

Joon-Ho Choi Ph.D., LEED Accredited Professional
 Assistant Professor of Building Science
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ACADEMIC BACKGROUND

<p>Assistant Professor Architectural Engineering Program Department of Civil, Architectural, and Environmental Engineering Missouri University of Science and Technology, Rolla, MO</p>	<p>August 2010 – July 2012</p>
<p>PhD in Building Performance and Diagnostics Center for Building Performance and Diagnostics, School of Architecture Carnegie Mellon University, Pittsburgh, PA</p> <ul style="list-style-type: none"> ○ Thesis title: “Bio-Sensing Adaptive HVAC System Controls for Ensuring Individual Thermal Comfort” ○ Advisor: <i>Vivian Loftness, University Prof., FAIA</i> ○ Investigate the potential use of physiological signals to control HVAC systems and develop smart thermostatic strategy. 	<p>May 2010</p>
<p>Master of Science in Architecture Texas A&M University, College Station, TX</p> <ul style="list-style-type: none"> ○ Thesis title: “Study of the Relationship between Indoor Daylight Environments and Patient Average Length of Stay (ALOS) in Healthcare Facilities” ○ Advisor: <i>Liliana Beltran, PhD</i> ○ Investigated daylighting environment in healthcare using lighting simulation program, and impact on patient average length of stay as human performance benefits. 	<p>Dec 2005</p>
<p>Master of Science in Architectural engineering Yonsei University, Seoul, Korea</p> <ul style="list-style-type: none"> ○ Thesis title: “An Empirical Study on Eco-friendly Elements in Feng-Shui Theory and their Application in Residential Apartment Complex Design” ○ Provided environmental design guidelines for residential apartment complex based on Asian traditional topology theory. 	<p>Feb 2003</p>
<p>Bachelor of Science in Architectural engineering Yonsei University, Seoul, Korea</p>	<p>Feb 2001</p>

GRANTS & HONORS

Research grants

<p>National Institute of Health (NIH) – NIOSH Exploratory / Developmental Grant Program (R21) - Center for Disease Control and Prevention (2 years - \$327,758) Principal Investigator (70%) “Pupil-size based Visual Environment Controls in the Workplace” Proposal Submission: October 16, 2012</p>	<p>In-review</p>
<p>Southern California – Clinical and Transitional Science Institute (Translating Science into Solutions for Better Health) – Pilot Funding (\$30,000 - 1 year) Principal Investigator (100%) “Pupil-size based Visual Environmental Controls” Proposal Submission: September 31, 2012</p>	<p>In-review</p>

Environmental Protection Agency (EPA) – P3 Research Awards: National Student Design Competition for Sustainability Focusing on People, Prosperity and Planet (\$327,758 – 2 years) Principal Investigator (70%) “Climate-Responsive Adaptive Control for Natural Ventilation”	Aug 2011
Boston Society of Architects (BSA) - AIA Research Grant (\$32,423-1 year, matching-\$64,846) Principal Investigator “Bio-sensing based Adaptive Thermal Comfort Control”	Jan 2009
Green Building Alliance (GBA) Product Innovation Research Grant (\$20,000-1 year, matching-\$20,000) Principal Investigator “CoBi Bio-sensing Wearable Controls for Individualized Thermal Comfort”	Jan 2009
Ford Motor Company Graduate Student Research Grant “Thermal comfort and Human health”	Apr 2007
Graduate Student Research Grant Office of Graduate Studies, Texas A&M University, College Station, TX	Sept 2004

Travel grants

Conference Travel Grant International Association of Lighting Designers (IALD) Annual Conference	Sept 2007
Conference Travel Grant Illuminance Engineering Society of North America (IESNA) Centennial Conference	Dec 2005
International Education Study Grant International Student Service, Texas A&M University, College Station, TX	Oct 2004

Awards

Best Paper Award Architectural Institute of Korea	Oct 2012
Best Chalk-Board Teaching Award Excellence in Civil Engineering Education (ExCEED) Teaching Workshop American Society of Civil Engineering (ASCE)	July 2012
Third Place Award in “Student Research Competition 2005” Texas A&M University, College Station, TX	Mar 2005
First Place Award in “Student Research Competition 2004” Texas A&M University, College Station, TX	Mar 2004
Honorable mention The 9th Solar Energy Architecture Student Design Competition, Seoul, Korea	Nov 2000
Honor student, Inha University, Incheon, Korea	Fall 1998

Scholarship

Academic Fellowship, The James S. and Mary G. Wright Fellowship Texas A&M University, College Station, TX	May 2005
Academic Scholarship Department of Architecture, Texas A&M University, College Station, TX	Sept 2003 -May 2005
KUSCO-KSEA Scholarship Korean-American Scientists and Engineers Association	Jun 2005
The Korean Honor Scholarship, The Embassy of Korea in U.S.A.	Sept 2004
Academic Scholarship Department of Architectural Engineering, Yonsei University, Seoul, Korea	Mar 2001 - Feb 2003
Academic Scholarship Department of Architectural Engineering, Yonsei University, Seoul, Korea	Sept 1999 - Jun 2000

PROFESSIONAL EXPERIENCE

Research experience

- Principal Investigator. Climate-Responsive Adaptive Control for Natural Ventilation. Missouri University of Science and Technology
Sept 2010 - present
- Sponsor: U.S. Environmental Protection Agency (EPA).
 - Perform continuous on-site measurement for indoor and outdoor thermal conditions.
 - Develop a building simulation model by TRNSYS software with calibration.
 - Develop a climate-responsive adaptive control model by Matlab.
- Principal Investigator. Web-Based Decision Support for Environmental Building Design. Missouri University of Science and Technology (Missouri S&T)
Sept 2010 - present
- Sponsor: U.S. Green Building Council (USGBC) and Department of Civil, Architectural & Environmental Engineering, Missouri S&T
 - Collect case studies of environmental building projects.
 - Design search-algorithms to query the database and to provide environmental design recommendations based on input variables.
 - Provide the project outcome to prospective industry partners, engineers, architects, etc. on the basis of membership.
- Research Assistant in NEAT™ (National Environmental Assessment Toolkit) – Post-Occupancy Evaluation project: WorkPlace 20•20 (PI: Vivian Loftness), Carnegie Mellon University
Aug 2005 - May 2010
- Sponsor: U.S. General Services Administration (GSA)
 - Performed field study of building performance with onsite measurements.
 - Conducted statistical cross-sectional analysis of measured data.
 - Proposed architectural design guidelines for enhancing sustainable building performance and indoor environments.
 - Developed manuals for lighting and acoustic measurements and analyses.
 - Project manager (June 2008 – May 2010) ○ Webpage: <http://neat2006.arc.cmu.edu>
- Research Assistant in BIDS™ (Building Investment Decision Support Tool) project (PI: Vivian Loftness), Carnegie Mellon University
Aug 2005 - May 2010
- Sponsor: Advanced Building Systems Integration Consortium (ABSIC)
 - Conducted case study collection and manage database
 - Performed cross-sectional and meta-analysis of healthcare facility-related case studies
 - Project manager (Sept. 2008 – May 2010) ○ Webpage: <http://cbpd.arc.cmu.edu/bids>
- Research Assistant in High Performance Building, Smart Enclosure project (PI: Volker Hartkopf) Carnegie Mellon University
Jan 2008 - May 2010
- Sponsor: ALCOA, SIEMENS and UNEP (United Nations Environment Programme)
 - Investigated best practices and high performance technologies
 - Performed statistical and cross-sectional analysis of energy consumption by LEED certification levels, building geometry and size, project site climate conditions, and urbanized conditions
 - Represented Carnegie Mellon University and poster session in GreenBuild 2008 Conference.
- Research Assistant in ITEST (Information Technology Enabled Sustainability Testbed) project (PI: Volker Hartkopf), Carnegie Mellon University
Jan 2007 - Jan 2008
- Sponsor: BOSCH ○ Set up data acquisition hardware and software
 - Performed statistical data analysis and data mining of relations between occupancy and CO2, lighting, acoustic qualities.
- Research Assistant in “Sustainability strategies for facility management investment in existing buildings” project (PI: Vivian Loftness), Carnegie Mellon University
Aug 2005 - Jun 2006
- Sponsor: Architects of the Capitol (AOC)
 - Reviewed the AOC campus energy consumption data and investigated the defects of building and systems designs
 - Established design guidelines for energy savings in HVAC systems and vertical transportations.
- Research Assistant, Architectural Environmental Design Research Lab., Yonsei University, Seoul, Korea
Mar 2001 - Feb 2003
- Performed energy and lighting simulation on residential apartment design projects.

Teaching experience

- *University of Southern California, Los Angeles, CA*
 - Assistant Professor Fall 2012
 - Course title: ARCH - 515 "Advanced Environmental Controls" (Graduate level)
 - Teach environmental control strategies in heating, ventilating and air-conditioning (HVAC) systems, lighting and acoustic environments, and human physiological factors relating to building indoor environmental quality.

- *Missouri University of Science and Technology, Rolla, MO*
 - Assistant Professor Spring 2011, 2012
 - Course title: ARCHE/ME-371 "Environmental Control" (Undergraduate level)
 - Teach passive and active environmental control strategies in heating, ventilating and air-conditioning (HVAC) systems, and human physiological factors relating to building indoor environmental quality.
 - Course title: ARCHE-301 "Building Performance and Systems Optimization (Undergrad. and Grad. level) Fall 2011
 - Taught building simulation and modeling tools for passive design, cooling and heating energy load calculation and building system performance, and design recommendations for environmental sustainability.
 - Trained, Bucknell Catalyst Teaching Workshop, Bucknell University, PA Summer 2011
 - Attended the teaching workshop for three days.
 - Being trained and consulted on teaching skills for effective knowledge transfer and course management.
 - Course title: CE-242 "Fundamentals of Building Systems" (Undergraduate level) Fall 2010
 - Taught mechanical and electrical equipment of building systems, and fundamental theories for building indoor environmental quality including thermal, lighting, air quality and spatial quality.

- *Carnegie Mellon University, Pittsburgh, PA*
 - Adjunct Instructor Fall 2009
 - Course title: "Environmental Assessment Tools and Data Analysis" (Graduate level)
 - Taught post-occupancy evaluation research including acoustic, lighting, air and thermal environmental quality investigations, data acquisition techniques for quantitative and qualitative data collection, data analysis (e.g. individual and cross-sectional analysis, etc.).
 - Teaching Assistant Fall 2009, Fall 2008
 - Course title: "Productivity, Health and the Quality of Buildings" (Graduate level)
 - Prepared class content for technical analysis required for project performance
 - Tutored environmental and human benefits estimation by indoor environmental design strategy.
 - Design studio reviewer Spring 2008, Spring 2007
 - Course title: "Architecture Design Studio: Systems Integration" (4th year level)
 - Undergraduate level course
 - Reviewed studio projects and participated in studio discussion.
 - Teaching Assistant Spring 2008
 - Course title: "Performance of Advanced Building Systems" (Graduate level)
 - Developed syllabus and lecture contents
 - Tutored building systems integration strategies to apply to master thesis projects with reviewing exams and projects.
 - Teaching Assistant Spring 2007
 - Course title: "Advanced Building Systems Integration" (4th year level)
 - Undergraduate level course
 - Developed class projects about building systems integration
 - Tutored building systems integration principles to apply to studio design projects.

- Trained, Teaching Seminar for Graduate Students Spring 2007
 Eberly Center for Teaching Excellence Program, Carnegie Mellon University, Pittsburgh, PA - Fall 2009
 - Received feedback for teaching skill, syllabus and assessment designs
 - Attended 8 seminars on teaching, including “Course and syllabus design”, “Monitoring your teaching effectiveness” and “Overview of Student Cognition”.
- *Texas A&M University, College Station, TX*
 Grader Spring 2005
 - Course title: “Tools and Techniques for Green Building Design” (Undergraduate level)
 - Graded assignments and reports, and gave feedback.
- *Yonsei University, Seoul, Korea*
 Teaching Assistant Fall 2001
 - Course title : “Environmental Design Studio” (4th year level)
 - Conducted weekly design review and discussion sessions
 - Motivated students to develop environmental design concepts and principles for studio projects.

Industry and other experiences

- Research Assistant, Center for Building Performance and Diagnostics, Carnegie Mellon University, PA Aug 2005
 - Performed professional design projects funded by architecture / construction firms - May 2010
 - Conducted on-site environmental measurements and lighting / energy computer simulations.
- Internship, St. Joseph Regional Health Center, Bryan, TX. Dec 2003
 - Worked as an assist-computer program engineer in Plant Maintenance, and HVAC Engineering - Jan 2004
 - Monitored HVAC systems performance, and assisted trouble-shooting jobs in the building.
- Assistant Researcher, Advanced Science Technology Research Center, Seoul, Korea Mar 2001
 - Performed professional design projects funded by architecture / construction firms - Feb 2003
 - Conducted on-site environmental measurements and lighting / energy computer simulations.
- Sergeant, Republic of Korea Army Mar 1996
 - Served as administrative officer at Seoul District Court - Sept 1997
 - Acted as information liaison to the general public.

PUBLICATIONS

Journals

- Choi, J.** Shen, C. “Climate-Responsive Indoor Predicted Mean Vote Prediction for Natural Ventilation”. *ASHRAE Transactions*, 2013 (75% draft completed) To be submitted
- Choi, J.** Loftness, V. “Investigation of human body skin temperatures as a bio-signal to indicate overall thermal comfort conditions”. *Journal of Building and Environment*, 2012. v.58, pp.258-269. December 2012
- Choi, J.** Loftness, V. Aziz, A. “Post-occupancy evaluation of 20 office buildings as basis for future IEQ standards and guidelines”. *Journal of Energy and Buildings*, 2012. v. 46, pp.165-175. April 2012
- Choi, J.** Beltran, L. Kim, H. “Impacts of indoor daylight environments on patient average length of stay (ALOS) in a healthcare facility”. *Journal of Building and Environment*, 2012. v.50, pp. 65-75. March 2012
- Choi, J.** Loftness, V. Lee, D. “Investigation of the possibility of the use of heart rate as a human factor for thermal sensation models”. *Journal of Building and Environment*, 2012. v.50, pp.165-175. March 2012
- Choi, J.** Aziz, A., Loftness, V. “An investigation of the impacts of different gender and ages on satisfaction of thermal environments in office buildings”. *Journal of Building and Environment*. 2010. v.45(6), pp.1529-1535. Jun 2010
- Loftness, V. Aziz, A. **Choi, J.** et al. “The value of post-occupancy evaluation for building occupants and facility managers”. *Journal of Intelligent Buildings International*. 2009. v.1 (4). Oct 2009

Peer-reviewed conference papers

- Choi, J.** Loftness, V. “Investigation of the potential use of skin temperature as bio-sensing thermostatic control for ensuring thermal comfort (CoBi)”. Proceedings of the 10th International Conference on Healthy Buildings 2012, Brisbane, Australia. July 2012
(Invited for publication in the Journal of HVAC&R as of Oct. 2012)

Choi, J. Loftness, V. Lee, D. "Potential Use of Human Bio-Signals for Thermal Sensation Prediction" Aug 2011
 Proceedings of US-Korea Conference on Science, Technology and Entrepreneurship 2011, Park City, UT

Choi, J. Loftness, V. Azizan, A. "User satisfaction with indoor air quality in government office buildings of the U.S.". Proceedings of the 12th International Conference on Indoor Air Quality and Climate 2011, Austin, TX June 2011

Choi, J. Aziz, A. Loftness, V. "Decision support for improving occupant environmental satisfaction in office buildings: Relationship between sub-set of IEQ satisfaction and overall environmental satisfaction". Proceedings of 9th International Conference of Healthy Buildings 2009, Syracuse, NY Sept 2009

Choi, J. Loftness, V. Aziz, A. "20 commercial office building analyses of IEQ and occupant satisfaction to impact future design standards and guidelines". Proceedings of 26th Conference on Passive and Low Energy Architecture, Quebec City, Canada, 22-24 June 2009. Jun 2009
(Invited for publication in the Journal of Building Research & Information as of Nov. 2009)

Loftness V., Hartkopf V., **Choi, J.** et al. "Building Investment Decision Support (BIDS™), Chapter 32 of SCP cases in the field of Food, Mobility and Housing". Workshop of the Sustainable Consumption Research Exchange Network, Paris, France, pp.523-541. Jun 2007

Loftness, V., **Choi, J.** et al. "Sustainability and Health are Integral Goals for the Built Environment". Proceedings of 7th International Conference of Healthy Building 2006, Lisbon, Portugal, pp. 1-17. Jun 2006

Choi, J. Beltran, L. "Study on the Relationship between Patients' Recovery and Indoor daylight Environment of patient rooms in Healthcare facilities". 2004 Asia-Pacific Regional Conference of International Solar Energy Society, Proceedings of ISES Asia-Pacific, Gwangju, Korea, 2004, p.1003-1010. Oct 2004

Son, J. **Choi, J.** Lee, K. et al. "A Study of the importance the network in changing specific street construction". Proceedings of Architecture Institute of Korea, 2003, V.23-1, p.487-490. Apr 2003

Choi, J. Lee, D. Kim, B. et al. "A Study on Urban space Analysis using Feng-Shui and Space Syntax". Proceedings of the 8th International Congress of Ecology, Korea, 2002, p.41. Aug 2002

Poster presentations

Choi, J. Shen, C. et al. "Climate-Responsive Indoor Predicted Mean Vote Prediction for Natural Ventilation Control". Proceedings of the 10th International Conference on Healthy Buildings 2012, Brisbane, Australia. July 2012

Choi, J. Loftness, V. "Potential Use of Human Bio-signals to Control HVAC Systems". GreenSense-The Premier Green Building Conference, Pittsburgh, PA. Mar 2009

Loftness, V. **Choi, J.** Azizan, A. "10 Strategies for Living, Bioclimatic facades for Sustainability, Human Health & Performance". GREEN BUILD International Conference 2008, Boston, MA. Nov 2008

Choi, J. Snyder M. Loftness V. "Decision Support for Green-Design Healthcare Facilities". CleanMed 2008 Conference for Green Health Care, Pittsburgh, PA. May 2008

Choi, J. Loftness, V. "Exploring potential use of human bio-signals to control HVAC systems". Innovation with Impact 2008, Carnegie Mellon University, Pittsburgh, PA. Mar 2008

Choi, J. Beltran, L. "The relationship between patient conditions and indoor daylight in healthcare facilities". 33rd American Solar Energy Society Annual Conference, Portland, OR. Jul 2004

Choi, J. "Analysis of the relationship between daylight and patients' recovery". Student Research Week Competition 2004 in Texas A&M University, College Station, TX. Apr 2004

Symposium & Symposium

Symposium Oct. 2012
 "Human Centered-Environmental Controls"
 Korean Institute of Construction Technology, Ilsan, Korea

Symposium Oct. 2012
 "Human Centered-Environmental Controls" and "Computational Intelligence for Building Indoor Environmental Quality"
 POSCO Engineering & Construction, Incheon, Korea

<i>Invited as Distinguished Speaker</i>	June 2012
“Climate-Responsive Adaptive Control for Natural Ventilation”	
8 th International Symposium on Sustainable Healthy Buildings, Seoul, Korea	
<i>Invited as Distinguished Speaker</i>	Nov 2010
“Post-Occupancy Evaluation in 20 Office Buildings towards Future IEQ Standards and Guidelines”	
4 th International Symposium on Sustainable Healthy Buildings, Seoul, Korea	
Patent	
Inventors: Choi, J. Loftness, V.	July 2012
“Bio-sensing adaptive HVAC system controls”	
Workshop	
Invited to 2012 American Society of Civil Engineering (ASCE), Excellence of Civil Engineering Teaching Education Teaching Workshop	July 2012
Invited to 2012 Civil, Mechanical and Manufacturing Innovation-National Science Foundation (NSF) CAREER Proposal Writing Workshop	Mar 2012
“Human-Centered Building Environmental Controls”	
Technical reports	
Choi, J. Laughler, L. Shen, C. Annelise, S. “Climate-Responsive Adaptive Control for Natural Ventilation” Report to U.S. Environmental Protection Agency	April 2012
Choi, J. Loftness V. “CoBi: Bio-sensing Wearable Controls for Individualized Thermal Comfort” Mid-point report to Green Building Alliance (GBA).	May 2009
Loftness, V. Choi, J. Aziz, A. et al. “Energy Savings and Performance Gains in General Services Administration Buildings: Seven Recommendations” Report to U.S. General Services Administration (GSA).	Dec 2008
Loftness, V. Choi, J. Aziz, A. et al. “Environmental Quality Report- Bank of America, NYC” Report to Dept of Facility Management and Maintenance, Bank of America, New York City.	Sept 2008
Loftness, V. Choi, J. Aziz, A. “GSA WP 20/20, Environmental Quality Report, Department of Veterans Affairs, Reno, NV – Old and New Building Comparison” Report to U.S. General Services Administration (GSA).	Jun 2008
Lam, K. Choi, J. et al. “IT-Enabled Sustainability Test-bed” Report to Advanced Building Systems Integration Consortium.	Jun 2008
Loftness, V. Choi, J. Aziz, A. “Recommendation for Energy Savings and Occupant Health & Productivity of GSA Buildings”, Report to U.S. General Services Administration (GSA).	Nov 2007
Loftness, V. Choi, J. Aziz, A. et al. “Productivity Protocol Development Workplace 20/20: The Role of Real Estate and Facilities in Individual and Organizational Effectiveness” Report to Advanced Building Systems Integration Consortium.	May 2007
Loftness, V. Choi, J. Aziz, A. et al. “Workplace 20/20 Field Evaluation of Baseline Environmental Quality”. Report to Advanced Building Systems Integration Consortium.	May 2007
Loftness, V. Hartkopf, V. Choi, J. et al. “Cost-Benefit Tool to Promote High Performance Components, Flexible Infrastructures and Systems Integration for Sustainable Commercial Buildings and Productive Organizations”, Report to Advanced Building Systems Integration Consortium.	May 2007, Mar 2006
Loftness, V. Choi, J. Aziz, A. “Workplace 20/20 Lighting Analysis of GSA federal offices” Report to U.S. General Services Administration (GSA).	Apr 2007
Loftness, V. Choi, J. Hua, Y. Snyder, M. “Case Studies for the Life Cycle Justification of High Performance, Environmentally Responsive, Green Hospitals”, Report to Northwest Energy Efficiency Alliance (NEEA).	May 2006
MEDIA CITATIONS	
EPA-Extramular Research	April 2012
<ul style="list-style-type: none"> ○ Introduced Dr. Choi’s EPA research and its performance outcome ○ Article title: Project Description ○ Website: http://www.epa.gov/p3/project_websites/2012/su835073.html 	

- ABC News (KSPR TV 33) Sept 2011
- Introduced the EPA research grant awarded to Joon-Ho Choi's research group
 - Article title: Missouri S&T Researchers Test Ways to Save 40% on Home Cooling Costs
 - Website: http://articles.kspr.com/2011-09-08/weather-station_30132605
- BUILDER Magazine Jul 2011
- Introduced the thermal comfort research – biosensing control
 - Article title: Environmental Comfort - BODY HEAT
 - Website: <http://www.builderonline.com/building-science/body-heat.aspx?printerfriendly=true>
- Association for the Advancement of Sustainability in Higher Education Aug 2008
- Published the full ecological footprint research report performed as a class project for Ecological Footprint course in spring, 2007
 - Paper title: "Campus Ecological Footprint of Carnegie Mellon"
 - Website: <http://www.aashe.org/resources/other-student-research-abstracts.php>
- The Journal on Indoor Environmental Quality Dec 2007
- Introduced the PhD dissertation research
 - Website: <http://blogs.healthyheating.com/2007/12/carnegie-mellon.html>
- Carnegie Mellon University Nov 2007
- Introduced the PhD dissertation research in the section of Practical and Advanced Research of Carnegie Mellon
 - Website: <http://www.cmu.edu/homepage/practical/2007/fall/smart-thermostat.shtml>
- Discovery Science Channel Aug 2007
- Introduced the class project work performed in spring 2007, "Adaptive indoor electric lighting control by sensing human signals" in the TV show entitled "Revolutionary approach to sustainable building environments"

GUEST LECTURES

- Korean Institute of Construction and Technology, Seoul, Korea Oct 2012
"Human-Centered Environmental Controls and Future Building Science"
- POSCO Engineering and Construction, Seoul, Korea Oct 2012
"Human-Building Interaction: Potential Use of Human Physiological Signals for Environmental Control"
- University of Southern California, Los Angeles, CA Sept 2012
"Human-Centered Environmental Controls"
Arch-699: PhD Research Course
- "Environmental Controls for Sustainability as a Research Methodology" Sept 2010
Arch-599: Master's Research Course
- Missouri University of Science and Technology, Rolla, MO Nov 2011
"Human Body As an Integrated Sensor in Building Environmental Controls"
Missouri Institute of Computational and Applied Mathematical Sciences
- "Thermal comfort and its principle" Sept 2010
Architectural Engineering Institute – Missouri S&T Chapter
- Carnegie Mellon University, Pittsburgh, PA Oct 2009
"Acoustic quality evaluation: reverberation time, sound transmission and background sound pressure"
Building Acoustics class (48-413)
- "Design strategies for enhancing Indoor environmental quality", Apr 2009
LEED Buildings and Green Design Concepts class (48-795)
- "The theory of thermal comfort model and the limitations", Nov 2008
Environment III-Mechanical Systems class (48-412)
- "Bio-sensing based adaptive control of HVAC system" and "National Environmental Assessment Toolkit Project: from onsite measurement to analysis" Jun 2008
Carnegie Mellon Summer Internship for Diversity Program
- "Bio-sensing based HVAC control system design" Nov 2007
Project meeting in Quality of Life Technology Center
- "Principle of radiant heating / cooling systems" Nov 2007
Environment III-Mechanical Systems class (48-412)

<ul style="list-style-type: none"> “Building design for daylighting and its benefits”, Productivity, Health and the Quality of Buildings class (48-729) • Slippery Rock University, Slipper Rock, PA “Indoor air quality and indoor environmental assessment”, Healthy Building Systems and Materials (71-662-01) 	<p>Oct 2007</p> <p>Mar 2009</p>
Consulting	
<ul style="list-style-type: none"> The Center for Health Design Related to design guidelines for healthy indoor environmental quality of a patient room in a health care facilities Deloitte Consulting, Consultant / Strategy & Operations Group Related to the current industry trend of eco-friendly product development for building envelope. Designing Outcomes (Interior Design) Group Related to evidence-based design for the interior lighting and physiological benefits. LG Chemical (Floor), Marketing Assistant Manager Related to evidence-based design for building interior material / product development for a hospital. 	<p>Oct 2012</p> <p>Nov 2009</p> <p>July 2009</p> <p>Nov 2008</p>
SERVICE & LEADERSHIP	
<ul style="list-style-type: none"> Research Advisory Committee Korean Institute of Construction and Technology, Seoul, Korea Panel Reviewer EPA 2012 – “People, Prosperity, and the Planet (P3) Grant Peer Review Panel 3: Built Environment Technical Committee Voting Member ASHRAE Technical committee 2.01: Thermal Comfort Advisor ASHRAE Missouri S&T Student Chapter, Rolla, MO Advisor Missouri S&T Solar House Team, Rolla, MO Committee Member Architectural Engineering Program Committee, Missouri S&T Task Force Team Member Faculty Work Load Program, Missouri S&T Session Chair 2011 Energy Sustainability Conference & Fuel Cell Conference, Washington D.C. Session Chair 2011 International Conference on Indoor Air Quality and Climate, Austin, TX Referee 2011 Energy Sustainability Conference & Fuel Cell Conference proceedings Referee 2011 International Conference on Indoor Air Quality and Climate proceedings Referee CLEAN –Soil, Air, Water (Journal) Referee 2011 Indoor Air Conference Proceedings Referee International Journal of Energy and Buildings Referee International Journal of Building and Environment Graduate Student Representative School of Architecture, Carnegie Mellon University, Pittsburgh, PA Program Leader School of Architecture Graduate Orientation Program, Carnegie Mellon University, Pittsburgh, PA 	<p>April 2012 - Present</p> <p>April 2012</p> <p>Jan. 2011 - Present</p> <p>Sept 2010 -Aug 2012</p> <p>Sept 2010 -Aug 2012</p> <p>Sept 2010 -Aug 2012</p> <p>Sept 2011 -Aug 2012</p> <p>Aug 2011</p> <p>June 2011</p> <p>Feb - June 2011</p> <p>Jan - June 2011</p> <p>May 2011 - Present</p> <p>Aug 2010 - Present</p> <p>Aug 2010 - Present</p> <p>Aug 2009 - Present</p> <p>Sept 2006 -Aug 2007</p> <p>Aug 2006</p>

Vice-President	Sept 2004
Alumni association of Yonsei University in Texas A&M University, College Station, TX	- Jul 2005
Webmaster	Sept 2003
IESNA Chapter of Texas A&M University, College Station, TX	- Jul 2005
Volunteer Service	Aug 2000,
Habitat for Humanity International, Asan and Kwangyang, Korea	Aug 2001

PROFESSIONAL AFFILIATION /LICENSES

LEED™ AP (Leadership in Energy and Environmental Design Accredited Professional), U.S. Green Building Council
 Affiliated Member, ISC (Intelligent System Research Center), Missouri University of Science & Technology
 Member, ISIAQ (International Society of Indoor Air Quality and Climate)
 Member and Technical Committee Meeting for Thermal Comfort Section
 ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers)
 Member, KSEA (Korean-American Scientists and Engineers Association)
 National Qualified Architectural Engineer, Human Resources Development Service of Korea
 National Qualified Quality Manager, Human Resources Development Service of Korea

TECHNICAL SKILLS

Building Performance related tools - DOE-2.1e, eQuest, EnergyPlus, ECOTECT, Radiance, Photolux
 Architectural and graphic software - AutoCAD, GIS, Photoshop
 Data analysis / Statistical tool - WEKA, Minitab, JMP, SAS, SPSS
 Sensing and Control tool - LabView
 Programming language - JAVA