

Iason Konstantzos, Ph.D.

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EDUCATION

Purdue University, West Lafayette, IN

Ph.D. In Civil (Architectural) Engineering, *(August 2012 - December 2016)*

Dissertation: “A human-centered approach for the design of perimeter office spaces based on visual environment criteria”

Advisor: Athanasios Tzempelikos, PhD.

National Technical University of Athens, Greece

M.S. in the Design and Construction of Underground Structures, *(October 2009 - January 2011)*

Master’s Thesis: “Stability comparison of the tunnel face, between the unsupported condition and when it is improved with fiberglass nails, using three-dimensional numerical analysis”

Thesis advisor: Michael Kavvadas, PhD.

Diploma in Civil Engineering – 5 years cycle with thesis, *(October 2003 - July 2009)*

AWARDS

- Leon Gaster Award – Society of Light and Lighting Best Paper Award (2019)
- ASHRAE Grant-in-Aid award (2015)
- Purdue College of Engineering Travel Fund for Engineering Ph.D. Candidates (2015)
- 3rd student paper award in the High-Performance Buildings Conference (2014)

WORK EXPERIENCE

Assistant Professor – University of Nebraska – Lincoln *(August 2018 – Present)*

Post-Doctoral Researcher – Purdue University *(December 2016 – June 2018)*

Research Assistant at Purdue University *(August 2012– December 2016)*

Freelance Civil Engineer in Athens, Greece *(September 2009 – August 2012)*

Corps of Engineers, Greek Army service *(November 2010 – July 2011)*

DETAILED PROJECTS EXPERIENCE

Assistant Professor, University of Nebraska – Lincoln

(August 2018 – Present)

- Smart and Connected Childcare (S&CC - National Science Foundation)
- Virtual/Augmented Discipline Exploration Rotations for Improved Engineering Student Engagement, Self-Efficacy, Diversity Awareness, and Retention (IUSE - National Science Foundation)
- Assessment of the Use of Augmented Reality in Medical Care (Nebraska Collaboration Initiative)
- Efficient Airport Foreign Object Detection with Small Unmanned Aerial System, Adaptive Lighting, and Machine Learning (Nebraska Collaboration Initiative)
- Harnessing walking variability to reduce falls in older adults (Nebraska Collaboration Initiative)
- Augmented Reality for Avatar-Based Metronomes to Improve Human Movement (Nebraska Collaboration Initiative)
- Enhanced Imaging Frameworks against Future Outbreaks of COVID-19 (COVID19 Rapid Grant)
- A New Paradigm for the Human-centered Operation of Adaptive Buildings (Startup Funding)
- Operational and Design Characteristics of Circadian Lighting Systems (UCARE funding)
- Investigation of the Effects of Visual Environment on Student Learning (EPA funded)

Postdoctoral Researcher, Purdue University

(December 2016 – June 2018)

- Development of a new façade camera-based sensor and daylighting control framework (Project with Lutron Electronics)
- Development of a web interactive tool to obtain preliminary façade design recommendations

Research Assistant, Purdue University

(August 2012– December 2016)

Modeling: Dynamic facades, systems and controls

- Development of shading controls balancing daylight glare mitigation and energy performance
- Investigation of Daylight Glare Probability in offices with dynamic facades.
- Development of a systematic method for shading fabrics selection (Project with Lutron Electronics)
- Development of an interactive web tool for the evaluation of solar protection devices (Project with Kawneer Inc.)
- Formulation of a decision-making framework for the façade design of perimeter building zones
- Design optimization on the floor thermal mass and building envelope for perimeter building zones
- Natural Ventilation Air Flow Modelling for a Commercial Building
- Implementation of Demand Control Ventilation; Lawson Building, Purdue University

Human factors and Built Environment

- Integration of Humans in Building design and operation (Project with the Alcoa Foundation)
- Evaluation of interior lighting preferences and glare predictors efficiency in office spaces.
- Evaluation of daylight glare sensation with the sun in the field of view through window shades and development of the DGP_{mod} and $Glare_{Ev}$ discomfort indices (Project with Lutron Electronics)
- Full-scale experimental investigation of occupant interactions with lighting and shading systems using different controls and levels of ease of access (Project with Lutron Electronics)
- Full-scale experimental quantification of the clarity of view through window shades and development of the View Clarity Index (Project with Lutron Electronics)

Experimental work

- Evaluation and improvement consulting about state-of-the-art building façade systems and controls
- Implementation of HDR imaging for luminance mapping with or without the solar corona

- Utilization of virtual sensing approaches for real- time indoor environmental mapping.
- Commercial and residential buildings Energy Audits and Indoor Environmental Quality assessment

Freelance Civil Engineer in Athens, Greece

(September 2009 - August 2012)

- Construction supervision: Supervised construction processes and renovations of residential buildings, coordinated with clients, contractors, technicians and city officials.
- Code Compliance Inspection - Architectural Design and Issuing Building Permits: Participated in the architectural design of small-scale residential buildings, issued certifications of legal compliance of constructions, performed adjustment permits and was involved in engineering consulting focused on legal matters (consult about design deviations, negotiate with city office etc.) - Coordinated and negotiated with clients about project details.
- Land Surveying: Surveying for pre-design requirements of buildings, legal disputes of ownership or state-dictated declaration of land ownership.

Civil Engineer – Corps of Engineers (Greek Army service)

(November 2010, July 2011)

Engineering Consulting (Budget Analysis – Preliminary design – supervision)

During mandatory military service, was in charge of providing consulting in engineering matters, involved in preliminary design of support structures (metal hangars, docks, etc.), negotiating for budgets and supervising processes.

MAJOR COURSES UNDERTAKEN (BUILDING SCIENCE RELATED)

Building Envelope Design and Thermal Loads, Building Energy Audits, Sustainable Building Design, Construction and Operation, Lighting in Buildings, Indoor Environment Analysis and Design, Building Controls, Human Factors in Engineering, Statistics & Econometric Methods

TEACHING

Teaching Experience:

- AE4940 –Building Envelopes (Fall 2019 – Spring 2022, Summer 2022)
- MECH3730 – Engineering Dynamics (Spring 2019 – Spring 2022)
- ASCE ExCEED 2019 Teaching Workshop (June 2019)
- Learning by Design Teaching Workshop (UNL College of Engineering – Fall 2018)
- Academic advising:
 - 2 PhD students at UNL (expected graduation in 2022 and 2024)
 - 1 PhD student at Purdue University (graduated in December 2021)
 - 1 undergraduate student in UNL (UCARE program in 2020)
- Lectures and materials design for the graduate course ‘Lighting in Buildings’ (2013-2018)
- Lab instructor for ‘Lighting in Buildings’ and ‘Building Envelope Design and Thermal Loads’ (2013-2018)
- Seminar about Visual Comfort for the Thermal Systems Research Area at Purdue (2013)

Teaching Interests:

Daylighting, Lighting, Building Physics, Sustainable Building Design, Building Envelope Design and Operation, Indoor Environmental Quality Perception

PUBLICATIONS AND PRESENTATIONS

Published in international refereed journals:

- [1] Kühlenengel, M., Waters, C., **Konstantzos, I.** (2021). The Effects of the Visual Environment on K-12 Student Achievement. Buildings 11(11), 498
- [2] Ko, W. H., Schiavon, S., Altomonte, S., Andersen, M., Batool, A., Browning, W., ..., **Konstantzos, I.**, ... & Wienold, J. (2022). Window View Quality: Why It Matters and What We Should Do. LEUKOS, 18(3), 259-267.
- [3] Quek, G., Wienold, J., Khanie, K.S., Erell, E., Kaftan, E., Tzempelikos, A., **Konstantzos, I.**, Christoffersen, J., Kuhn, T., Andersen, M. (2021). Comparing performance of discomfort glare metrics in high and low adaptation levels. Building and Environment, 206, 108335.
- [4] Kim, M., **Konstantzos, I.**, Tzempelikos. (2020). Real-time daylight glare control using a low-cost, window-mounted HDRI sensor. Building and Environment 106912
- [5] **Konstantzos, I.**, Sadeghi, S. A., Kim, M., Xiong, J., & Tzempelikos, A. (2020). The effect of lighting environment on task performance in buildings—a review. Energy and Buildings, 110394.
- [6] Wienold, J., Iwata, T., Khanie, M.S., Erell, E., Kaftan, E., Rodriguez, R.G., Garretton, Y.A., Tzempelikos, T., **Konstantzos, I.**, Christoffersen, J., Kuhn, T.E., Pierson, C., Andersen, M., (2019). Cross-validation and robustness of daylight glare metrics. Lighting Research and Technology, 1477153519826003
- [7] **Konstantzos, I.**, Kim, M., Tzempelikos, A. (2018). An integrated method and web tool to assess visual environment in spaces with window shades. Science and Technology for the Built Environment. **24(5)**, 470-482.
- [8] Xiong, J., Tzempelikos, A., Bilonis, I., Awalganekar, N., Lee, **Konstantzos, I.**, Sadeghi, S.A., Karava, P. (2018). Inferring personalized visual satisfaction profiles in daylight offices from comparative preferences using a Bayesian approach. Building and Environment, **138**, 74-88
- [9] **Konstantzos, I.**, Tzempelikos, A. (2017). Daylight glare evaluation with the sun in the field of view through window shades. Building and Environment. **113**, 65-67.
- [10] Sadeghi, S.A., Karava, P., **Konstantzos, I.**, Tzempelikos, A. (2016). Occupant interactions with shading and lighting systems using different control interfaces: a pilot study. Building and Environment **97**, 177-195.
- [11] **Konstantzos, I.**, Chan, Y. C., Seibold, J., Tzempelikos, A., Proctor, R. W., & Protzman, B. (2015). View Clarity Index: a new metric to evaluate clarity of view through window shades. Building and Environment, **90**, 206-214.
- [12] **Konstantzos, I.**, Tzempelikos, A., & Chan, Y. C. (2015). Experimental and simulation analysis of daylight glare probability in offices with dynamic window shades. Building and Environment **87**, 244-254.
- [13] Chan, Y. C., Tzempelikos, A., & **Konstantzos, I.** (2015). A systematic method for selecting roller shade properties for glare protection. Energy and Buildings, **92**, 81-94.

Under submission in international referred journals:

- [1] Soleimani Javid, A., **Konstantzos, I.**, Liu, X. (2022) “Challenges and Opportunities of Occupant-centric Building Controls in Real-world Implementation: a critical review

Under review in international peer reviewed conferences:

- [1] Soleimani Javid, A., **Konstantzos, I.** “Smart Low-cost Thermal Imaging Acquisition Towards Personal Comfort Prediction”, Herrick High Performance Buildings Conference, July 2022;

In international conference proceedings:

- [1] Kuhlengel, M., Waters, C., **Konstantzos, I.** “Assessing the impact of outside view on learning: a close look to EN 17037 ‘view out’ practices through the analysis of 220 classrooms”, CISBAT International Conference, Lausanne, Switzerland, September 2019.
- [2] Kim, M., **Konstantzos, I.**, Tzempelikos, A. “A low-cost stereo-fisheye camera sensor for daylighting and glare control”, CISBAT International Conference, Lausanne, Switzerland, September 2019.
- [3] Kim, M., **Konstantzos, I.**, Tzempelikos, A. “A New Control Framework For The Visual Environment Based On Low-Cost HDR Luminance Acquisition”, Proceedings of 5th High Performance Buildings conference at Purdue, July 2018
- [4] **Konstantzos I.**, Tzempelikos, A. “An Online Interactive Tool to Assess Visual Environment in Offices with Roller Shades”, CISBAT International Conference, Lausanne, Switzerland, September 2017
- [5] **Konstantzos, I.** Tzempelikos, A., "Selecting shading properties based on glare mitigation, energy performance and connection to the outdoors", Proceedings of BSA2017: Building Simulation Applications Conference, Bolzano, Italy, February 2017.
- [6] **Konstantzos, I.**, Tzempelikos A., “A holistic approach for improving visual environment in private offices”. Proceedings of SBE 16, Thessaloniki, October 2016
- [7] **Konstantzos, I.**, Tzempelikos A., “Daylight Glare Evaluation when the Sun is Within the Field of View Through Window Shades”, Proceedings of 4th High Performance Buildings Conference at Purdue, July 2016.
- [8] **Konstantzos I.**, Tzempelikos, A. “Design recommendations for perimeter office spaces based on visual performance criteria”, CISBAT International Conference, Lausanne, Switzerland, September 2015.
- [9] **Konstantzos I.**, Tzempelikos, A. “Daylight Glare Probability Assessment with Shading Controls”, ASHRAE Winter Conference, Chicago, January 2015.
- [10] Chan, Y-C. **Konstantzos I.** A. Tzempelikos, “Annual Daylight Glare Evaluation for Typical Perimeter Offices: Simulation Models versus Full-Scale Experiments Including Shading Controls”, ASHRAE Annual conference, Seattle, June 2014.
- [11] **Konstantzos, I.**, Tzempelikos, A. “Daylight glare probability measurements and correlation with indoor illuminances in a full-scale office with dynamic shading controls”, Proceedings of 3rd High Performance Buildings Conference at Purdue, July 2014.

Invited lectures:

- [1] **Konstantzos, I.**, “View Clarity Towards Visual Satisfaction”, Invited Speaker at Symposium on Research and Design Practice Related to Window Views, CBE, UC Berkeley, 2021
- [2] **Konstantzos, I.**, “Daylighting aspects of human comfort in the built environment”, Invited speaker at National Taiwan University, 2022
- [3] **Konstantzos, I.**, “Approaching Smart Buildings through the Scope of the Visual Environment” *Invited Speaker* at Università degli Studi di Firenze, Florence, Italy, 2019.
- [4] **Konstantzos, I.** “Designing and operating healthy visual environments: a researcher’s perspective”, *Invited Speaker* at The Center for Research in Human Movement Variability (MOVCENTR), Omaha, 2020
- [5] **Konstantzos, I.**, “A human – centered approach for the design of perimeter office spaces based on visual environment criteria”, NBERG Seminar, Omaha, 2018.
- [6] **Konstantzos, I.**, “Integration of Humans into Building Design and Operation”. International Living Future conference, Seattle, 2016.

Posters

- [1] Adams, A., **Konstantzos, I.** “An Investigation of the Operational and Design Characteristics of Circadian Lighting Systems”, Poster for UCARE 2019-2020, UNL, April 2020.
- [2] Chan, Y. C., **Konstantzos, I.**, Tzempelikos, A., “The Impact of Roller Shade Properties on Daylighting and Visual Comfort”, Poster at the Herrick IAC Annual Meeting, November 2014.
- [3] Chan, Y. C., **Konstantzos, I.**, Tzempelikos, A., “Visual Comfort Assessment in Spaces with Smart Façade Controls”, Poster at the Herrick IAC Annual Meeting, November 2013

PARTICIPATION IN INTERNATIONAL REFEREED REVIEW PANELS

Building and Environment, Energy in Buildings, Building Simulation, ASCE Journal of Architectural Engineering, Buildings, Energies, Sustainability, Journal of Imaging

MEMBERSHIPS, LEADERSHIP AND SERVICE

- ASCE Journal of Architectural Engineering, Associate Editor (2018 – present)
- ASHRAE, Program Chair, TC 4.5 (present)
- ASHRAE, GPC45, Voting member and Lighting Subgroup Leader (2021 – present)
- ASHRAE, TC 4.5 (Voting member), TC. 2.1 (CM and Webmaster), (2018 – present)
- ASHRAE Multidisciplinary Task Group (MTG) – Health and Wellness in the Built Environment, Member (2019- present)
- UNL Durham School Graduate Committee (2018- present)
- UNL Durham School External Relations Committee (2021- present)
- UNL Durham School Curriculum Committee (2018 – 2021)
- ASHRAE, Associate member (2012 – ongoing)

- International Building Performance Simulation Association (IBPSA), Member (2018 – Present)
- US Building Council, Member, (2017 – Present)
- Member, Technical Chamber of Greece (2009 – Present)
- Hellenic Students Association at Purdue, President (2013 – 2016)
- Session Chair, 5th International High Performance Buildings Conference at Purdue, July 2018
- Co- Chair, 4th International High Performance Buildings Conference at Purdue, July 2016

LANGUAGES

Greek & English (bilingual), German (conversational)