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Rania Labib

Education and certificates

Sep 2014 – current **Texas A&M University**
PhD, Architecture (Expected graduation: May 2019)
United States

Dissertation title: *The Facade Internet of Things (F-Iot): Human-Centered Façade-Communication Approach for Visual and Thermal Comfort.*

Sep 1992 – Jul 1997 **Minia University**
5-year professional BSc, Architectural Engineering
Egypt

July 2018 **Institute for Advanced Architecture of Catalonia, Spain**
Summer School **Summer school in NYC**
Course: Digitize, Smart Architecture, Environmental sensing, Augmented Reality, and 3D scanning.

May 2016 **University of Michigan, School of Information Technology**
6-month Certificate: Programming in Python
Completed on Coursera
Final project: Creating an SQL database and interactive map to visualize the location of top 500 universities across the world

Oct 2016 **University of California, Irvine (UC Irvine)**
6-month Certificate: Programming for the Internet of Things
Completed on Coursera
Final project: Building a device to collect temperature, humidity, and air pressure and stream the collected data to the internet for easy access

Nov 2017 **ETH Zurich, Switzerland**
Course: Smart Cities
Completed on edx
Final project: Improving the urban layout of Empower Shack project in Cape Town, South Africa

June 2017 **IE School of Architecture and Design, Madrid, Spain**
Course: Making Architecture

Completed on Coursera

Jan 2017 **IBM**
1-month Course: A Developer's Guide to the Internet of Things (IoT)
Completed on Coursera

Ongoing **University of Pennsylvania**
Course: Designing cities
3-month course
Completed 90% - Expected finish date (July 2018)

Ongoing **University of Michigan**
Machine Learning using Python
1-month certificate
Completed 5%- Expected finish date (August 2018)

February 2017 (workshop) **Illuminating Engineering Society**(IES)
Course: Fundamentals of Lighting
4-month Workshop (in person at a local IES chapter)

Researchgate Statistics

	As of June, 1,2018
RG Score	5.29
Reads	4891
Recommendations	24

Google Scholar Statistics

	As of Nov, 1,2018
Citations	14
h-index	2

Research Interests

Advanced Building Performance Simulations
Adaptive Facades
Connected smart facades
Smart cities
Human-centered design
Daylighting
Grasshopper custom component development in Python
Performance based design, especially in parametric design environments.
Embedded devices, aka IoT devices, to achieve human-centered design.

Sustainable Building Design, with focus on high performance daylighting systems.
Incorporating computer programing into Architectural education and research

Awards, Grants, and Competitions

Nov 2017 Malcolm Verdict Memorial Poster Competition – 3rd place winner at the 2017 Texas Energy Summit

Nov 2016 Scholarship: The Illuminating Engineering Society (IES) Emerging Professionals Scholarship.

Sep 2016 Scholarship: Charles and Bonny Culp '06 Research award at Texas A&M University

Sep 2016 **Award: National Science Foundation (NFS) Graduate Fellowship; Honor mention, $150,000.00** (Please note: Honor mention recipients don't obtain funds)

Oct 2015 Scholarship: The Illuminating Engineering Society (IES) Young Professionals Scholarship.

Sep 2015 Scholarship: Norman & Renee Zelman Endowed Scholarship at Texas A&M University

Sep 2014 Scholarship: Norman & Renee Zelman Endowed Scholarship at Texas A&M University

Sep 2014 Fellowship: Selected to receive the merit based McKnight Fellowship from Florida Educational Funds (declined award to attend Texas A&M). $15,000 a year for 5 years and full tuition at any University in Florida.

Journal Publications & Conference Proceedings

Rania Labib, Juan Carlos Baltazar: *Using Python to Automate the Preparation and Execution of Thousands of Daylighting and Glare Simulations on a Cloud Parallel Computing environment for Time-efficient Processing.* The 2019 IBPSA International Conference, September 2019, Rome, Italy. (upcoming)

Josh McAfee, Rania Labib: *The Negative Impact of Solar Reflections Caused by Reflective Buildings' Facades in Urban Settings: Simulation-Based Case Study of the Nasher Museum in Texas,* the 2019 Sustainable Built Environment (SBE) International Conference, May 2019, Helsinki, Finland. (upcoming)

Rania Labib: Is computer programming beneficial to architects and architecture students for complex modeling and informed performative design decisions? 12th Advanced Building Skins, Bern, Switzerland; 10/2017

Rania Labib, Juan Carlos Baltazar: *Analysis and quantification of visual glare caused by photovoltaic panels installations in urban canyons*. 11th conference on Advanced Building Skins, Bern, Switzerland; 10/2016

Rania Labib, *Trade-off method to assess the interaction between light shelves and complex ceiling forms for optimized daylighting performance*. Advances in Building Energy Research 03/2015; 9(2). DOI:10.1080/17512549.2015.1014838

Mohammed Mayhoub, Rania Labib: *Towards A Solution for the Inevitable Use of Glazed Facades in the Arid Regions via a Parametric Design Approach*. The 29th CIE, Manchester, UK; 06/2015

Rania Labib, Liliana Beltran: *Optimized Street Design to Balance Outdoor Thermal Comfort and Indoor Daylighting Performance Within Large Scale Urban Settings in Hot Arid Climates.* 31st International PLEA; 09/2015

Rania Labib: *Trade-off Method to Assess the Interaction Between Light Shelves and Complex Ceiling Forms for Optimized Daylighting Performance*. 9th Energy Forum Advanced Building Skins, Bressenone, Italy; 10/2014 **(chosen among top 10 papers to get published in the Advances in Building Energy Research Journal)**

Rania Labib: *Improving daylighting in existing classrooms using laser cut panels*. Lighting Research and Technology 10/2013; 45(5). DOI:10.1177/1477153512471366

Rania Labib, Juan-Carlos Baltazar: *What if Buildings' Facades Could Talk to Each Other? Façade Internet of Things (F-IoT)*, 14th Annual CATEE 2017, Nov 2017. **3rd place winner poster**.

Work on progress: Rania Labib, Juan Carlos Baltazar: *Analysis and quantification of visual glare caused by photovoltaic panels installations in urban canyons*. For submission to the Energy and Buildings Journal

Scientific Committees

2015 to current **Daylighting Committee, Illuminating Engineering Society (IES):**

Activities as of Nov 2018:

Currently (sine 3/2018), on a special IES sub-committee to revise the RP-5-13, (a recommended practice guide published by the IES titled "Recommended Practice for Daylighting Buildings")

Invited Critique

Fall 2019 School of Architecture, Prairie View A&M University,

ARCH 3256 mid-term project: Theater/performance arts center

Fall 2019 School of Architecture, Prairie View A&M University,
ARCH 3256 end-of-term project: Assisted-living housing/community center

Spring 2018 School of Architecture, Texas A&M University,
ENDS 105 mid-term project: The future of the past, Expanding Siena, Italy

Fall 2017 School of Architecture, Texas A&M University,
ENDS 105 mid-term project: A tower and skin

Summer 2016 School of Architecture, Texas A&M University,
ENDS 106 final project: A Pavilion

Summer 2016 College of Architecture, Texas A&M University,
ENDS 106 mid-term project: A public space

Spring 2015 School of Architecture, Prairie View A&M University,
ARCH 2415 final project: A house for an artist

Invited lecturer and taught workshops

Spring 2015 College of Architecture, Texas A&M University,
Daylighting and glare simulations in Parametric Environments:
A workshop for a graduate daylighting course

Spring 2016 College of Architecture, Texas A&M University,
Parametric Design Using Grasshopper
A workshop for an undergraduate design communication course

Spring 2018 College of Architecture, Texas A&M University,
The architecture of ancient Egypt
A lecture for a world architecture course

Teaching experience

Fall 2018 Assistant Professor at Prairie View A&M University
Course: **ARCH 3256** Design Studio V
Course: **ARCH 2223** Computer Aided Design
Course: **ARCH 4347** Building Information Modeling

Fall 2017 Professor of Record at Texas A&M University
Course: **ENDS 115** Design Communication Foundation I

	Adjunct assistant professor at Prairie View A&M University
	Course: **ARCH 4743** Building Information modeling
Spring 2017	Professor of Record at Texas A&M University
	Course: **ENDS 115** Design Communication Foundation I
	Course: **ENDS 105** Foundation Design Studio
	Adjunct assistant professor at Prairie View A&M University
	Course: **ARCH 4733** Computational design
Fall 2016	Professor of Record at Texas A&M University
	Course: **ENDS 115** Design Communication Foundation I
	Adjunct assistant professor at Prairie View A&M University
	Course: **ARCH 4737** Building Information modeling
Summer 2016	Professor of Record at Texas A&M University
	Course: **ENDS 116** Design Communication Foundation II
Spring 2016	Adjunct assistant professor at Prairie View A&M University
	Course: **ARCH 4733** Computational design
	Course: **ARCH 5737** Advanced Building Information modeling
Fall 2015	Adjunct assistant professor at Prairie View A&M University
	Course: **ARCH 4737** Building Information modeling
Spring 2015	Adjunct assistant professor at Prairie View A&M University
	Course: **ARCH 4733** Computational design
	Course: **ARCH 5737** Advanced Building Information modeling
Fall 2014	Adjunct assistant professor at Prairie View A&M University
	Course: **ARCH 4737** Building Information modeling

Non-Teaching Graduate Assistantship (GANT) experience

Spring 2018	Graduate Assistant (non-teaching)
	Duties: Preparing Energy, Daylighting, Glare, and Thermal comfort simulations and teaching material for use in a newly created course.

Certifications

Since 2018	A member of ASHRAE student chapter at Texas A&M University
Since 2016	Academy for Future Faculty Certificate from Texas A&M University
Since 2008	LEED AP (Leadership in Energy & Environmental Design Accredited professional) Accredited by the US Green Building Council.
Since 2000	Registered Architect in Egypt.
Since 2008	Associate AIA (American institute of Architects.)
Since 1998	A member of The Egyptian Syndicate of Engineers.

Skills and Languages

Computer Skills	AutoCAD Revit Architecture, including energy and building performance plugins Rhino and algorithmic modeling using Grasshopper Energy Plus, eQuest, DOE 2.1E, Open Studio, and Design Builder Sketchup Daylight simulations software such as Diva for Rhino Energy simulations using Autodeask Vasari, and Ecotect Grasshopper building performance plug-ins such as Honeybee and Ladybug Grasshopper climate analysis plug-ins such as Ladybug Envi-met, OTC Model, and UMI for urban scale simulations Dynamo Microsoft office applications Adobe Applications: Including Photoshop, Illustrator, InDesign. Autodesk impression for presentation.
Computer Programming	Python (experienced in writing custom Grasshopper components using Python) HTML JavaScript Internet of Things (IoT) Robotics (Arduino and Raspberry Pi) Node Red SQL (experienced in streaming building performance simulation results to SQL database) Linux operating system MQTT Node.js

Languages	Native:	**Arabic**
	Fluent:	**English**
	Intermediate:	**French**
	Beginner:	**German**
	Beginner:	**Italian** (Currently working on improving my Italian language skills)

Citizenship Dual Citizen (Egyptian/American)

Computer Programming, Virtual reality, and Internet of Things Projects for Architectural Purposes:

2016 **Dynamic IoT-powered pavilion design**
The pavilion design project was implement under my supervision at ARCH 106 class in Texas A&M University. The students were instructed to design and prototype a simple pavilion that have dynamic shading devices, the devices are controlled by an Arduino that have light sensors connected to it. The devices rotate to block sunlight in the summer based on the information collected by the light sensors.

2016 **Online-connected weather data logger**
A data-logger that I designed, programmed, and prototyped using a Raspberry Pi and a set of sensors that collect data from the surrounding environment such as temperature, lighting level, air pressure, humidity…..etc. I programmed the raspberry pi to save the collected data in an SQL database. For the purpose of accessing the data online, , I created a dedicated webpage with an easy to read interface to display live data from the logger. The logger was used to test the indoor environment of multiple around The College of Architecture at Texas A&M University.

2017 **Custom Grasshopper component to visualize annual glare data**
A custom Grasshopper component to parse and visualize daylight glare probability (DGP) values on dynamic graphs. A combination of Python, JavaScript, and HTML were used to create the component

2018 **Silicon Wearable with embedded sensing capabilities that can connect the real world with the virtual world**
This is a group project that was completed during a summer school at the Institute for advanced architecture at Catalonia (the NY location). The smart wearable has embedded sensors that collect data of the human interaction with the surrounding environment and use this data to control architectural proprieties of a space in the virtual environment.

2018 **Custom Grasshopper component for shading and reflection analysis**
A Grasshopper component developed using Python. It is used to assess glare caused by reflective facades in urban environments in the early design phase. **The component is currently under consideration for inclusion in the next Honeybee and Ladybug's release.**

Professional practice experience

2012-2013 **Senior Architectural Designer/ BIM associate**
Firm **Farrell Partnership Architectural firm, New Jersey**
Duties:

BIM using Revit Architecture on a daily basis to develop design ideas and construction documents.
Worked on commercial projects, an example project is a 22,000 sf two-story office/ warehouse building.
Coordinated with electrical, mechanical, structural, and plumbing; engineers to produce and solve issues with construction documents.

2008-2009 **Architectural Designer/ BIM associate**
Firm **Farrell Partnership Architectural firm, New Jersey**
Duties:

Helped the firm members to convert to BIM software via Group and Individual Training sessions and continuous support.
BIM using Revit Architecture on a daily basis to develop design ideas and construction documents.
Establishing Design Ideas, and presenting them a graphic way.
Preparing Construction documents (CD).
Construction field Observation.
Making sure projects are code compliant.
Preparing Bidding and contract forms.
Managing Junior Architects and intern
Attending Coordination meeting with Engineers.
Worked on pharmaceutical, commercial and offices layouts
Researched equipment, Materials and furniture to be used in a different projects
Put together presentations for Worldwide Makeup and Perfume companies like L'Oreal, Symrise, and Snofi Avantis.

Hobbies

Spending time with my family
Learning foreign languages
Making things with Arduino and the Raspberry Pi
Reading