

Ji-Hyun (Jeannie) Kim
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EDUCATION

- Georgia Institute of Technology**, Atlanta, Georgia Aug. 2008 – Aug. 2016
Ph.D. School of Architecture
Advisor: Professor Godfried Augenbroe (Building Technology Lab)
- Yonsei University**, Seoul, Korea Sept. 2005 – Aug. 2007
M. Eng. Department of Architectural Engineering
Advisor: Professor Seung-Bok Leigh (Building Environmental Technology Lab)
- Kookmin University**, Seoul, Korea Mar. 2001 – Feb. 2004
B. Eng. Department of Civil and Environmental Engineering
Major: Structural and Geotechnical Engineering (advanced)
Minor: Water Resources and Environmental Engineering

RESEARCH EXPERIENCE

- Argonne National Laboratory**, Lemont, Illinois Oct. 2020 – Present
Building Scientist
- Lawrence Berkeley National Laboratory**, Berkeley, California May 2015 – Dec. 2015
Research Assistant
A case study on occupant behavior and its impact towards office building retrofit (EnergyPlus)
: Conducted energy analysis to verify the impact of occupant types (austerity, standard, and wasteful) on energy saving of retrofit measures, considering the building efficiency levels and the climate conditions.

A simplified urban energy use estimation study (MS Office Excel)
: Developed a simple energy calculation tool integrating the city level energy demand and supply network to evaluate the large-scale design options including district heating and cooling system, heat recovery, and building retrofit scenarios.
- Oak Ridge National Laboratory**, Oak Ridge, Tennessee May 2012 – Aug. 2012
Advanced Short-Term Research Opportunity
A validation of the technologies, installed in the ZEBRAlliance Homes (EnergyPlus)
: Conducted a rigorous calibration process to find the modeling errors, hence, to make a robust model for future comparison studies.

A ground-source heat pump feasibility study (eQUEST)
: Conducted energy analysis to evaluate the feasibility of a heat pump system using wasted sewage water in medium-size district.
- Georgia Institute of Technology**, Atlanta, Georgia Aug. 2009 – Nov. 2011
Research Assistant
A system Optimization to achieve LEED certification and improve energy performance

: Conducted a comparison study between ASHRAE Standard 90.1 and ISO 13790 to identify the differences and the proper uses of two methodologies (in collaboration with POSCO E&C, Incheon, Korea).

A development of shading device selector (MS Office Excel)

: Developed a simple calculation tool to help the designers choose the optimum shading device in regard to thermal comfort, cost, and energy consumption (in collaboration with KAWNEER, Atlanta, Georgia).

Yonsei University, Seoul, Korea

Nov. 2005 – Aug. 2007

Research Assistant

An optimization of indoor environmental performance using integrated hybrid ventilation (in collaboration with the Ministry of Construction & Transportation, Korea)

A development of energy saving technology in buildings achieved by reducing the environmental load and improving efficiency (in collaboration with the Ministry of Science & Technology, Korea)

A development of a passive heating and cooling system and intelligent building skin (in collaboration with the Ministry of Construction & Transportation, Korea)

A development of remodeling technology to improve the outdated energy-related building facilities (in collaboration with the Ministry of Construction & Transportation, Korea)

PROFESSIONAL EXPERIENCE

Baumann Consulting, Chicago, Illinois

Sept. 2018 – Sept. 2020

Building Performance Analyst

Energy & Commissioning Engineer

Building Performance Analysis (Office, Multi-Family, Hospital, and Airport)

- Early Design Energy Efficiency Measures Analysis & Comparisons
- Design Optimization & Parametric Study using Monte Carlo Algorithm
- HVAC System Sizing and Verification
- ASHRAE 90.1 Appendix G – Performance Rating Method
- LEED Energy & Daylighting Simulation
- Tool: EnergyPlus, IES-VE, eQUEST

Integrated Energy Master Planning (Cities and Campuses)

- Large-scale Energy Demand Modeling
- Large-scale Energy Efficiency Measures Analysis & Comparisons
- Ground-Source Heat Pump Modeling in EnergyPlus with GLHEPro
- Tool: EnergyPlus, GLHEPro, IES-VE, IES iCD, IES iVN

Fundamental and Enhanced Commissioning (Office, Multi-Family, Hospital, and Airport)

- Commissioning Process based on ASHRAE Guideline 0
- Energy Audits based on ASHRAE Standard 211
- Tool: CxAlloy

Operation & Diagnostics (Office and Airport)

- Measurement & Verification and Fault Detection using hourly energy measurement data

- Tool: Synavision

DLR Group, Chicago, Illinois
Building Performance Analyst Internship

Sept. 2017

- Developing Life-Cycle Cost Analysis tool for DLR Group projects

PUBLICATIONS

Kim, J.H., Augenbroe, G., and Wang, Q. (2020). The role of occupant-related inputs in building energy simulation. (*in preparation*)

Kim, J.H., Suh, H.S., and Augenbroe, G. (2020). Life Style Factor: data-driven methodology predicting the variability of future housing energy consumption. (*in preparation*)

Sun, K., Hong, T., and Kim, J.H. (2017). Impact of occupant behavior on office building retrofit. (*accepted to Building Simulation 2017*)

Wang, Q., Augenbroe, G., Kim, J. H., and Gu, L. (2016). Meta-modeling of occupancy variables and analysis of their impact on energy outcomes of office buildings. *Applied Energy*, 174, 166-180.

Kim, J.H., Suh, H.S., Augenbroe, G., and Wang, Q. (2015). Domestic building energy prediction in design stage utilizing large-scale consumption data from realized projects. *Building Simulation 2015*, Hyderabad, India.

Wang, Q., Kim, J.H., and Augenbroe, G. (2015). A meta-analysis of the variability of occupant presence and actions in commercial buildings. *Building Simulation 2015*, Hyderabad, India.

Kim, J.H., Augenbroe, G., and Suh, H.S. (2013). Comparative study of the LEED and ISO-CEN building energy performance rating methods. *Building Simulation 2013*, Chambery, France.

Kim, J.H. (2007). Thermal performance of envelope for heating load reduction in apartment houses. Master's Thesis, Yonsei University, Seoul, Korea.

Lim, D.Y., and Kim, J.H., et al. (2007). A study on the thermal performance of envelope with the objective of reducing heating load reduction in apartment houses, *Conference Journal of Architectural Institute of Korea*, Vol. 27 No. 1, Architectural Institute of Korea, 881~884.

Moon, M.R., and Kim, J.H., et al. (2007). A survey study of energy consumption in green apartment houses, *Conference Journal of The Society of Air-Conditioning and Refrigerating Engineers of Korea*, The Society of Air-Conditioning and Refrigerating Engineers of Korea, 839~844.

Park, B.Y., and Kim, J.H., et al. (2006). Floor planning for the improvement of natural ventilation in tower-type apartment housing, *Conference Journal of the Society of Air-Conditioning and Refrigerating Engineers of Korea*, The Society of Air-Conditioning and Refrigerating Engineers of Korea, 463~468.

Kim, J.H., et al. (2006). A residents' mechanical equipment remodeling preferences study on the aged apartment housing by questioning survey, *Conference Journal of the Society of Air-Conditioning and Refrigerating Engineers of Korea*, The Society of Air-Conditioning and Refrigerating Engineers of Korea, 1061~1068.

TEACHING EXPERIENCE

Georgia Institute of Technology, Atlanta, Georgia

Teaching Assistant

ARCH3231 and ARCH4231 (Undergraduate/Graduate level) Spring 2010 – Spring 2015

Environmental Systems I (Thermal, lighting, and acoustic environment)

Environmental Systems II (HVAC systems)

Mentor (50-100 mentees)

- Introduction to sustainable building rating systems (LEED)
- Tool introduction: Ecotect (Autodesk), Energy Performance Calculator (ISO13790)
- Weekly individual and group mentoring and grading

ARCH6731 (Graduate level)

Fall 2013 – Fall 2014

Zero Energy Housing: Design, Simulation, and Feasibility

Mentor (5 teams, 26 mentees)

- Simple energy calculation for housing projects
- Tool introduction: Ecotect (Autodesk), Energy Performance Calculator (ISO13790), and IES-VE (Integrated Environmental Solutions)
- Regular design critique, final design review, and grading

Instructor

ARCH6241 (Graduate level)

Spring 2014 – Spring 2015

Building simulation in design practice

- Introduction to ASHRAE Standard 90.1 Performance Rating Method
- Tool introduction: IES-VE (Integrated Environmental Solutions) and Energy Performance Calculator (ISO13790)
- Individual and group mentoring

ARCH6226 (Graduate level)

Fall 2014

Green Construction

- Tool introduction: Ecotect (Autodesk), Energy Performance Calculator (ISO13790), and IES-VE (Integrated Environmental Solutions)
- Individual and group mentoring

AWARDS & CERTIFICATES

NABCEP (North American Board of Certified Energy Practitioners)

Jan. 2017

40-Hour Advanced PV (Photovoltaic) Design Professional Course, Georgia Tech, Atlanta, GA

IBPSA (International Building Performance Simulation Association)-USA

Nov. 2015

Student Scholarship Award for Building Simulation 2015, Hyderabad, India

American Institute of Architects (AIA) Georgia 2014 Merit Design Award

Aug. 2014

Project: Paulk Residence, Highland Gap, North Carolina

Leadership in Energy and Environmental Design (LEED) Green Associate

Dec. 2011 – Dec. 2013

Received from the Green Building Certification Institute in the U.S.

Group Category Winner in the IBPSA Student Modeling Competition

July 2009

Building Simulation 2009, Glasgow, UK

Certificate of Qualification in Engineering Architecture
Received from the Human Resources Development Service of Korea

June 2005

SKILLS

Ecotect (Autodesk)	Aug. 2012 – Dec. 2015
EnergyPlus (Department of Energy, USA)	May 2012 – present
eQUEST (Quick Energy Simulation Tool)	May 2012 – present
IES-VE (Integrated Environmental Solution-Virtual Environment)	Dec. 2010 – present
SPSS Statistics for Windows	Aug. 2009 – Aug. 2016
TRNSYS (TRaNsient SYtem Simulation program)	Sept. 2005 – Aug. 2007

OTHER ACTIVITIES

Volunteer at Anti-Cruelty Society (Chicago, IL)	Oct. 2019 – present
Volunteer at Berkeley East Bay Humane Society (Berkeley, CA)	Sept. 2015 – Dec. 2015
Invited speaker at the 1 st IEA EBC Annex 66 Expert Meeting Lawrence Berkeley National Laboratory, Berkeley, California	Mar. 2015
Main Coordinator of the Symposium on Building Energy Uncertainty and Risk Analysis School of Architecture in Georgia Institute of Technology, Atlanta, Georgia Title: Symposium on Building Energy Uncertainty and Risk Analysis Summary: presenting the outcome of the NSF-EFRI Award	Sept. 2014
Main Host of the Doctoral Students Symposium School of Architecture, Georgia Institute of Technology, Atlanta, Georgia Title: Translations from Knowledge to Building	Apr. 2013
Volunteer at Atlanta Habitat for Humanity (Atlanta, GA)	July 2010 – Dec. 2016