Shani Sharif

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EDUCATION

Jan. 2012 – May 2017 (expected)
Georgia Institute of Technology, *School of Architecture, Atlanta, GA*
PhD candidate in Architecture, Design Computation

Major: Digital Fabrication, Design Computation
Advisors: Prof. T. Russell Gentry, Prof. Chuck Eastman
Minor: Computer Science, Cognitive Science
Advisor: Prof. Larry Sweet
Thesis Title: 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), Computation
Thesis co-advisors: Prof. Terry Knight, Prof. Lawrence Sass
Thesis Title: The Confluence of Digital Design/Fabrication and Biological Principles: Systematic knowledge transfer for the development of integrated architectural systems

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)

PROFESSIONAL AND ACADEMIC EXPERIENCE

Jan. 2016 – May 2017
Georgia Institute of Technology, *Atlanta, GA*
Instructor
Course: "Introduction to Robotic Fabrication"
- *Designed the course, developed the syllabus, and taught the hands-on special topic course on robotic fabrication for the first time at Gatech's school of architecture*
- *Taught the fundamentals of robot controlling and programming, and application of industrial robots in architectural fabrication*
- *Supervised 4 student teams in design and fabrication method development*
- *Coordinated projects on material and fabrication method selection, assembly processes, and integration with electronics and sensor feedback*
- *Directed the Digital Fabrication Lab resources for industrial robotic fabrication*

Jun. 2016 – Aug. 2016
Autodesk, San Francisco, CA
Software Developer Intern
Build Logic group
- *Developed an ontology of fabrication processes to be used as the framework for fabrication knowledge extraction (by natural language processing)*
- *Created a mapping between different fabrication systems, fabrication machinery, materials and end products for the development of the ontology*
- *Optimized the knowledge query and knowledge sharing for Build Logic based on the defined framework*
- *Developed a plugin for Dynamo, Autodesk's visual programing tool, for visualization and editing the data in knowledge graphs to be used by fabrication experts*

Jan. 2014 – Dec. 2015
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. 2014 – Dec. 2014	**Georgia Institute of Technology,** *Atlanta, GA* *Instructor* Course: "Materials, Fabrication and Systems" - *Taught fundamentals of digital fabrication techniques and machinery, and 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* - *Discussed the fundamentals of various material system integration (wood, metal, plastic and concrete) in design assemblies* *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 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* - *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*
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*
2005 - 2006	**Atec Consultants,** *Tehran, Iran* *Project Architect*

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, Russll; Sweet, Larry (2016). *Human-Robot Collaboration for Creative and Integrated Design and Fabrication Processes.* Paper presented at the 33rd International Symposium on Automation and Robotics in Construction (ISARC 2016), Alabama, USA
http://www.iaarc.org/publications/fulltext/ISARC2016-Paper112.pdf

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. (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, 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; 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; 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: C#, Python, Java, SQL,.NET, IronPython, 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, 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