Ramyar Tajik

ARCHITECTURAL ENGINEERING PH.D. CANDIDATE
LIGHTING & HUMAN FACTORS
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PROFESSIONAL SUMMARY

Architectural engineering Ph.D. candidate working on circadian-supportive lighting, personal light exposure, and occupant interaction with building technologies. Combines near-eye sensing and field study design with daylight and glare simulation to evaluate lighting conditions alongside occupant experience.

CORE SKILLS

Lighting and controls: Daylight and glare analysis, visual and thermal comfort, non-visual/circadian lighting, CIE S 026 metrology, near-eye exposure sensing (LiDo), melanopic equivalent daylight illuminance (mEDI), kinetic/adaptive shading, and lighting feedback.

Lighting simulation and design: Radiance, ClimateStudio, Ladybug/Honeybee, Rhino/Grasshopper, Revit, and SketchUp. Parametric modeling, user-specific controls, Wallacei/NSGA-II multi-objective optimization, and regression-based preferences.

Human factors and field methods: Human-subject research, IRB, recruitment and protocols, experimental design, repeated measures, multisensory evaluation, survey design, interviews and qualitative coding, mixed methods, and occupant engagement.

Exposure data and research synthesis: Aligned environmental data with wearable heart rate and electrodermal activity. Framework development, evidence mapping, multi-database searching, structured screening and coding, researcher-verified AI-assisted screening, and full-text review.

Prototyping and interfaces: Wearables, lighting controls, human-building interfaces, requirements and product prototyping, dashboard and participant feedback design, stakeholder synthesis, workshop facilitation, presentations, and technical figures.

Visual communication: Architectural visualization (V-Ray, Lumion), Adobe Photoshop, Illustrator, InDesign, Canva, Linearity Curve, Inkscape, DaVinci Resolve, and CapCut.

SELECTED TECHNICAL PROJECTS

Graduate Research Assistant, Drexel University | 2021–Present

LuxRest Personal Light Exposure and Feedback Study | 2023–2026

- Led requirements, protocol development, systems integration, field deployment, feedback design, and analysis for a within-participant pilot of a personal light-exposure and feedback system.
- Developed the backend and custom web dashboard to display near-eye melanopic equivalent daylight illuminance (mEDI). Connected a wearable LiDo sensor to a Raspberry Pi gateway via a Pico W companion.
- Built a Telegram assistant that sent reminders and answered participants' questions about their light exposure. Collaborated with Lucerne University of Applied Sciences and Arts colleagues on companion hardware and MQTT firmware.
- Designed the workflow to distinguish sensor acquisition, data receipt, display, and message delivery from participant uptake and behavioral response.
- Analyzed 18 operational records and data from 14 pilot completers. Used surveys to anchor day and evening exposure windows and compared baseline and feedback periods with mixed-effects models.

Circadian-Supportive Lighting Triad, First Author and Project Lead | 2025–Present

- Developed a framework connecting biological responses to light, light-exposure systems, and occupant engagement.
- Led systematic searching, structured screening, full-text coding, and visualization for an evidence map of applied human research.

Controlled Multisensory Indoor Environment Pilot | 2021–2023

- Contributed to a study with nine adults and 16 controlled test conditions, relating lighting, thermal, acoustic, and olfactory conditions to physiological and reported stress and comfort in a healthcare-oriented setting.

M.Sc. Thesis Researcher, Intelligent Shading Retrofit, Politecnico di Milano | 2019–2021

- Co-developed a Rhino/Grasshopper workflow for simulating daylight, glare, thermal performance, and energy use, using Radiance and EnergyPlus. Combined multi-objective optimization with regression-based user preferences to compare four shaded options with an unshaded home-office baseline.
- Implemented a user-specific, automated shading controller in a live demonstration. Compared trade-offs in daylight availability, glare, and energy use along the modeled Pareto front.

Five-strategy comparison and controller demonstration

PROFESSIONAL EXPERIENCE

Lead Author, Occupant-Centric Building Technologies Roadmap, ET4WIBE | **2023–Present**

- Led writing and workshop synthesis for a 17-author roadmap. Converted expert discussions on sensing, controls, human-building interfaces, and adoption into implementation priorities.

Teaching Assistant and Grader, Drexel University | **2022–2026**

- Guided students through daylight assessment and interpretation of building performance. Supported first-year engineering teams in prototyping, design reviews, and technical reporting.

Teaching Assistant and Junior Tutor, Politecnico di Milano | **2019–2021**

- Supported design reviews and workshops on climate analysis, passive design strategies, and building simulation.

Interior Design Assistant, 123 Studio, Tehran, Iran | **Jan–Jul 2018**

- Developed models and drawings for two office interiors and created parametric forms in Rhino and Grasshopper. Modeled mechanical, electrical, and plumbing systems in Revit.

SELECTED DESIGN PROJECTS

NEO-TULOU, Nearly Zero-Energy Residential Design, Politecnico di Milano | **2020**

- Contributed to a Hong Kong housing proposal integrating annual daylight analysis with design and energy simulation. Used weather data and solar-shading analysis to support design comparisons.
- Combined work on daylight, comfort, energy, and HVAC alternatives with the architectural design and technical documentation.

Design study and technical report

Behavioral Health Emergency Department, AIA AAH and ASHE PDC Student Design Challenge | **2025**

- Worked with a multidisciplinary team on a patient-centered emergency department and EmPATH expansion concept for Grady Memorial Hospital. The team placed third.

EDUCATION

Ph.D., Architectural Engineering, Drexel University, Philadelphia, PA | **Expected December 2026**

M.Sc., Building & Architectural Engineering, Politecnico di Milano, Milan, Italy | **2021**

Final grade: 110/110

B.Sc., Architectural Engineering, University of Guilan, Rasht, Iran | **2017**

SELECTED PRESENTATION AND PUBLICATIONS

The Missing Link in Circadian-Supportive Lighting Solutions | **March 2026**

- Invited seminar, Centre for Chronobiology, Basel, Switzerland. Presented a personal light exposure feedback system and its use in circadian-supportive lighting research.

LuxRest feedback interface and field study

Tajik et al. (2024). “A case study: Intelligent shading retrofit to existing home-office using multi-objective optimization.” Journal of Green Building, 19(1), 123–155. DOI

Tajik, R. (2025). “Beyond Energy Efficiency: What Healthcare Sustainability Should Measure Next.” Research perspective on light at the eye, using an anonymized healthcare case. Article

PROFESSIONAL DEVELOPMENT AND RECOGNITION

Technical Lead, NSF I-Corps Hub Northeast Regional Program, Spring 2026; participated in customer discovery and testing product assumptions.

Kling-Lindquist Endowed Grant, Drexel University College of Engineering, 2023.