Shani Sharif

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EDUCATION

Jan 2011-present **Georgia Institute of Technology**, *School of Architecture, Atlanta, GA*
PhD student in Architecture, Design Computation

Major: Design Computation, Digital Fabrication
Advisors: Prof. T. Russell Gentry (Architecture, Civil Eng.), Prof. Chuck Eastman (Architecture, Computer Science)
Minor: Computer Science, Cognitive Science
Advisor: Prof. Larry Sweet (Robotics, School of Interactive Computing)
Research Topic: Human Robot Collaboration for Creative and Integrated Design and Fabrication Processes

2008 - 2010 **Massachusetts Institute of Technology**, *Department of Architecture, Cambridge, MA*
Master of Science in Architectural Studies (SMArchS), Design and Computation
Thesis co-advisors: Prof. Terry Knight, Prof. Lawrence Sass

2004 - 2007 **Shahid Beheshti University**, *Department of Architecture and Urbanism, Tehran, Iran*
Master of Architecture (M.Arch)

1999 - 2004 **University of Tehran**, *Department of Fine Arts, Tehran, Iran*
Bachelor of Architecture (BArch)

RESEARCH INTERESTS

Building Information Modeling (BIM), computational and parametric design, digital and robotic fabrication, software development

Related Courses:

- Building Models (COA 8690)
- BIM Applications (ARCH 6503)
- Intro-Object Orient Prog (CS 1331)
- Intr to Database Systems (CS 4400)
- Design & Engr Databases (COA 8676)
- Intro-Perception & Robotic (CS 8803)
- Materials/Fabrications (ARCH 6506) *Teach*
- Inro Robotic Fab (ARCH 8863) *Teach*

ACADEMIC AND PROFESSIONAL EXPERIENCE

Jan. 2016 – May 2016 **Georgia Institute of Technology,** *Atlanta, GA*
Course: "Robotic Fabrication" Spring 2016
Instructor

- *Designed the course, developed the syllabus, and taught the special topic course (lecture and lab)*
- *Focus of the course on the robot controlling and programming, application of industrial robots in architecture, and hands on experiences in the Digital Fabrication Lab with Kuka robot*
- *Developed the course for graduate students in architecture and indrusrial design*

Jan. 2014 – Present and May 2012 – Aug. 2012 **Georgia Institute of Technology,** *Atlanta, GA*
Building Information Modeling for Masonry (BIM-M), *Digital Building Laboratory*
Research Assistant
Worked with Prof. Russell Gentry (PI)

- *Researched on the development of Building Information Modeling for Masonry*
- *Collaborated in the development of a data structure as part of the Masonry Unit Database to capture all the required data for digital representation of masonry units*
- *Acquired Entity-Relationship (ER) data model, and MySQL database management system*
- *This database is used as part of future BIM software applications and would be used for selection, specification and purchase of masonry units by AEC industries in building projects*
- *Gathered data and performed survey analysis for the Building Information Modeling for Masonry Initiative*

Aug. 2013 – Dec. 2013 ***Georgia Institute of Technology,*** *Atlanta, GA*
Course: "Construction Materials, Systems and Fabrication" Fall 2013
Instructor

- *Taught architecture graduate students fundamentals of digital fabrication techniques and machinery, and construction material properties and processing, in accordance with design requirements*
- *Instructed the operation and application of digital fabrication machines, including: CNC router, water jet cutter, plasma cutter, laser cutter, wire cutter*
- *Taught the use of high-level CAD/CAM software for development of fabrication models and fabrication adjustments*

Aug. 2012 – Dec. 2013 ***Georgia Institute of Technology,*** *Atlanta, GA*
Semantic Exchange Modules (SEM), *Digital Building Laboratory*
Research Assistant
Worked with Prof. Chuck Eastman (PI)

- *Developed an online platform for specification of Semantic Exchange Modules (SEM) for Building Information Modeling (BIM) applications*
- *Acquired Microsoft Visual Studio, C#, .NET framework and MySQL database management system*
- *SEM is a new framework for composing model views based on object-oriented, testable and reusable modules of information, used for specifying information exchanges between software applications using Industry Foundation Class (IFC) schema.*

Jan. 2011 - Aug. 2011 ***Wentworth Institute of Technology,*** *Boston, MA*
Adjunct Professor
Spring 2011

- *Designed the course, developed the syllabus, and taught the special topic course "GeoMatter**",** focusing on the integrated role of geometry and material properties in the process of design and fabrication*
- *Developed the course for both graduate and senior undergraduate level architecture students*
- *Constructed the lectures and class projects based on an interactive teaching and learning strategy*

Summer 2011

- *Taught the 3rd year undergraduate architecture studio*
- *Focused the design studio on an one-to-one teaching and learning strategy*

Thesis supervision

- *Secondary thesis advisor for Vannesa Rubino MArch thesis (2011), "The Spatial Possibilities of Linearity"*

2011 Summer ***Graduate Student Teaching Certificate***
(Certified by the Dean for Graduate Education and the Dean for Undergraduate Education)
The passed workshops included:

- *Introduction to Research on How People Learn*
- *Designing a Course and Constructing a Syllabus*
- *Constructing Effective Problem Sets and Exam Questions*
- *Planning and Presenting a Lecture*
- *Interactive Teaching and Active Learning*
- *Teaching in a Multicultural Classroom*
- *Developing a Teaching Philosophy Statement*

Oct. 2010 – Aug. 2011 ***Massachusetts Institute of Technology,*** *Cambridge, MA*
Making the Clean Energy City in China, Department of Urban Studies and Planning
Research Fellow
Worked with Prof. Dennis Frenchman and Prof. Christopher Zegras

- *Performed research on the effects of sun and wind, based on urban form, on the energy use of neighborhood-scale urban clusters*

Sep. 2010 – Feb. 2011 ***Massachusetts Institute of Technology,*** *Cambridge, MA*
Mobile Experience Laboratory, *Media Lab (http://mobile.mit.edu/)*
Research Assistant
Worked with Prof. Federico Casalegno

- *Collaborated on the Green Home Alliance project*
- *Developed the design and digital fabrication of the zero energy house model*

2009 - 2010 ***Massachusetts Institute of Technology,*** *Cambridge, MA*
ArchNet, *the Aga Khan Trust for Culture (https://archnet.org/)*
Research Assistant
- *Performed research and authored descriptive documents on historic sites and monuments for the ArchNet Digital Library*
- *Edited and developed Maria-Therese Ullens' historic documentary videos and photos of the Middle East for the ArchNet Visual Collection*

2008 - 2009 ***Massachusetts Institute of Technology,*** *Cambridge, MA*
Digital Design and Fabrication Group, *School of Architecture and Planning*
Research Assistant
Work with Prof. Lawrence Sass
- *Performed research on automated fabrication systems in industry and architecture*
- *Designed and 3D modeled a two story wooden structure house with all the assembly parts for a digital fabrication system*
- *Designed five models and fabricated mockups with a friction-joint system for the wall structure of a greenhouse*

2006 - 2008 ***Design Core [4s] Architects,*** *Tehran, Iran*
Project Architect
Projects:
- *Kishware Computer Company Headquarter Office, Isfahan, Iran*
- *Kishware Computer Company Headquarter Office, Tehran, Iran*
- *Damavand Residential Complex, Tehran, Iran*

2005 - 2006 ***Atec Consultants,*** *Tehran, Iran*
Project Architect
Projects:
- *Office and Shopping Center, Mashhad, Iran*
- *Sustainable Residential and Office Complex Competition, Yazd, Iran*

HONORS AND AWARDS

2016 ***The National Network for Manufacturing Innovation(NNMI) Students Poster competition,*** *Georgia Tech*
Second poster award

2015 ***Anne Robinson Clough International Student Fellowship****, Georgia Tech*
Awarded funding for conference participation and presentation: CAADRIA 2015, Korea

2010 ***MIT Council for the Arts Grant Recipient****, MIT*
Awarded funding for an independent project on a bio-inspired interactive origami design, fabrication and installation

2008 ***The Department of Architecture Graduate Fellowship,*** *MIT*
Fellowship for tuition and stipend for the 2008-09 and 2009-10 academic years

2003 ***Ranked 1st in the national university entrance exam for graduate studies****, Iran*
Master of landscape architecture

2003 ***Ranked 3rd in the national university entrance exam for graduate studies****, Iran*
Master of architecture

PUBLICATIONS

Sharif, Shani; Gentry, Russell (2016). *Design Cognition Shift from Craftsman to Digital Maker*. Automation in Construction Journal (Invited paper, Under Review)

Sharif, Shani; Gentry, Russll (2015). *BIM for Masonry: Development of BIM Plugins for the Masonry Unit Database.* Paper presented at the Real Time - Proceedings of the 33rd Education and Research in Computer Aided Architectural Design in Europe Conference (eCAADe 2015), Vienna, Austria *http://cumincad.scix.net/cgi-bin/works/Show?_id=ecaade2015_261*

Sharif, Shani; Gentry, Russell (2015). *Design Cognition Shift from Craftsman to Digital Maker*. Paper presented at the Emerging Experience in Past, Present and Future of Digital Architecture, Proceedings of the 20th International Conference of the Association for Computer-Aided Architectural Design Research in Asia (CAADRIA 2015), Daegu, Korea. *http://cumincad.scix.net/cgi-bin/works/Show?_id=caadria2015_208*

Sharif, Shani; Gentry, Russell; Eastman, Chuck; Elder, Jeff. (2015). *Masonry Unit Database Development for BIM-Masonry.* Paper presented at 12th North American Masonry Conference, Denver, Colorado.

Witthuhn, Tyler; Sharif, Shani; Gentry, Russell; Elder, Jeff. (2014). *Masonry Product Models for Building Information Modeling.* Paper presented at 9th International Masonry Conference, Guimarães, Portugal.

Sharif, Shani. (2013). *Material Cognition: Designer's Perception Of Material in a Creative Design Process.* Paper presented at the 17th Conference of the Sociedad Iberoamericana de Gráfica Digital Conference (SiGraDi 2013), Valparaiso, Chile. *http://cumincad.scix.net/cgi-bin/works/Show?_id=sigradi2013_429*

Sharif, Shani; Gentry, T Russell, Yen, Jeannette, & Goodman, Joseph N. (2013). *Transformative Solar Panels: A Multidisciplinary Approach.* International Journal of Architectural Computing, 11(2), 227-246. *http://multi-science.atypon.com/doi/abs/10.1260/1478-0771.11.2.227*

Sharif, Shani; Gentry, T Russell, Yen, Jeannette, & Goodman, Joseph N. (2012). *Kinetic Solar Panels: A Transformative and Expandable Geometric System for Photovoltaic Structures. Paper presented at the* 16th Conference of the Sociedad Iberoamericana de Gráfica Digital Conference (SiGraDi 2012)*, Fortaleza, Brasil. http://cumincad.scix.net/cgi-bin/works/Show?sigradi2012_187*

Sharif, Shani; Demaine, Martin. (2011) Interactive Blossoms." In Proceedings of the Fifth International Conference on Tangible, Embedded, and Embodied interaction, TEI'11, Work in Progress Section, Funchal, Portugal. http://www.tei-conf.org/11/TEI-WIP-final-compressed.pdf

Sharif, Shani. (2010). The Confluence of Digital Design/Fabrication and Biological Principles: Systematic knowledge transfer for the development of integrated architectural systems. (Master's), Massachusetts Institute of Technology. http://dspace.mit.edu/handle/1721.1/61560

REVIEWS

Automation in Construction Journal (2014) – Reviewer

SIGraDi (The Iberoamerican Society of Digital Graphics) Conference 2014 – Reviewer

SIGraDi (The Iberoamerican Society of Digital Graphics) Conference 2013 – Reviewer

SKILLS

Computer

Programming and scripting: Java, C#, Python, SQL, ASP.NET, Matlab, Rhino Script, Processing, Arduino
Modeling: Revit, AutoCAD, Inventor, Solidworks, Rhino, 3DMax, Dynamo, Grasshopper
Graphic and video editing: Adobe Photoshop, Adobe illustrator, Final Cut Pro

Digital Fabrication

Kuka robot (Kuka PR C4), CNC and CAM, water-jet cutter, plasma cutter, laser cutter, 3D printer

Language

English (Full professional proficiency)
Persian (Native proficiency)
Arabic (Elementary reading proficiency)

ACTIVITIES

2016 **School of Architecture PhD Students Pecha Kucha Night, Georgia Tech,** *Co-organizer*

2012 - 2013 ***Design Computation PhD Students forum, Georgia Tech,*** *Founder and Co-organizer*

2009 - 2010 **Graduate Student Council (GSC), MIT,** Representative of the Department of Architecture

2009 **Persian Students Association (PSA), MIT,** Social chair