

## Kushagra Varma

Ph.D., PMP, LEED AP, WELL AP, ENV SP

+1 617.949.1025 | [kushagravarma15@gmail.com](mailto:kushagravarma15@gmail.com) | [www.kushagravarma.com](http://www.kushagravarma.com)

---

### Education

- 02/2021 - 08/2024* **Carnegie Mellon University**, Pittsburgh, Pennsylvania  
Doctor of Philosophy in Architecture Engineering Construction Management (AECM)  
GPA 4.06/4.33  
*Thesis Title* A 4D Interactive Carbon Emissions Dashboard: A Visualization and Assessment Tool for Urban Building Environmental Impact.  
*Thesis Advisors* Dr. Erica C. Hameen, Vivian Loftness, Kristen Kurland, Dr. Peter Scupelli, Dr. Ellyn Lester
- 08/2015 - 12/2016* **Stevens Institute of Technology**, Hoboken, New Jersey  
Master of Science in Construction Management  
GPA 3.93/4.00
- 07/2009 - 04/2014* **National Institute of Technology (MANIT)**, Bhopal, India  
Bachelor of Architecture  
GPA 8.56/10.00

### Skills

- Project Management* MS Project, Primavera P6, MS Office, Bluebeam, @Risk, Precision Tree  
*Building Design* Autodesk – AutoCAD, Revit, Navisworks, Design Builder, and IES-VE  
*Energy Analytics* Energy Plus, Climate Consultant, NREL SAM, Homer Grid Pro, ReOpt, Atrius, and WebCTRL.  
*Data Analytics* Python 3, ArcGIS Pro, SPSS, and Tableau (Prep, Desktop, Public)  
*Graphic Design* Adobe Creative Suite - Photoshop, Illustrator, InDesign

### Achievements and Awards

- 2023* Environmental Defense Fund (EDF) Climate Corp Fellowship at the City of Orlando.  
*2023* Finalist in Carnegie Mellon University's 3-minute doctoral thesis (3MT) challenge.  
*2022* Emerging Scholar Award 2022, Common Ground Research Network, Urbana Campaign, IL.  
*2022* First Place – Scott Institute for Energy Innovation, Research Poster Competition 2022.  
*2019* Faculty Appreciation Award, Stevens Institute of Technology.  
*2019 & 20* Appreciation letter from the vice-provost for excellent teaching ratings, Stevens Institute of Technology.

### Credentials and Certifications

- 2025* Project Management Professional (PMP®), Project Management Institute (PMI)  
*2021* Fundamentals of Engineering (FE), National Council of Examiners for Engineering and Surveying  
*2021* CITI Training in Responsible Conduct of Research for Engineers  
*2021* CITI Training in Social and Behavioral Responsible Conduct of Research  
*2021* WELL AP, International WELL Building Institute (IWBI)  
*2020* Certified associate in project management (CAPM®), Project Management Institute (PMI)  
*2019* Envision Sustainability Professional (ENV SP), Institute for Sustainable Infrastructure (ISI)  
*2017* LEED AP BD+C, US Green Building Council  
*2016* Construction Manager-in-Training (CMIT), Construction Management Association of America  
*2016 & 17* OSHA 30, OSHA 10 Construction Industry Certificates

### Professional Affiliations

- 2025* Member, American Council for Construction Education (ACCE)  
*2018* Associate Member, American Institute of Architects  
*2018* Registered Architect, Council of Architecture, India  
*2016* Member, Construction Management Associate of America  
*2012* Lifetime Member, National Information Center for Earthquake Engineering (NICEE)

## Academic Appointments

- 08/2024 - Present **Assistant Professor**, Wentworth Institute of Technology, Boston, MA
- Instructor of undergraduate courses in the Sweeney Programs of Construction Management.
  - Conduct research in building science and construction management.
- 07/2022 – 05/2024 **Instructor and Thesis Advisor**, Carnegie Mellon University, Pittsburgh, PA
- Instructor and advisor for Theses in Master of Science in Building Performance and Diagnostics and Master of Science in Sustainable Design programs.
  - Advised over 10 graduate thesis projects.
- 02/2021 – 07/2022 **Teaching and Research Assistant**, Carnegie Mellon University, Pittsburgh, PA
- Geographic Information Systems, with Prof. Kristen Kurland
  - Indoor Environmental Quality, With Prof. Erica C. Hameen
- 01/2018 – 12/2020 **Lecturer**, Stevens Institute of Technology, Hoboken, NJ
- Taught five different construction engineering and management courses in the Civil, Environmental, and Ocean Engineering (CEOE) department. (Course ratings attached)
- 05/2017 – 12/2020 **Academic Advisor**, Stevens Institute of Technology, Hoboken, NJ
- Advised over 100 graduate students in the Construction Engineering and Management program.
- 2019 – 2020 **Instructor**, Civil Engineering Summer Boot Camp, Pre-College Program, Stevens Institute of Technology
- Taught Introduction to Civil Engineering course to high school students
  - Taught Introduction to Engineering Drawing and Building Information Modeling course.

## Sponsored Research

- 2025 **Principal Investigator:** Wentworth Institute's Spark Small Research Grant  
**Project:** *An Interactive 3D Carbon Emissions Map for Environmental Assessment of Buildings at Wentworth: An Introduction to Undergraduates in Construction Management Program*  
**Award type:** Competitively awarded faculty grant.  
**Total Support:** USD 2,000
- 2022 **Investigator:** Steinbrenner Institute Doctoral Fellowship for Environmentally Focused Research  
Principal Investigator: Erica C. Hameen  
**Project:** Kushagra Varma's doctoral research project: *A 4D Interactive Carbon Emissions Dashboard: A Visualization and Assessment Tool for Urban Building Environmental Impact.*  
**Award type:** Competitively awarded doctoral research fellowship.  
**Total Support:** USD 40,000
- 2021 **Investigator:** P.J. Dick Incorporated AECM Doctoral Fellowship  
Principal Investigator: Erica C. Hameen  
**Project:** Kushagra Varma's doctoral research project: *A 4D Interactive Carbon Emissions Dashboard: A Visualization and Assessment Tool for Urban Building Environmental Impact.*  
**Award type:** Competitively awarded doctoral research fellowship.  
**Total Support:** USD 250,000 +

## Service Appointments

- 2024 – present **Undergraduate Curriculum Committee Member**, School of Management, Wentworth Institute of Technology
- 2021 – 2024 **Admissions Committee Member** for M.S. in Architecture-Engineering-Construction Management Program, School of Architecture and Civil and Environmental Engineering Department, CMU

2021 **Faculty Advisor**, Construction Management Students Organization (CMSO), Stevens Institute of Technology

### Industry Appointments

- 05/2023 – 08/2023 **EDF Climate Corps Fellow** at Office of Sustainability and Resilience, City of Orlando, Florida
- Monitored and analyzed energy, water, and renewable assets at municipal buildings.
  - Analyzed rooftop PV and community solar capacities in the city to evaluate system efficiencies and to track progress toward City's 2030 renewable energy and decarbonization goals.
- 05/2022 – 08/2022 **Senior Intern** in Built Ecology Consulting, WSP USA, Chicago, Illinois
- Created two scope 1, 2 & 3 - carbon emission calculators for two different projects.
  - Prepared sustainability and decarbonization guidance documents for pursuits and projects.
- 02/2017 -05/2017 **Assistant Project Manager**, Copper Hill Development Inc., New York City, New York
- Worked as a consultant for large corporate clients to provide design and construction guidance.
  - Conducted project meetings, prepared meeting minutes, and performed site walk-throughs. Prepared and maintained project schedules and estimates.
- 06/2016 – 08/2016 **Field Engineering Intern**, China Construction America Civil Inc, Jersey City, New Jersey
- Prepared quantity take-offs, Request for Quotations (RFQs), and Purchase Orders (POs).
  - Prepared daily field reports, environmental control checklists, and 2-week look-ahead schedules.
- 07/2014 – 07/2015 **Architectural Engineer**, Samsung Heavy Industries India, Noida, Uttar Pradesh, India
- Prepared architectural layouts, material take-offs, purchase order specifications, and quantity take-offs for two Floating Production Storage and Offloading (FPSO) ships.
  - Performed work in compliance with ISO 9001, 14001, and 18000 family of standards.
- 12/2013 – 04/2014 **Architect Intern**, HCP Design Planning and Management Pvt. Ltd., Ahmedabad, India
- Prepared architectural layouts for a multi-super specialty hospital in Ahmedabad.
  - Prepared GIS-based planning maps, building layouts, and urban planning policy guideline.

### Other Appointments

- 2021 – Present **Reviewer**, Elsevier's Building and Environment Journal
- 2024 – Present **Reviewer**, ASCE's Urban Planning and Development Journal
- 2022 **Conference session chair**, 12<sup>th</sup> International Conference on the Constructed Environment.
- 2020 **Sustainability expert and final competition judge**, Jersey City High School STEAM Challenge, Appointed by the New York Academy of Sciences (NYAS)
- 2019 **Conference planning committee member and session chair**, 2019 AMPS Conference 2019, Stevens Institute of Technology

### Journal Publication

- 2014 Varma K., Chaurasia M., Shukal P., Ahmed T. (2014, February). *Green Building Architecture: A Literature Review on Designing Techniques*. International Journal of Scientific Research Publication, Volume 4 (Issue 2). ISSN 2250-3153

### Manuscripts (in progress)

- 2025 Feasibility of benchmarking embodied carbon in building structures and envelop at urban scale: A systematic review of embodied carbon in buildings research published between 2011 and 2022. (Target journal: *Elsevier, Building and Environment*)

Towards 4D visualization of urban building environmental performance: A systematic review of predictive methods.

(Target journal: *Elsevier, Energy and Buildings*)

Analysis of web-based tools used for visualizing the building performance data collected through benchmarking ordinances: An analysis of 48 US cities and states.

(Target journal: *Elsevier, Computer Environment, and Urban Systems*)

Predictive modeling of building-related emissions using Pittsburgh's energy benchmarking data: A comparative analysis of different forecasting methods.

(Target journal: *Elsevier, Building and Environment*)

### **Invited Presentations**

- 2022 Varma, Kushagra (July 2022), *Modern Planning, scheduling, and management tools & techniques to reduce time, cost, resource wastage in construction industry*. National Faculty Development Program 2022, Council of Architecture India.

### **Conference Presentations (refereed)**

- 2023 Varma K., Cochran E. (2023, September). *Towards 4D Visualization of Urban Building Environmental Performance: Analysis of Energy and Water Use Performance of Municipal Buildings in Pittsburgh*. ASHRAE Building Performance Analysis Conference 2023. Austin Texas.
- 2021 Varma K., Cochran E., Ken Oporum B. (2021, April). *Effects and Impacts of Sustainability Initiatives on the Environmental Performance of Residential Buildings in the Borough of Manhattan: A comparative Study and a Model for the Future*. Eleventh International Conference on the Constructed Environment. (Online): University of Calgary, Canada.  
[https://cgscholar.com/cg\\_event/events/V21/proposal/55659](https://cgscholar.com/cg_event/events/V21/proposal/55659)

### **Graduate Theses Advised**

#### **Master of Engineering in Construction Engineering and Management, Stevens Institute of Technology**

- 2019 Mihalik Jarred, (May 2019) *Building on the Past: Identifying the Historical Trends that Shaped New York City Unions*. Committee: Ellyn A Lester (Chair), **Kushagra Varma** (reader)

#### **Master of Science in Sustainable Design, Carnegie Mellon University**

- 2022 - 23 Manali, Lisa, (May 2023) *Pixels to Pavement: Analyzing City Sidewalks Using Deep Learning and Vision-Based Frameworks for Data-Driven Solutions in Urban Planning*, Committee: Dana Cupkova (Chair), Azadeh Sawyer, **Kushagra Varma**, Sinan Goral, Co-advisors: Claudio T. Silva, Zekum (Suzy) Li

Meffert N., Clarice, (May 2023) *Architectural Psychology of Stress: Analyzing the Impact of Material, Formal, and Aesthetic Features on Stress Reactions Using Biophilic Patterns*, Committee: Dana Cupkova (Chair), Azadeh Sawyer, **Kushagra Varma**, Sinan Goral, Co-advisor: David Creswell.

Nagaraj, Sanjana, (May 2023) *The Blue-Green Sponge Toolkit: Mitigating Flash Floods in Bengaluru*, Committee: Dana Cupkova (Chair), Azadeh Sawyer, **Kushagra Varma**, Sinan Goral, Co-advisors: Zekum (Suzy) Li

Lamne, Sayali, (May 2023) *Building as a Battery: Communal Solutions for Urban Energy Systems*, Committee: Dana Cupkova (Chair), Azadeh Sawyer, **Kushagra Varma**, Sinan Goral, Co-advisors: Vivian Loftness

Khatwani, Nikita, & Dabas, Sachin (May 2023) *Is your Apartment Sustainable? Analytical Toolset to Evaluate the Health of Apartments and Increase Sustainable Building Practices in Rental Markets*, Committee: Dana Cupkova (Chair), Azadeh Sawyer, **Kushagra Varma**, Sinan Goral, Co-advisors: Vivian Loftness

Zhou, Xin (May 2023) *Designing the Invisible: Adaptive Design for Experiencing Qualitative Daylight Analysis Using Virtual Reality*, Committee: Dana Cupkova (Chair), Azadeh Sawyer, **Kushagra Varma**, Sinan Goral

Zhourui, Li (May 2023) *Reinforcement Learning Model of Irregular Shading Control for Optimal Daylight and Glare Analysis*, Committee: Dana Cupkova (chair), Azadeh Sawyer, **Kushagra Varma**, Sinan Goral, Co-advisor: Josh Bard

Bandewar, Ninad (May 2023) *Examining the Collective Impact of Greenhouse Gas Emissions on Retrofits of Single-Family Homes*, Committee: Dana Cupkova (Chair), **Kushagra Varma** (co-advisor), Azadeh Sawyer, Sinan Goral

#### **Master of Science in Building Performance and Diagnostics, Carnegie Mellon University**

2023 - 24 Guo, Bingtong (expected May 2024) *A Graphic Library to Compare and Identify the Most Suitable Data-Driven Benchmarking Model Based on Building Types and Climate Zones in the US*, Committee: Vivian Loftness (Chair), **Kushagra Varma**, Tian Li

Lasariia, Laura (expected May 2024) *Deluge, drought and sustainable connectivity of buildings to the habitat of the most vulnerable areas within two different climatic zones*, Committee: Vivian Loftness (Chair), **Kushagra Varma**, Suzy Li, Zhan Shi

Shahidi, Negin (expected May 2024) *The Impact of High-Performance Office Design on Sick Building Symptoms*, Committee: Vivian Loftness (Chair), **Kushagra Varma**

Zhang, Xinyue (expected May 2024) *IAQ-sensor-Based Control of HVAC System for Office Buildings*, Committee: Vivian Loftness (Chair), **Kushagra Varma**, Wei Liang, Erica Cochran Hameen

Ma, Yihan (expected May 2024) *Machine Learning-Enhanced Fault Detection and Diagnosis for HVAC Maintenance Prioritization for Improved Indoor Air Quality in Office Buildings*, Committee: Vivian Loftness (Chair), **Kushagra Varma**, Jinzhao Tian