-zero building, Renewable energy potential

Research Fellow Postdoc (Aug 2021 - Current)

Project1: Integrated PV facade system development on a curved facade surface | **NSF PFI Project _ 2021- Current**

Role: Performance simulation, Prototype fabrication, Data collection

Project2: Algae Facade Performance Monitoring | **NSF STTR Project July 2021- June 2022**

Role: Algae growth data measurement, Algae facade maintenance, Data analysis (Optical density, Dry mass)

Project3: Air-Depolluting Facade System | **NSF Icorp_2020-2021, ARCC 2022, ACSA 2022**

Role: Air-depolluting facade performance test, Data collection and analysis

Research Assistant (Aug 2014 - May 2021)

Project1: Performance prediction of a customized kinetic facade system using regression model | **ARCC 2021**

Role: Performance simulation, Data collection and analysis

Project2: Adaptable solar window (2019-2020) | **NSF I-Corps_2019**

Role: Adaptive solar facade development, Performance simulation, Fabrication, Geometry optimization

Project3: A unified framework for optimizing the performance of a kinetic facade (2019) | **SimAUD 2019**

Role: Performance simulation, Data collection and analysis

Project4: Assessing the circadian potential of an office building in the southeastern US | **SimAUD 2018**

Role: Performance simulation, Parametric script development

Project5: Performance optimization for improving the energy efficiency of a building | **Appalachian Energy Summit 2017**

Role: Parametric performance simulation, Parametrical script development

Project6: Performance simulation of thermal-bimetal as sustainable shading system | **ARCC 2015**

Role: Performance simulations, Bi-metal façade module design, Detailed drawing

Intern Architect

EL Architects • South Korea (Dec 2010- Feb 2011)

Role: Final model (town house / apartment) production

Awards

- **2021 Graduate Interdisciplinary Research Award, UNC Charlotte, School of Architecture**
- **2019 Nominated Outstanding Graduate Teaching Assistants at UNC Charlotte**
- **2019 National Science Foundation (NSF) Research Funding, Innovation Corps Regional/National Stages \$53,000**
- **2015 Energy Summit Student Poster Competition, 2nd Award**
- **2014 10th Collections of Graduation Thesis in Architectural Institute of Korea, the Excellent prize**
- **2014 1st Korea CAD/CAM Student Research Competition, 3rd Prize**
- **2013 International Student Competition for a Sustainable Built Environment (Iisbe), Honorable Mention**
- **2011 Korean Space Design Association, Specially Selected**

Scholarships

- **2018 Academic Fellowship**, The Graduate School Summer Fellowship (GSSF) Program (UNC Charlotte, NC)
- **2014 Academic Assistantship**, The Graduate Assistant Support Plan 2014-2019 (UNC Charlotte, NC)
- **2013 Academic Scholarship**, Scholarship for excellent grades (Chonnam National University, South Korea)

Publications

- **2022** Abdulrahim, R.P., Kim, K. H., **Im, O.K.**, Indoor Daylight Level Assessment By Applying Microalgae In The Building Double Glazed Façade, PLEA 2022
- **2022** Rivas, D. G., **Im, O.K.**, Wu, C., Kim, K. H., A Photocatalytic Building Façade for Improving Urban Air Quality. 2022 ACSA 110th Annual Meeting
- **2022** Bapat, K., **Im, O.K.**, Wu, C., Kim, K. H., An Air-Depolluting System for Indoor VOC Reduction. ARCC-EAAE 2022
- **2021** **Im, O. K.**, Kim, K. H., A time efficient design method for a kinetic façade using a regression model. Architectural Research Centers Consortium 2021
- **2021** Kim, K. H., **Im, O. K.**, Toward Net Zero Energy Retrofitting: Building Integrated Photovoltaic Curtainwalls. International Journal of High-Rise Buildings. 10, no.1
- **2019** **Im, O. K.**, Kim, K. H., Amirazar, A., & Lim, C. (2019, April). A unified framework for optimizing the performance of a kinetic façade. In Proceedings of the Symposium on Simulation for Architecture and Urban Design (pp. 1-8).
- **2018** Amirazar, A., Azarbayjani, M., **Im, O. K.**, Zarrabi, A. H., Ashrafi, R., Cox, R., & Johnson, A. (2018, June). Assessing the circadian potential of an office building in the southeastern US. In Proceedings of the Symposium on Simulation for Architecture and Urban Design (pp. 1-7). Society for Computer Simulation International.
- **2015** **Im, O. K.**, Han, S. H. (2015). Control mechanism and the energy performance of an integrated kinetic facade system. International Journal of Civil and Structural Engineering, 72-76.
- **2014** Kim, T. R., **Im, O. K.**, & Han, S. H. (2014). A study on the energy sustainability of the kinetic building envelopes. In Biotechnology, Agriculture, Environment and Energy (pp. 349-354). CRC Press.
- **2013** **Im, O. K.**, Kim, K., & Han, S. (2013). A Kinetic Light Shelf Unit as an Integrated Intelligent Control Device for

Optimizing Interior Illumination. In Proceedings of the Eighth International Multi-Conference on Computing in the Global Information Technology (pp. 295-298).

- **2013 Han, S. H., Cheon, D. Y., Lee, M. H., & Im, O. K.** (2013). A Study on Establishing an Evaluation System for Integrative Comfort Performance of Hanok Residence. Journal of the Korean housing association, 24(3), 27-35.

Patents

- **2017 Im, Okkyun.** Light shelf apparatus for switching light blocking and building structure using the same (<https://patents.google.com/patent/KR101736295B1/en>)
- **2013 Im, Okkyun.** Light shelf unit for enabling control of angle and building structure using the same (<https://patents.google.com/patent/KR101306640B1/en?q=KR101306640B1>)

Technical Skills

- **2D & 3D modeling software:** Rhino, Grasshopper, Sketch-up, Revit, Auto-Cad
- **Data analysis & visualization:** Python, R studio
- **Image editing & rendering software:** Photoshop, Enscape
- **Building Performance Simulation:** Climate-studio, Diva, Honeybee & Ladybug, RhinoCFD

Service

- **ARCC 2022 Peer reviewer**
- **IBPSA (International Building Performance Simulation Association) 2022 Peer reviewer**

Youtube Channel for Architectural modeling and rendering

- <https://www.youtube.com/channel/UCvLH2Ih1m3IHjZl7j0tkCHQ>