

## EDUCATION

### Massachusetts Institute of Technology (MIT)

2011 – 2015 Ph.D. in Building Technology, Department of Architecture, School of Architecture + Planning

### Cairo University

2007 – 2010 Master of Science in Architecture

2002 – 2007 Bachelor of Architecture

## ACADEMIC APPOINTMENTS

2015 – **Assistant Professor, Syracuse University (SU)**

School of Architecture (SoA)

Spring 2015 **Adjunct Professor, Rhode Island School of Design (RISD)**

Division of Architecture + Design, Department of Architecture

Fall 2014 **Instructor, MIT**

Building Technology Program, Department of Architecture

## RESEARCH

### Syracuse University, Performative Praxis Lab (PPL) - Director

2018 – 2021 **MicroCam: A Low Power and Privacy Preserving Multi-modal Sensor Platform for Occupancy Detection and Counting** (\$1.2 M)

Role: Co-Principal Investigator

PI: Dr. Senem Velipasalar. Co-PI: Dr. Pramod Varshney, Dr. Can Isik and Dr. Sek Chai

Partners: SRI International, Syracuse Center of Excellence (SyracuseCoE) and Center for Advanced Systems Engineering (CASE)

Sponsor: The Advanced Research Projects Agency-Energy (ARPA-E) – United States Department of Energy (US DOE)

2017 – 2018 **Community Energy: Technical and Social Challenges and Integrative Solutions** (\$99,965)

Role: Co-Principal Investigator

PI: Dr. Jason Dedrick. Co-PI: Dr. Bess Krietemeyer.

Partners: Pecan Institute and SU I-School

Sponsor: National Science Foundation (NSF) – Smart and Connected Communities Planning Grant

2017 – 2018 **Community Energy Dashboard: A Tool for a Community Energy Approach** (\$17,000)

Role: Co-Principal Investigator

PI: Dr. Bess Krietemeyer. Co-PI: Dr. Jason Dedrick

Sponsor: SyracuseCoE and SU SoA Research Grant

- 2017 – 2018 **SU South Campus as a Lab for Building Envelope Diagnostics using Unmanned Aerial Systems (UAS)** **(\$24,739)**  
 Role: Principal Investigator  
 Co-PI: Dr. Senem Velipasalar  
 Partners: SU College of Engineering and Computer Science (CECS).  
 Sponsor: SU Climate Action Plan
- 2016 – 2017 **Heat Mapping Drones: Building Envelope Energy Performance and Privacy Diagnostics using Unmanned Aerial Systems (UAS)** **(\$43,162)**  
 Role: Principal Investigator  
 Co-PIs: Dr. Senem Velipasalar and Dr. Yang Wang  
 Partners: SkySkopes, SU CECS and School of Information Studies (I-School)  
 Sponsor: Governor Cuomo’s Upstate Revitalization Initiative through Gryphon Sensors and Syracuse University’s Office of Research
- 2016 – 2017 **Daylighting for Cognition: Improving Cognitive Performance and Well-being in Office Environments using Electrochromic Glazing** **(\$94,000)**  
 Role: Principal Investigator  
 Co-PIs: Dr. Mariana Figueiro and Dr. Mike Kalish  
 Partners: Rensselaer Polytechnic Institute (RPI) Lighting Research Center (LRC) and SU College of Arts and Sciences Department of Psychology  
 Sponsor: SageGlass
- 2016 – 2017 **VIS-SIM: A Framework for Designing Neighborhood Energy Efficiency through Data Visualization and Calibrated Urban Building Energy Simulation** **(\$25,000)**  
 Role: Co-Principal Investigator  
 PI: Dr. Bess Krietemeyer. Co-PI: Dr. Jason Dedrick  
 Partners: Pecan Institute and SU I-School  
 Sponsor: SyracuseCoE
- 2016 – 2017 **Feasibility Assessment of Sustainable Transportation Alternatives (FAST: Syracuse)** **(\$230,796)**  
 Role: Principal Investigator  
 Co-PI: Dr. Ed Bogucz  
 Partners: SU CECS and SyracuseCoE, Barton & Loguidice (B&L), Clean Communities of Central New York, the Downtown Committee of Syracuse, and Hitachi Consulting  
 Sponsor: NY State Energy Research and Development Authority (NYSERDA) and NY State Department of Transportation (NYSDOT), B&L and SU SoA and CECS
- 2015 – 2016 **Learning from LEED: Informing Future Home Building Practices through Analysis of LEED-H Market Adoption** **(\$36,000)**  
 Role: Principal Investigator  
 Co-PIs: Dr. Todd Moss and Dr. Tom Lumpkin  
 Partners: US Green Building Council (USGBC) and SU School of Management.  
 Sponsor: United Technologies Corporation (UTC) through the Sustainable Enterprise Partnership (SEP) at SU and SUNY ESF.

**MIT, Sustainable Design Lab**

2011 – 2015 **Simulation Workflows for Thermal Comfort-Based Mobility Evaluation of Cities**  
Ph.D. Research – Advisor: Dr. Christoph Reinhart – Sponsor: MIT Energy Initiative and UTC

2014 – 2015 **City-wide Energy Study of Boston** (\$75,000)  
Manager – PI: Dr. Christoph Reinhart – Sponsor: Boston Redevelopment Authority Grant

2012 – 2014 **The Daylit Area Project – Giving Architects a Voice in Daylighting Standards**  
Research Assistant – PI: Dr. Christoph Reinhart – Sponsor: MIT HASS Fund

**The American University in Cairo, Department of Construction and Architectural Engineering**

2008 – 2011 **Integrated Desert Building Technologies**  
Research Assistant – PI: Dr. Ahmed Sherif – Sponsor: King Abdullah University of Sci. and Tech.

**Cairo University, Faculty of Engineering, Department of Architecture**

2007 – 2010 **Performance-based Form Finding**  
M.Sc. Research – Advisors: Dr. Hesham Eissa and Dr. Moemen Afify

**PUBLICATIONS****Peer Reviewed Journal Articles**

- 2018 Rakha, T., Liberty, A., Gorodetsky, A., Kakillioglu, B. and Velipasalar, S. "Heat Mapping Drones: An Autonomous Computer Vision-based Procedure for Building Envelope Inspection using Unmanned Aerial Systems (UAS)," *Technology | Architecture + Design* (In Press).
- 2014 Reinhart, C F., Rakha, T. and Weissman, D., "Predicting the daylit area - a comparison of students assessments and simulations at eleven schools of architecture," *LEUKOS*, 10 (4), pp. 193 – 206.
- 2012 Sherif, A., Sabry, H. and Rakha, T. "External perforated solar screens for daylighting in residential desert buildings" *Solar Energy*, 86 (6), pp.1929 –1940.
- 2011 Rakha, T. and Nassar, K. "Genetic algorithms for ceiling form optimization in response to daylight levels," *Renewable Energy*, 36 (9), pp. 2348-2356.

**Peer Reviewed Conference Proceedings**

- 2017 Rakha, T., Zhand, P. and Reinhart, C F. "A framework for outdoor mean radiant temperature simulation: towards spatially resolved thermal comfort mapping in urban spaces," In *Proceedings of Building Simulation 2017*, pp. 2814 – 2820, 07-09 August, San Francisco: USA.
- 2017 Rakha, T., and Martinez, C. "Human-powered Mobility Programming Needs in Mid-sized US Cities: the Case of Syracuse NY," In *Proceedings of the 35<sup>th</sup> International Conference on Passive and Low Energy Architecture PLEA*, pp. 4868 – 4875, 02-05 July, Edinburgh: Scotland.

- 2017 Martinez, C., and **Rakha, T.** "A Design Framework for Sustainable Mobility Hub Networks in Mid-Sized Cities," In Proceedings of the 35<sup>th</sup> International Conference on Passive and Low Energy Architecture PLEA, pp. 4860 – 4867, 02-05 July, Edinburgh: Scotland.
- 2017 **Rakha, T.**, Shin, D. and Moss, T. "A decade analysis of transitioning residential LEED communities in the United States," In Proceedings of the 35<sup>th</sup> International Conference on Passive and Low Energy Architecture PLEA, pp. 4827 – 4834, 02-5 July, Edinburgh: Scotland.
- 2014 **Rakha, T.**, Rose, C M. and Reinhart, C F. "A framework for urban modeling occupancy profiles based on human activity patterns in the city," In Proceedings of ASHRAE/IBPSA-USA Building Simulation Conference, 10-12 Sep, Atlanta: GA.
- 2014 Reinhart, C F., **Rakha, T.** and Weissman, D. "Predicting the daylit area - a comparison of students assessments and simulations at eleven schools of architecture," In Proceedings of eSim 2014, 07-10 May, Ottawa: ON
- 2013 **Rakha, T.** and Reinhart, C F. "A carbon impact simulation-based framework for land use planning and non-motorized travel behavior interactions," In Proceedings of Building Simulation 2013, 25 - 28 August, Chambéry: France.
- 2013 Reinhart, C F., Dogan, T., Jakubiec J.A., **Rakha, T.** and Sang, A., 2013. "Umi - an urban simulation environment for building energy use, daylighting and walkability," In Proceedings of Building Simulation 2013, 25 -28 August, Chambéry: France.
- 2012 **Rakha, T.** and Reinhart, C F. "Generative urban modeling: a design work flow for walkability-optimized cities," In Proceedings of SimBuild 2012, 01-03 August, Madison: WI.
- 2012 Sabry, H., Sherif, A., Gad Elhak, M. and **Rakha, T.** "External Perforated Solar Screen Parameters and Configurations: Daylighting Performance of Screen Axial Rotation and Opening Proportion in Residential Desert Buildings," In Proceedings of the International Conference on Computing in Civil and Building Engineering, 27 – 29 June, Moscow, Russia.
- 2011 Sabry, H., Sherif, A., el-Zafarany, A., Arafa, R., **Rakha, T.**, and Anees, M. "Balancing the Energy Savings and Daylighting Performance of External Solar Screens," In Proceedings of the 27<sup>th</sup> International Conference on Passive and Low Energy Architecture PLEA, 13-15 July, Louvain-La-Neuve, Belgium.
- 2011 Sabry, H., Sherif, A., and **Rakha, T.** "External Perforated Solar Screen Parameters and Configurations: Daylighting Performance of Screen Axial Rotation and Opening Proportion in Residential Desert Buildings," In Proceedings of the International Conference for Sustainable Design and Construction, 23-25 March, Kansas City, MO.
- 2010 **Rakha, T.** and Nassar, K. "Daylight as an evolutionary architectural form finder," In Proceedings of the International Conference on Computing in Civil and Building Engineering, 30 June - 2 July, Nottingham, UK, University of Nottingham Press, Paper 186, p. 371. **Best Paper Award.**

- 2010 Sherif, A., Sabry, H., Shawky, S. and **Rakha, T.** "Daylighting for privacy: evaluating external perforated solar screens in desert clear sky conditions," In proceedings of Renewable Energy 2010 Conference, 27 June - 2 July, Yokohama, Japan. **Best Paper Award.**
- 2010 Sabry, H., Sherif, A., Fekry, A. and **Rakha, T.** "Integration of daylighting simulation software in architectural education," In Proceedings of the International Conference on Computing in Civil and Building Engineering, 30 June-2 July, Nottingham, UK, Nottingham University Press, Paper 299, p. 597.
- 2010 Sabry, H., Sherif, A. and **Rakha, T.** "Assessing the effect of external obstruction parameters on indoor daylighting performance in desert clear sky conditions," In proceedings of the 16th annual international sustainable development research conference, 30 May - 1 June, Hong Kong, China.

### Articles in Preparation

- 2018 **Rakha, T.**, Moss, T. and Shin, D. "A decade analysis of transitioning residential LEED communities in the United States," Sustainable Cities and Society (under review).
- 2018 **Rakha, T.**, Gorodetsky, A. and Liberty. "Review of Unmanned Aerial System (UAS) Applications in the Built Environment: Towards Standardizing Automated Building Inspection and Energy Audit Procedures using Drones," Automation in Construction (under review).
- 2018 **Rakha, T.**, and Martinez, C. "Human-powered Mobility Programming Needs in Mid-sized US Cities: the Case of Syracuse NY," Urban Planning and Transport Research.
- 2018 **Rakha, T.**, Rose, C M. and Reinhart, C F. "A Framework for Generating Building Performance Simulation Occupancy Schedules using Human Activity Patterns Clustering," Energy and Buildings.

## TEACHING

### Syracuse University, School of Architecture – Assistant Professor

Summer 2018	<b>Aerial Analytics: Building Diagnostics using Drones</b>	ARC500
Spring 2018	<b>4<sup>th</sup> Year Integrative Design Studio</b>	ARC409
Fall 2017	<b>Building Systems II: Environmental Design and Service Systems</b>	ARC322
Spring 2017	<b>4<sup>th</sup> Year Integrative Design Studio</b> (Studio Co-coordinator)	ARC409
	<b>Professional Elective: Comfort in Motion</b>	ARC500
Fall 2016	<b>3<sup>rd</sup> Year Professional Undergraduate Studio</b> (Studio Co-coordinator)	ARC307
	<b>Building Systems II: Environmental Design and Service Systems</b>	ARC322
Spring 2016	<b>Dubai Visiting Critic Studio – Sustainable Start-ups in the Desert</b>	ARC407/609

Fall 2015	<b>3<sup>rd</sup> Year Professional Undergraduate Studio</b>	ARC307
	<b>Building Systems II: Environmental Design and Service Systems</b>	ARC322
<b>Rhode Island School of Design, Department of Architecture – Adjunct Professor</b>		
Spring 2015	<b>Environmental Design II: Daylighting and Acoustics</b> <i>Core Curriculum Undergraduate and Graduate Seminar</i>	ARCH-2158
<b>Massachusetts Institute of Technology, Department of Architecture</b>		
Summer 2015	<b>Modeling Urban Sustainability - Energy, Daylight and Walkability</b> <i>Instructor– Executive Education Seminar</i>	
Fall 2015	<b>Comfort in Motion</b> <i>Principal Instructor and Course Developer – Graduate Elective Seminar</i>	4.S42
2013 – 2014 2 Semesters	<b>Modeling Urban Energy Flows for Sustainable Cities &amp; Neighborhoods</b> <i>Teaching Assistant</i>	4.433
2012	<b>Daylighting</b> <i>Teaching Assistant</i>	4.430
<b>The American University in Cairo, Department of Construction and Architectural Engineering</b>		
2010 2 Semesters	<b>Architectural Design Studio V – Hi Tech</b> <i>Assistant Lecturer</i>	AENG 455
2010 2 Semesters	<b>Advanced Computer Aided Architectural Design</b> <i>Assistant Lecturer</i>	AENG 473
2010 – 2011 2 Semesters	<b>Environmental Control and Sustainability Design</b> <i>Teaching Assistant</i>	AENG 326
2008 2 Semesters	<b>Introduction to Architectural Engineering</b> <i>Teaching Assistant</i>	AENG 321
2008 – 2009 4 Semesters	<b>Digital Communication Tools for Architects</b> <i>Teaching Assistant</i>	AENG 273
2007	<b>Descriptive Geometry and Engineering Drawing</b> <i>Teaching Assistant</i>	ENGR 115
<b>Cairo University, Department of Architecture</b>		
2008	<b>Architectural Design Studio 3</b> <b>Execution Designs 1</b> <b>Knowledge Based Systems</b> <b>Basic Engineering Design</b> <i>Teaching Assistant</i>	ARC 201 ARC 303 ARC N404 GEN N003

## STUDENT ACHIEVEMENTS

### Syracuse University, School of Architecture – Assistant Professor

- |      |   |  |
|------|---|--|
| 2017 | <b>2<sup>nd</sup> Place Winner:</b> Undergraduate Student Poster Competition at the Syracuse Center of Excellence Symposium<br><i>Principal Investigator, Heat Mapping Drones Project</i> | Amanda Liberty, Alice Gorodetsky and Burak Kakillioglu     |
| 2017 | <b>Jeffery Cook Student Travel Scholarships to PLEA:</b> \$1K travel scholarships for student participants in PLEA 2017 Conference<br><i>Thesis Advisor and Paper Co-author</i>           | Christian Martinez 17'                                     |
| 2017 | <b>Awardee:</b> \$2K Stipend for Summer Research and Mentorship<br><i>Faculty Mentor, Daylighting for Cognition Project</i>   | Emily Greer  |
| 2017 | <b>Honorable Mention:</b> King+King Prize, Syracuse<br><i>Studio Instructor</i>   | Yuxuan Liu and Yidian Liu                                  |
| 2017 | <b>Finalist:</b> US Department of Energy – Race to Zero Design Competition<br><i>Faculty Mentor</i>   | Rutuja Ganoo, Hanseul Jang, Apoorva Rao and Raul Sadhwani. |
| 2016 | <b>Honorable Mention:</b> Reimagine Place Design Competition, Syracuse<br><i>Studio Instructor</i>  | Joe Lin, Daniel Park and Irving Shen                       |
| 2016 | <b>Finalist:</b> Well Buildings 2050 International Student Design Competition<br><i>Faculty Mentor</i>  | Emily Greer and Sarah Ritchey                              |
| 2016 | <b>Winner:</b> NYS Green Buildings Conference Student Poster Competition<br><i>Studio Instructor</i>  | Austin Adams and Yen Chin Liu                              |
| 2016 | <b>Winner:</b> NYS Green Buildings Conference Undergraduate Student Research Poster Competition<br><i>Thesis Advisor</i>  | Erik Yopez (16')   |
| 2015 | <b>1<sup>st</sup> Place Winner:</b> Undergraduate Student Poster Competition at the Syracuse Center of Excellence Symposium<br><i>Thesis advisor</i>                                      | Chelsea Wheeler (16')                                      |

## PRACTICE

### Mostadahm Architects and Planners – Principal

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|------|--|
| 2018 | <b>Building 2 Attachment Performative Design</b><br>Architects – Schematic Design and Design Development<br>Client: Sharabati Denem Recycling Plant  |
| 2017 | <b>Impact Measurement of Architectural Measures for Climate Change Resilience Upgrades in Greater Cairo Region Informal Areas</b><br>Energy Consultants – Building Performance Assessment and Simulation<br>Client: Participatory Development Programme in Urban Areas (PDP), an Egyptian-German development in cooperation between Egyptian Ministry of Housing, Utilities and Urban Communities (MOHUUC) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. |
| 2017 | <b>Building 1 Attachment Performative Interior Design</b><br>Architects – Schematic Design and Design Development<br>Client: Sharabati Denem Recycling Plant   |

- 2017 **Comprehensive Building Performance Assessment**  
 Building Energy Auditors – Energy Conservation and Human Comfort Analysis  
 Client: Sharabati Denem Recycling Plant

### **Practicing and Consulting Architect**

- 2016 **Gemini Real Estate – Consultant**  
 Environmental Analysis: Makronisos Marina – Ayia Napa, Cyprus.  
 Site analysis, residential, commercial and events building performance simulation study.
- 2008 **Architecture and Urbanism Group – Junior Architect**  
 Design: Oseem Mosque, Africa Land Theme Park – Libya, Office Building – 6th of October City.  
 Construction Documents: Facades, Park Avenue – Damac Properties, Egypt.
- 2008 **Shafie – Sherif Bureau – Junior Architect**  
 Design: El Rahma Hospital, Egypt  
 Construction documents: 300 Bed Hospital Prototype, Saudi Arabia.
- 2007 **Mimar Engineering Consultancy – Junior Architect**  
 Design: The Egyptian Embassy in Rabat – Morocco Competition. (2nd Prize Winner)  
 Construction documents: Damanhour Creativity Center, Egypt.

### **AWARDS AND HONORS**

- 2017 **2017 SU Innovative Program Development Fund Award**  
 \$16,260 SU College fund for development toward offering “Aerial Analytics: Buildings Diagnostics using Drones” co-taught with Dr. Senem Velipasalar in Summer 2018.
- 2015 **Syracuse Center of Excellence Faculty Research Fellow Seed Fund**  
 \$45,000 fellowship award over 3 years for research focusing on energy and indoor environmental quality.
- 2014 **Raab Family Education Fund Award – MIT Department of Architecture**  
 First recipient of a \$10,000 award for one nominated PhD Candidate with a public interest focus.
- 2014 **William L. Stewart, Jr. Award – MIT Awards Convocation**  
 Institute service contributions of the Egyptian Student Association, President.
- 2014 **Bridge Builder Award – MIT Student Leader Awards**  
 Service leadership of the Egyptian Student Association, President.
- 2012 **Travel Award – International Building Performance Simulation Association (IBPSA-USA)**  
 – Attend and present a paper in the ASHRAE-IBPSA conference in Atlanta, GA (2014), IBPSA-World conference in Chambéry, France (2013), IBPSA-USA conference in Madison, WI (2012).
- 2012 **Certified Passive House Consultant Training Scholarship – MIT Building Technology**  
 Scholarship that covers Passive House Consultant training fees.
- 2012 **Seed Fund for Doctoral Studies – MIT Energy Initiative**  
 Research grant to conduct PhD research, awarded to Prof. Christoph Reinhart.



- 2011 **Scholarship for Arab Students – Harvard Graduate School of Design (GSD)**  
Award covering all tuition expenses for Fall 2011.
- 2010 **Best Paper Award – International Conference on Computing in Civil and Building Engineering**  
Student Paper presented from M.Sc. thesis work.
- 2010 **Best Paper Award – Renewable Energy 2010 Conference**  
Low Energy Architecture Paper presented from group research.
- 2009 **Outstanding Performance and Dedication Certificate – The American University in Cairo**  
Teaching in the Architecture Program.
- 2007 **Excellence in Ecological Design Award – Cairo University**  
Ranked 1st in the B.Sc. thesis project.
- 2002 **Annual University Grants – Cairo University**  
*Maintaining academic excellence in undergraduate education 5-year annual financial awards.*

## INVITED TALKS

- 12 18 2017 **The Performative Praxis Lab (PPL)**  
At the Arab Academy for Science, Technology & Maritime Transport, Smart Village, Egypt.
- 12 17 2017 **Performative Architectural Design in Academia and Practice**  
At the Nile Academy for Science, Mansoura City, Egypt.
- 11 10 2017 **Performative Built Environments:  
Transdisciplinary Necessity in the Age of Climate Change**  
For the Emerging Voices (EV) Lecture Series at University of Michigan, Taubman College.
- 09 19 2017 **How to Improve Walkability: using Syracuse's Urban Landscape as a Case Study**  
For Invest Health: a Robert Wood Johnson Foundation Initiative, Syracuse NY.
- 07 25 2017 **A Downtown for People: Observations, Trends and Designs**  
For the Downtown Committee of Syracuse Inc. Board Meeting, Syracuse, NY.
- 06 30 2017 **In FAST: Syracuse – Streets are for People!**  
For the SyracuseCoE Research & Technology Forum, Syracuse, NY.
- 03 22 2017 **Performative Praxis Lab Research**  
For the RPI Building Science Lunch Talk Series, Troy, NY.
- 12 02 2016 **Performance Driven Scholarship**  
For the SRC Invited Speaker Series, Syracuse, NY.
- 11 11 2016 **High Performance Design / Energy Modeling and Research**  
1<sup>st</sup> invited speaker for the Skidmore Owings & Merrill (SOM) National Technical Meeting, NYC.
- 10 20 2016 **40 Below Presents: FAST Transit Study**  
For Civics on Tap Forum, organized by 40 Below, Syracuse, NY.

- 10 07 2016 **Alternative Transportation Analysis for the City of Syracuse**  
In the Institute of Transportation Engineers Upstate New York Annual Meeting.
- 03 17 2016 **Walkable Dubai?**  
In BuroHappold Engineering Forum, Dubai, United Arab Emirates.
- 11 10 2015 **Sustainable Urban Mobility: Unlocking the Power of Walkable Cities**  
Invited session chair and speaker in the 2015 SyracuseCoE Symposium.
- 10 24 2015 **Built Environment Technologies: From Smart Buildings to Smart Cities**  
In "Techne Summit" international technology platform in Alexandria, Egypt.
- 20 10 2015 **Comfort in Motion: Urban-scale modeling of walkability and thermal comfort**  
In "Green Buildings and Urban Environment Forum" co-organized by Syracuse University and Nanjing University in Syracuse NY.
- 11 05 2014 **Which "Smart" Mobility? Sustainability through Human Powered Transportation**  
In "Towards a Roadmap for Sustainable Cities in the MENA Region" conference hosted by the American University in Beirut (AUB) and Friedrich Ebert Stiftung - Lebanon.
- 04 12 2014 **Walk the Walk, Literally**  
TEDxCairo talk on the walkability and bikeability of Egyptian cities – Egypt.
- 11 19 2013 **Appreciating Density: the Design of Walkable and Bikeable Cities**  
Architecture Boston Expo (ABX) invited speaker and panelist
- 09 20 2013 **Microclimate: Elements, Methods and Tools**  
Northeastern University, Environmental Systems Undergraduate Seminar
- 03 02 2013 **Designing Urban Walkability**  
Harvard GSD Interdisciplinary Student Sustainability Summit invited speaker and panelist
- 02 15 2010 **Decoding Digital Methodologies for Architectural Design**  
Public lecture, the American University in Cairo – Egypt.

## CONFERENCE PRESENTATIONS

- Aug 2017 **A framework for outdoor mean radiant temperature simulation: towards spatially resolved thermal comfort mapping in urban spaces**  
Oral presentation in Building Simulation 2017, San Francisco, CA.
- Jul 2017 **Human-powered mobility programming needs in mid-sized US cities: the case of Syracuse NY**  
Oral presentation in the 35th PLEA conference, Edinburgh, Scotland.
- Jul 2017 **A decade analysis of transitioning residential LEED communities in the United States**  
Oral presentation in the 35th PLEA conference, Edinburgh, Scotland.
- Apr 2016 **Towards comfortable and walkable Cities**  
Oral presentation in the 14<sup>th</sup> Annual New York State Green Building Conference, Syracuse, NY.

- Sep 2014 **A framework for urban modeling occupancy profiles based on human activity patterns**  
Oral presentation in the ASHRAE / IBPSA Conference 2014, Atlanta, GA.
- Oct 2013 **Modeling urban energy flows**  
Poster presented in the MITEI Conference, Cambridge, MA.
- Aug 2013 **A carbon impact simulation-based framework for land use planning and non-motorized travel behavior interactions**  
Oral presentation in Building Simulation 2013, Chambéry, France.
- Feb 2013 **A simulation-based framework for walkable cities**  
Poster presented for the MITEI Seed Fund poster session, Cambridge, MA.
- Nov 2012 **Walkable cities**  
Poster presented in the third MIT Transportation Showcase, Cambridge, MA.
- Oct 2012 **Urban form optimization for walkability of cities**  
Poster session presented in the MIT Energy Initiative Fall Research Conference, Cambridge, MA.
- Aug 2012 **Generative urban modeling: a design work flow for walkability-optimized cities**  
Oral presentation in SimBuild Conference, Madison, WI.
- Mar 2011 **External Perforated Solar Screen Parameters and Configurations**  
Oral presentation in the International Conference for Sustainable Design and Construction, Kansas, MO
- July 2010 **Eco-evolutionary algotecture: a model for interactive design optimization**  
Poster session presented in the Fourth Conference on Design Computing and Cognition (DCC10), Stuttgart, Germany.
- Jun 2010 **Daylight as an evolutionary architectural form finder**  
Oral presentation in the International Conference on Computing in Civil and Building Engineering (ICCCBE), Nottingham, UK.
- Jun 2010 **Integration of daylighting simulation software in architectural education**  
Oral presentation in the International Conference on Computing in Civil and Building Engineering (ICCCBE), Nottingham, UK.
- Dec 2009 **Digiscape architecture: form generation as new architectural design glasses**  
Oral presentation in ARCHCAIRO2009, 5th International Cairo University, Faculty of Engineering, Architecture Department Conference, Cairo, Egypt.

## LEADERSHIP AND SERVICE

### Service to Syracuse University

- 2017 **17<sup>th</sup> SyracuseCoE Annual Symposium, Program Committee, Member**
- Since 2016 **Search Committee, School of Architecture, Elected Member (and Secretary 2016)**  
**Bylaws Committee, School of Architecture, Elected Member (and Secretary 2017)**

**Graduate Admissions Committee, School of Architecture, Member**

2016 **“Density: through thick and thin” Symposia Series, Co-coordinator**  
**16<sup>th</sup> SyracuseCoE Annual Symposium, Program Committee, Chair**

Since 2015 **University Campus Sustainability Committee, Member**  
**Campus as a Laboratory for Sustainability Advisory Committee, Member**

2015 **“Start Ups in the Desert” Symposium, Coordinator**  
**School of Architecture NAAB Review Committee, Member**

### **Service to Academia**

2018 **Architectural Science Review Journal – Taylor and Francis, Reviewer**  
**Mitigation and Adaptation Strategies for Global Change Journal – Springer, Reviewer**  
**2018 Building Performance Analysis Conference and SimBuild, Chicago IL, Reviewer**

2017 – 2018 **Symposium on Simulation for Architecture and Urban Design (SimAUD 2018), Delft: the Netherlands, Invited General Chair**  
**7<sup>th</sup> International Building Physics Conference (IBPC), Syracuse NY, Scientific Track Chair**

2017 **Energies Journal – MDPI, Reviewer**

2016 – 2017 **Building Simulation 2017 Conference IBPSA. San Francisco CA, Reviewer & Session Chair**

2016 **Data Mining and Knowledge Discovery (DAMI) Journal – Springer, Reviewer**

2014 **2014 ASHRAE/IBPSA-USA Building Simulation Conference, Session Chair**

2013 – 2014 **SimAUD 2015 and eSIM 2014 Conferences, Reviewer**

2013 – 2017 **Guest critic for the following courses:**

Fall 2017: AENG 453 Architectural Design Studio III – the American University in Cairo (AUC)

Fall 2015: Second Year Design Studio – SCI-Arc, ARCH 21ST 05 Luminous Structures –RISD

Spring 2015: MArch/BSA Thesis Final Review – MIT

Spring 2014: ARCH-2158 Environmental Design II – RISD

Fall 2013: 4.472 Design Workshop for a Sustainable Future, 4.401 Introto Arch. Building Systems – MIT

### **Service to Massachusetts Institute of Technology**

2013 – 2014 **Egyptian Student Association, President**  
 Established the MIT-Egypt program for seed fund grants and student exchange.

2013 – 2014 **Architecture Student Council, Mentor**

2014 **Sustainable Urban Mobility Lecture Series, Coordinator**

2013 **Symposium on Sustainable Urban Design, Coordinator**

## LICENSURE AND CERTIFICATION

- 2014 **Member, the Illuminating Engineering Society of North America (IESNA)**
- 2014 **Teaching Certificate Program (TCP)** - MIT Teaching and Learning Laboratory (TLL)
- 2012 **Certified Passive House Consultant (CPHC)** - Passive House Institute US (PHIUS) for 3 years
- 2011 **Affiliate, the International Building Performance Simulation Association (IBPSA)**
- 2007 **Architecture Practice Licensure** - Egyptian Syndicate of Engineers

## WORKSHOP INSTRUCTOR

- 2017 **Building Performance Simulation - mostadahm**  
2-day daylighting, natural ventilation and energy modeling using DIVA for Rhino & Archsim for Grasshopper.
- 2014 **Building Environmental Optimization - Algoritm**  
1-day daylighting theory and simulation workshop using DIVA for Rhino.
- 2013 **Building Performance Simulation for the Sustainable Design of Built Environments – EECA**  
3-day professional workshop using Rhino plug-ins DIVA and umi. (Instructed twice)
- 2013 **Modeling Urban Energy Flows – IEREK**  
1-day professional modeling urban energy flows workshop using Rhino plug-in umi.
- 2013 **Daylighting and Energy Modeling - Karmsolar**  
1-day professional building performance simulation workshop using Rhino plug-ins DIVA and umi.
- 2010 **Daylighting Simulation – Zuhair Fayez**  
Participated as an instructor in a 3-day workshop using Ecotect.

## INTERNSHIPS AND WORKSHOPS IN ARCHITECTURE

- 2007 **The Identity of Architecture and Urban Structure in Historic Arabic Towns – Cairo, Egypt**  
Tutor, summer workshop organized by Brandenburg Technical University, Germany.
- 2006 **Lederer Ragnarsdóttir Oei - Architekten – Stuttgart, Germany**  
Architectural Intern.
- 2006 **Revitalization of Street Space in the Mediterranean – Nicosia, Cyprus**  
Participant, summer workshop organized by the Chamber of Cyprus Turkish Architects.
- 2006 **Urban Development of Historic Districts in Arabic Towns – Damascus, Syria**  
Participant, spring workshop organized by Brandenburg Technical University, Germany.
- 2005 **Multiple Engineering and Architectural Systems Firm – Cairo, Egypt**  
Architectural Intern.

2004 **Mimar Engineering Consultancy –Cairo, Egypt**  
Architectural Intern.

## RELEVANT PRESS

- 01 26 2017 **University Announces \$2.28M Invest Syracuse Gift for the College of Engineering and Computer Science (A Gift to Learn From)**  
Syracuse University - <https://goo.gl/Fvf5NW>
- 12 15 2017 **SOA's Tarek Rakha, SU Research Team, Awarded \$1.2M DOE Grant, Paving Way for Occupation Recognition Technology, Home Energy Savings**  
Syracuse Architecture - <https://goo.gl/GqHmFG>
- 12 01 2017 **University Awarded \$1.2 Million to Develop New Energy Saving Technology**  
Syracuse University - <https://goo.gl/oWtvTQ>
- 10 12 2017 **Syracuse Architecture, School of Information Studies faculty receive National Science Foundation grant for joint research on smart energy**  
Architect - <https://goo.gl/wUhJX6>
- 10 02 2017 **SyracuseCoE Awards Funding for Eight Research and Innovation Projects**  
Syracuse University - <https://goo.gl/Kr2BGD>
- 06 30 2017 **Study Finds Syracuse Has Good Potential for Transportation Alternatives**  
SyracuseCoE - <https://goo.gl/3joSGS>
- 06 23 2017 **SyracuseCoE Finds Untapped Potential for Sustainable Transit - Radio Interview**  
WRVO Public Media (NPR) - <https://goo.gl/BfzDrb>
- 06 21 2017 **Exploring new ways of getting around Syracuse - TV Interview**  
WSYR-TV, News Channel 9 - <https://goo.gl/DdNNg3>
- 06 01 2017 **Campus as a Laboratory for Sustainability Program Awards Nearly \$75,000 to Projects**  
Syracuse University - <https://goo.gl/9hCA1b>
- 04 15 2017 **Interview with Dr. Tarek Rakha (Arabic) - Radio Interview**  
BBC News - <https://goo.gl/R9bGEw>
- 01 05 2017 **Office of Research Award \$230,000 for UAS Research**  
Syracuse University - <https://goo.gl/GiCpRh>
- 10 31 2016 **The World's Tallest Tower Is Estimated to Cost \$1 Billion**  
Forbes - <https://goo.gl/TXQvjm>
- 10 26 2016 **CoE Awards Funding for Research by Faculty at University, SUNY ESF**  
Syracuse University - <https://goo.gl/ttw2mh>
- 10 04 2016 **SU Researchers Study Transportation Alternatives - TV Interview**  
WSYR-TV, News Channel 9 - <https://goo.gl/L7BAKF>

- 09 27 2016 **Study to examine sustainable transportation in Syracuse, central New York**  
Daily Orange - <https://goo.gl/7KV2eT>
- 09 14 2016 **Syracuse University researching ride sharing in Syracuse - Radio Interview**  
WRVO Public Media (NPR) - <https://goo.gl/cT7VPP>
- 04 13 2016 **Architecture Student's Exploration of Sustainable Design in Heart of Dubai Includes Site Visit of a Lifetime**  
Syracuse Architecture - <https://goo.gl/EXSASC>
- 09 16 2016 **FAST: Syracuse Will Study Sustainable Transportation Alternatives for CNY**  
Syracuse University - <https://goo.gl/QJKTKp>
- 01 27 2016 **Cities Weigh Re-designs to Encourage Walking**  
Yale Climate Connections - <https://goo.gl/2MDtwL>
- 01 29 2016 **From Syracuse to Dubai**  
Syracuse University - <https://goo.gl/K3vVm7>
- 12 22 2015 **Two Syracuse Architecture Faculty Members Think "Glocal" as School Launches New Design | Energy | Futures MS Concentration**  
Archinect - <https://goo.gl/Ln7ybL>
- 06 19 2014 **Can Cairo be sustainable?**  
Cairo Scene - <https://goo.gl/HxGAra>
- 05 16 2014 **MIT recognizes excellence during 2014 awards convocation**  
MIT News - <https://goo.gl/ksr4yN>
- 12 16 2013 **Urban sustainability: Designing resource-efficient, appealing cities**  
MIT Energy Futures - <https://goo.gl/zUJ1Rf>