

# Ramyar Tajik

ENGINEERING RESEARCHER | BUILDING SYSTEMS | PERFORMANCE | CONNECTED SENSING  
Philadelphia, PA | 215.407.9052 | [tajikramyar@gmail.com](mailto:tajikramyar@gmail.com) | [linkedin.com/in/ramyar-tajik](https://www.linkedin.com/in/ramyar-tajik) | [ramyartajik.com](https://www.ramyartajik.com)

## ENGINEERING PROFILE

Architectural Engineering Ph.D. candidate connecting building-performance analysis, connected sensing, computational design, and human-centered system evaluation. Work spans requirements, architecture, implementation, simulation, field deployment, quality assurance, interpretation, and decision-ready communication.

## ENGINEERING CAPABILITIES

**CONNECTED SYSTEMS** • Environmental and light sensors, Raspberry Pi, Pico W, MQTT, Notecard/Notehub, n8n, Ubidots, APIs, dashboards, messaging, and workflow automation.

**BUILDING PERFORMANCE** • EnergyPlus, TRNSYS/TRNBUILD, Radiance, Ladybug/Honeybee, daylight, glare, thermal comfort, envelope analysis, HVAC comparison, and passive design.

**COMPUTATION + DATA** • Rhino/Grasshopper, Python, MATLAB, parametric modeling, optimization, regression, neural networks, PCA, clustering, and time-series analysis.

**VERIFICATION + DELIVERY** • Requirements, traceable assumptions, sensitivity studies, held-out comparison, field troubleshooting, QA, interdisciplinary coordination, and technical reporting.

## SELECTED ENGINEERING EVIDENCE

### LuxRest - Wearable-to-Cloud System | 2023-2026

- Led requirements, integration, field deployment, protocol, participant feedback, and analysis for a personal circadian-light measure-to-action system.
- Integrated LiDo, Pico W, Raspberry Pi, MQTT, cellular/cloud routing, n8n, Ubidots, Qualtrics, and Telegram; pilot produced 18 operational records with 14 completers.

### Intelligent Shading System | Published 2024

- Co-developed a parametric-to-control workflow linking daylight, glare, energy, adaptive comfort, multi-objective optimization, learned preference, and manual override.
- Peer-reviewed case study in Journal of Green Building, 19(1); DOI 10.3992/jgb.19.1.123.

## EDUCATION

**Drexel University** • Ph.D., Architectural Engineering, expected Dec 2026

**Politecnico di Milano** • M.Sc., Building & Architectural Engineering, 110/110

**University of Guilan** • B.Sc., Architectural Engineering

## PERFORMANCE AND PREDICTIVE MODELING

### EnergyPlus Building-Performance Analysis | Individual study

- Audited and improved an office-building model through staged envelope, infiltration, lighting, shading, orientation, PTAC, and VAV sensitivity studies.
- Documented modeled end-use reduction from 363.95 GJ to 288.14 GJ (20.8%); results remain bounded to the recorded model, weather, schedules, and system assumptions.

### Predictive CFD with Neural Networks | Course research

- Trained a neural-network surrogate on more than 20,000 hourly records linking 13 simulation inputs to indoor ambient temperature.
- Separated data into 70% training and 30% testing subsets and evaluated held-out predictions against source-simulation results.

## ADDITIONAL SYSTEM EXPERIENCE

**WHOLE-BUILDING INTEGRATION** • Coordinated TRNSYS model for Home for Life combining ventilation, heat recovery, automated shading, solar thermal, BIPV, comfort, and daylight evaluation.

**EVIDENCE-TO-IMPLEMENTATION** • Lead author and framework developer for ET4WIBE, coordinating 17 authors around sensing, analytics, controls, interfaces, interoperability, governance, and validation.

**DESIGN-ENGINEERING INTEGRATION** • Architectural training supports coordination across space, envelope, systems, constructability, occupant experience, and visual communication.

## SELECTED TOOLS

EnergyPlus • TRNSYS/TRNBUILD • Radiance • Ladybug/Honeybee • Rhino/Grasshopper • Revit/BIM • AutoCAD • Python • MATLAB • Git/GitHub • n8n • Ubidots • Notecard/Notehub • Raspberry Pi • Pico W

## REPRESENTATIVE DELIVERABLES

System architecture and data-flow diagrams • Simulation setup, assumptions, and sensitivity records • Field deployment and troubleshooting protocols • Interactive dashboards and decision tools • Technical reports, peer-reviewed manuscripts, and stakeholder-ready presentations