YASAMAN TAHOUNI

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EDUCATION

Institute for Computational Design and Construction (ICD), University of Stuttgart, Germany — 2018 - Present
Doctor of Engineering (Dr.-Ing)
Advisor: Achim Menges
Thesis topic: Computational Design and Fabrication of Passively-Actuated Shape-Changing Structures through 4D Printing

Massachusetts Institute of Technology (MIT), Cambridge, MA, USA — 2015 – 2018
Master of Science in Electrical Engineering and Computer Science
Advisor: Stefanie Mueller
Thesis topic: Human-Computer Interaction via Augmented Material Interfaces (Joint w. SMArchs)

Massachusetts Institute of Technology (MIT), Cambridge, MA, USA — 2015 – 2018
Master of Science in Architectural Studies (SMArchs), Design and Computation group
Advisor: Terry Knight
Thesis topic: Human-Computer Interaction via Augmented Material Interfaces (Joint w. EECS)

University of Tehran, Tehran, Iran — 2008 – 2013
Bachelor of Science in Architecture Engineering

ACADEMIC POSITIONS

Institute for Computational Design and Construction (ICD), Stuttgart, Germany — 2018 - present
Research Associate | Research and Development on Material Programming, Encompassing Computational Design and Fabrication (Desktop & Robotic 3D printing) + Smart Materials research

MIT Design Lab, **Massachusetts Institute of Technology** Cambridge, MA, USA — 2017 - 2018
Graduate Research Assistant | Future of Sportswear sponsored by Puma, 1. Computational design of high-performance running shoe midsoles (Puma Xetic Series), 2. Embedded sensors and actuators for "smart" footwear

Tangible Media Group, MIT Media Lab, Cambridge, MA, USA — 2016
Graduate Research Assistant | Programmable Food: Computational Design and 3D printing of Bread dough, Pasta, and other edibles for "programmed" taste and texture

TEACHING EXPERIENCE

ITECH M.Sc. Program, University of Stuttgart, Stuttgart, Germany — Fall(s) 2022, 2021, 2020
Tutor | Computational Design Techniques and Design Thinking Seminar
Co-taught with T. Schwinn

ITECH M.Sc. Program, University of Stuttgart, Stuttgart, Germany — Spring(s) 2022, 2021, 2020, 2019
Tutor | Physical Computing and Digital Fabrication Seminar
Co-taught with T. Schwinn, O. Bucklin, R, Doque, F.Kennenberg

Massachusetts Institute of Technology, International Design Center, Cambridge, MA, USA — Jan. 2017
Teaching Assistant | Making Spaces Workshop**.** Taught by Dina El-Zanfaly, Terry Knight

Massachusetts Institute of Technology, MIT Media Lab, Cambridge, MA, USA — Spring 2017
Teaching Assistant | How to Make [almost] Anything. Taught by Neil Gershenfeld

Massachusetts Institute of Technology, School of Architecture, Cambridge, MA, USA — Fall 2017
Teaching Assistant | Introduction to Design Techniques and Technologies. Taught by Skylar Tibbits, Caitlin Mueller, Jessica Rosenkrantz

PEER-REVIEWED PUBLICATIONS

Tahouni, Y. Cheng, T. Kliem, S., Benz, J. Bonten, J., Wood, D., Menges, A. 2022 „ **Co-design of biobased cellulose-filled filaments and mesostructures for 4D-printing humidity responsive smart structures".** *3D Printing and Additive Manufacturing* — 2022

Wood, D., Cheng, T., Tahouni, Y. and Menges, A., 2023. **Material Programming for Bio-inspired and Bio-based Hygromorphic Building Envelopes**. In *Advanced Materials in Smart Building Skins for Sustainability* (pp. 99-112). Springer, Cham. — 2022

Moussavi, S. M., Svatoš-Ražnjević, H., Körner, A., Tahouni, Y., Menges, A., & Knippers, J. 2022. **Design based on availability: Generative design and robotic fabrication workflow for non-standardized sheet metal with variable properties**. *International Journal of Space Structures* — 2022

Tahouni, Y., Krüger, F., Poppinga, S., Wood, D., Pfaff, M., Rühe, J., Speck, T. and Menges, A., 2021. "**Programming sequential motion steps in 4D-printed hygromorphs by architected mesostructure and differential hygro-responsiveness**." *Bioinspiration & Biomimetics.* — 2021

F. Krüger, R. Thierer, Y. Tahouni, R. Sachse, D. Wood, A. Menges, M. Bischoff, J. Rühe.: 2021, "**Development of a material design space for 4D-printed bio-inspired hygroscopically actuated bilayer structures with unequal effective layer widths**". *Biomimetics* — 2021

Cheng, T., Thielen, M., Poppinga, S., Tahouni, Y., Wood, D., Steinberg, T., Menges, A. and Speck, T., 2021. "**Bio-Inspired Motion Mechanisms: Computational Design and Material Programming of Self-Adjusting 4D-Printed Wearable Systems**". *Advanced Science.* — 2021

Qi, Y., Zhong, R., Kaiser, B., Tahouni, Y., Wagner, H.J., Verl, A. and Menges, A., 2021. "**Augmented Accuracy-A human-machine integrated adaptive fabrication workflow for bamboo construction utilizing computer vision**." *eCAADe 2021* — 2021

Tahouni, Y., Cheng, T., Wood, D., Sachse, R., Thierer, R., Bischoff, M. and Menges, A., 2020. „**Self-shaping Curved Folding: A 4D-printing method for fabrication of self-folding curved crease structures**". *In ACM Symposium on Computational Fabrication (SCF'20)* — 2020

Cheng, T., Tahouni, Y., Wood, D., Stolz, B., Mülhaupt, R. and Menges, A., 2020, November. „**Multifunctional Mesostructures: Design and Material Programming for 4D-printing**". *In ACM Symposium on Computational Fabrication (ACM SCF 2020)* — 2020

Kliem, S., Tahouni, Y., Cheng, T., Menges, A. and Bonten, C., 2020, November. „**Biobased smart materials for processing via fused layer modeling** ". *In AIP Conference Proceedings.* — 2020

Neuhaus, R., Zahiri, N., Petrs, J., Tahouni, Y., Siegert, J., Kolaric, I., Dahy, H. and Bauernhansl, T., 2020. „**Integrating ionic electroactive polymer actuators and sensors into adaptive building skins–potentials and limitations**". *Frontiers in Built Environment* — 2020

Tahouni, Y., Qamar, I.P. and Mueller, S., 2020, February. „**NURBSforms: A Modular Shape-Changing Interface for Prototyping Curved Surfaces**." *In Proceedings of the Fourteenth International Conference on Tangible, Embedded, and Embodied Interaction (ACM TEI 2020)* — 2020

PATENTS

Sole of a shoe, particularly an athletic shoe. European Patent Office EP3790423B1, Granted — 2021

HONORS AND AWARDS

Digital Future's Young Scholar Award July 2022
DigitalFUTURES 2022, Tongji University, China
Norman Foster Foundation's Robotics Atelier Fellowship
Norman Foster Foundation, Madrid, Spain Nov. 2019
Merit-based tuition scholarship 2015 - 2017
Dept. of Architecture, Massachusetts Institute of Technology**,** Cambridge, MA, USA
Exceptional Talents full scholarship 2013 - 2015
University of Tehran, Tehran, Iran

INVITED TALKS

Carnegie Mellon University, Morphing Matter Lab, USA | hosted by Lining Yao 2022
Hasso Plattner Institute, Germany | hosted by Thijs Rouman 2022
DigitalFUTUES.World/Talks, Virtual event | hosted by Neil Leach 2022
Florida International University, USA | hosted by Neil Leach 2021
University of Pennsylvania, USA | hosted by Laia Mogas-Soldevila 2021
Volkswagen Group, Germany | hosted by Sacha Peters 2019

VOLUNTARY ACTIVITIES

Diversity and Equal Opportunity Committee, IntCDC Cluster of Excellence, University of Stuttgart, Germany 2020 - 2022
Early Career Board, IntCDC Cluster of Excellence, University of Stuttgart, Germany 2020 - 2022
Reviewer, Journals: Scientific Reports, Bioinspiration and Biomimetics; Conferences: CAAD Futures 2023**,** UIST'2022, ANNSIM'22 2021 - present
Workshop Instructor, DigitalFUTURES 2021, "Autonomous Origami" workshop co-taught with T. Cheng, D. Wood June 2021
Workshop Instructor, ACADIA 2020, "Dual Additive Manufacturing" workshop co-taught with H. J. Wagner, D. Wood, T. Cheng, L. Orozco, H. Chai, Prof. A. Menges Nov. 2020
Student Volunteer, ACADIA 2017: Disciplines and Disruption, MIT, USA 2017

ADVISED MASTERS THESES

Pelin Asa, Christian Steixner, Christelle Feghali, "**Embraced Wood: Building with Unprocessed Reclaimed Timber",** University of Stuttgart. Co-advisor: H.J. Wagner, Supervisors: J. Knippers, A. Menges 2022
Francesca Maisto, Lena Strobel, Irina Voineag, **"Autonomous material robotics: Passively-actuated auxetic metamaterials for robotic structures"**, University of Stuttgart. Co-advisor: D. Wood, Supervisors: J. Knippers, A. Menges 2021
Anahi Gonzalez, Jeongwoo Jan, Hooman Salyani. **"Actively passive: A hybrid system for user-controllable environmentally responsive architectural skins"**, University of Stuttgart. Co-advisor: Jan Petrs, Supervisors: H. Dahy, A. Menges 2020
James Hayward, Schu Chuan Yao, **"Augmented robotic craftsmanship: Enabling interactive robotic fabrication through mixed reality interfaces",** University of Stuttgart. Co-advisor: M. Maierhofer, Supervisors: J. Knippers, A. Menges 2020
Yue Qi, Ruqing Zhong, **"Working with uncertainties: An adaptive fabrication workflow for bamboo structures"**, University of Stuttgart. Co-advisor: H. J. Wagner, Supervisors: J. Knippers, A. Menges 2020

Mobin Moussavi, Hana Svatos-Raznjevic, **"Design based on availability: Generative design and robotic fabrication workflow for non-standardized sheet metal leftovers"**, University of Stuttgart. Co-advisor: A. Koerner, Supervisors: J. Knippers, A. Menges 2019

Nima Zahiri, **"Electroactive skin: Towards bio-inspired soft responsive building envelopes"**, University of Stuttgart. Co-advisors: J. Petrs, R. Neuhaus, Supervisors: H. Dahy, A. Menges 2019

Samantha Melnyk, Tamara Rosales, Robert Faulkner, Naomi Tashiro, **"Haptic reality: Novel interfacing for informed assembly systems"**, University of Stuttgart. Co-advisors: D. Wood, T. Cheng, Supervisors: A. Menges, K. Kuchenbecker 2019

REFERENCES

Achim Menges, Director, Institute for Computational Design and Construction (ICD), University of Stuttgart

Terry Knight, Professor of Design and Computation, Department of Architecture, Massachusetts Institute of Technology, MA, USA

Stefanie Mueller, Associate Professor, Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, MA, USA