

Alexandros Haridis

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EDUCATION

- 2022 **Ph.D. in Architecture: Design and Computation**, Department of Architecture
Massachusetts Institute of Technology. GPA: 5.0/5.0
- 2017 **M.S. in Computer Science**, Department of Electrical Engineering & Computer Science
Massachusetts Institute of Technology. GPA: 5.0/5.0
- 2016 **SMArchS in Design and Computation**, Department of Architecture
Massachusetts Institute of Technology. GPA: 5.0/5.0
- 2014 **Diploma Architect-Engineer** (M.Arch. equivalent)
Aristotle University of Thessaloniki. GPA: 8.8/10.0

PUBLICATIONS

Peer-reviewed Journal Articles

- 2022 "Geometry of Point-Line Arrangements Containing Shapes: Mathematical Properties and Applications to Shape-Rewriting Programs." **A. Haridis**
Computer-Aided Design Journal [Accepted]
- "Analysis of Shape Grammars: Continuity of Rules." **A. Haridis**, George Stiny
Environment and Planning B: Urban Analytics and City Science 49(7): 1929—1948
- 2021 "SHREC'21: Quantifying Shape Complexity." MF Arslan, **A. Haridis**, PL Rosin, S Tari,
C Brassey, JD Gardiner, A Genctav, M Genctav.
Computers & Graphics 102: 144—153
- 2020 "Structure from Appearance: Topology with Shapes, without Points." **A. Haridis**
Journal of Mathematics and the Arts 14(3): 199—238
- "The Topology of Shapes Made with Points." **A. Haridis**
Environment and Planning B: Urban Analytics and City Science 47(7): 1279—1288

Textbook projects

- 2018-present *Introduction to Artificial Intelligence: 6.034 Teaching Notes*
Department of Computer Science and Electrical Engineering, MIT
A. Haridis, P. H. Winston, K. Koile, R. Davis

- Distributed to staff and students of "6.034/6.844 Artificial Intelligence" since Fall 2020.

PhD Thesis

- 2022 **Visual Calculating Aesthetic Value: Formal Models of Description and Evaluation**
Department of Architecture, Massachusetts Institute of Technology, August 2022.

AWARDS AND HONORS

- 2022 **Hyzen Fellow, Massachusetts Institute of Technology**
Awarded for the last semester of doctoral studies, 2021/2022
- 2019 - 2022 **Onassis Foundation Scholar**
Awarded for doctoral studies in the US
- 2018 **Bill Mitchell++ Award, Massachusetts Institute of Technology**
Awarded for doctoral research in design and computation
- 2017 **Presidential Fellow, Massachusetts Institute of Technology**
Awarded to 1 student for five-year doctoral studies in design computation
- 2015 - 2017 **AG Leventis Foundation Scholar**
Two-year Scholarship for full-time master's studies in the US
- 2018 **Graduate Student Council Travel Grant**
Selected from the MIT Graduate Student Council
- 2016 - 2018 **Avalon Travelling Grant, Department of Architecture, MIT**
Multiple grants awarded for presentation at international conferences
- 2016 **Floyd Naramore Architectural Fellowship, Massachusetts Institute of Technology**
Awarded for master's research in design and computation
- 2015 **Hyzen Fellow, Massachusetts Institute of Technology**
One-semester tuition and stipend for master's research, 2015/2016
- 2015 **Finalist, NASA Centennial Challenge: 3D Printed Habitat**
Design and fabrication competition with the MIT Digital Structures Group
- 2015 **Gerondelis Foundation Grant**
Awarded for master's research at MIT
- 2014 - 2015 **Department of Architecture Fellowship, Massachusetts Institute of Technology**
Graduate fellowship for master's studies in design and computation
- 2014 **Highest Honors, Diploma Architect-Engineer, AUTH**
Distinction for graduating in the highest tier from the Department of Architecture
- 2013 **Honorable Mention, National Architectural Ideas Competition on Public Spaces**
With Horotechniki, S.A., Thessaloniki, Greece
- 2011, 2013 **15th and 16th Biennale of Young Artists, BJCEM**
Among 15 artists from Europe and the Mediterranean

TEACHING EXPERIENCE

Graduate of the **2018 Kaufman Teaching Certificate Program**, MIT Teaching+Learning Lab

- 8-Session seminar on evidence-based practice in course design and classroom teaching

College of Art, Media, and Design, Northeastern University, Boston, MA

2022-2023 *Assistant Teaching Professor*

Visualization Technologies, Level I & Level II

- Taught two core graduate courses on interactive data visualization technologies open to design majors and minors from all disciplines. Research discussion and presentations on topical areas of research in architecture, urbanism, machine learning, digital heritage. (60 students)

Department of Architecture, MIT, Cambridge, MA

Graduate Teaching Assistant

2017-2021 Proseminar/Research Seminar in Computation

- Led small-group discussions on traditions of design computation research and scholarship. In-depth analysis of diverse issues from architectural theory, art, artificial intelligence, logic and mathematics, literary studies and aesthetics. (~10 SMArchS & PhD students)

2018-2020 Introduction to Shape Grammars I & II

- Prepared and delivered guest lectures on mathematics of shapes, geometry and topology, and grammatical analysis of style in art and architecture. (~12 students)

Spring 2020 Architectural Design Studio, Level II

- Assisted instruction in architectural design and project development for 12 undergraduate students, with an emphasis on social and cultural programs, integrating building technology and materials.

Spring 2020 Advanced Subject in Architectural Computation

- Assisted instruction in advanced digital technologies for parametric and volumetric modeling and 3D printing, with applications to product design, garments, and material design. (6 students)

Spring 2015 Design Across Scales and Disciplines

- Architectural cross-studio for design majors and minors from all five Schools of the Institute. Assisted instruction for design projects blending engineering, material science, and design. (~100 students)

Fall 2014 Architectural Design Option Studio

- Assisted instruction in architectural design and project development for 9 graduate students, focused on special programmatic and spatial building typologies in Boston.

2016, 2018 **Department of Electrical Engineering and Computer Science, MIT, Cambridge, MA**

Graduate Teaching Assistant

- Core introductory class on theories, methods, and applications of artificial intelligence. Taught weekly recitations for 60 students on artificial intelligence methods, developed and graded quizzes/exams, led weekly programming labs, advised students. *Evaluation Score: 6.8/7.0* (~350 students in total)

Department of Architecture, Boston Architectural College (BAC)

Spring 2017 Instructor at the *Advanced Architectural Design Studios*

DME2100 Research in Design Computation

- Designed and taught an introduction to computation research and scholarship for architecture students. Guided 6 students through assignments for skills-building, reading/writing, and a final project.

RESEARCH EXPERIENCE

- 2018-2022 **PhD Researcher, Department of Architecture, Massachusetts Institute of Technology**
Major: Design and Computation, Minor: Computability Theory and Applied Mathematics
Research Topics: Structural Mathematics in Architecture and Design, Shape Grammars, Computational Evaluation, History and Theory of Computation in Architecture and Science.
 Advisor: Prof. George Stiny
- 06—12/2020 **Principal Researcher, Computation Group, Department of Architecture**
 Responsible for the research design and supervision of work for two MSc students, funded through the Summer Work and Pedagogy Program.
- 06—09/2019 **Research Intern, OPT Industries Inc., Cambridge, MA**
 Led research on representation and efficient transfer of geometric information to CNC machines
- 09—12/2016 **Research Assistant, Computer Science and Artificial Intelligence Laboratory, MIT**
 Mentor: Professor Patrick H. Winston, CSAIL Group: Genesis Group
 - Conducted experimental studies aimed at understanding language-enabled descriptions for envisioning and recreation of 3D spatial configurations
- 06—12/2015 **Research Assistant, Digital Structures Group, MIT Department of Architecture**
 Mentor: Professor Caitlin Mueller
 - Worked on topics in computer graphics and shape modeling for applications in computational structural design and design space exploration

SELECTED TALKS AND WORKSHOPS

- May 2021 **Eurographics 2021, SHREC'21 Workshop Track on "Quantifying Shape Complexity" for 3D Objects Retrieval**
 Workshop track co-organizer
- Dec 2020 **Research Topics in Computation and Design, National Technical University of Athens Post-Graduate Program**
 Invited speaker
- Jul 2018 **International Conference on Design Computing and Cognition (DCC'18), Politecnico di Milano, Lecco, Italy**
 Research paper presenter
- Jan 2018 **International Conference on Design Creativity (ICDC), University of Bath, Bath, UK**
 Research paper presenter
- Jan 2018 **International Design Workshop, MIT Computation Group and UAI Design Lab, Funded by the MIT MISTI-Chile Program**
 Workshop co-organizer
- Jul 2016 **International Conference on Design Computing and Cognition (DCC'16), Northwestern University, Chicago, USA**
 Selected workshop presenter

SERVICE

- Reviewing **Environment and Planning B: Urban Analytics and City Science** (2019-today)
Artificial Intelligence for Eng. Design, Analysis, Manufacturing - AIEDAM (2019-today)
IEEE Transactions on Learning Technologies (2022-today)
Nexus Network Journal: Architecture and Mathematics (2018-2019)
Design Computing and Cognition Conference Series (2018-2022)
- 2022 **Curriculum Development**, College of Art, Media, and Design, Northeastern University
 - Led the development of a summer bootcamp in the areas of creative computing, visual communication, and research fundamentals, to be taken every year by entering graduate students
- 2021 **Graduate Admissions Committee** (Member) for SMArchS & PhD in Computation, MIT
- 2018-2020 **Cabinet Representative for PhD students**, Architecture Student Council (ASC), MIT
- 2015-2021 **Interdepartmental Subjects Listing Contributor**, Department of Architecture, MIT
 - Contributed and maintained a subjects listing for course selection across disciplines at MIT
- Organization **Co-organizer, 4.583 Forum in Computation**, MIT Computation Group.
 - Organized lecture series with invited speakers working on topical areas in Computational Design, Human-Computer Interaction, Machine Learning, Computational Biology. Fall/Spring 2017-2018
- Mentoring & Advising 3 Graduate (MArch, SMArchS) students from the MIT Department of Architecture
1 Undergraduate (BSc) student from the MIT Department of Mathematics and EECS
List of Names available upon request.

PROFESSIONAL EXPERIENCE

- 06—08/2016 **10xBeta New Lab, Brooklyn, NY**
Computational design consultant on generative shape studies for engineering product design.
- 06—08/2016 **Anmahian Winton Architects, Cambridge, MA**
Architectural design and computational support for the Knafel Building at Harvard University.
- 2018-2013 **Egnatia Group of Companies, Thessaloniki, Greece**
Assistant Architect
 - Participated in the design team for >15 built projects in Greece, including private residential buildings, commercial office buildings and competition entries.

LANGUAGES AND TECHNICAL SKILLS

Languages:

Greek (Native), English (Fluent), Armenian (Mother's Language), German (Beginner)

Computer Programming and design software:

Python, Processing/Java, JavaScript/CSS/HTML, LaTeX
Adobe Suite for Image/Video Editing, Autodesk Rhino/Grasshopper, Autocad, 3DSMax

OUTREACH & OTHER ACTIVITIES

- Invited Critic **Massachusetts Institute of Technology, Georgia Institute of Technology, Wenworth Institute of Technology, Boston Architectural College, National Technical University of Athens, Aristotle University of Thessaloniki**
- Exhibitions (Selection) 3D Building Reconstruction research with Hosta Labs, Exhibited at poster session of the New England Symposium on Graphics, MIT CSAIL (Cambridge, MA, April 14, 2019).
 "Elements of Spatial Configuration of a Settlement of Huts", Boston Architectural College Faculty Exhibit (Boston, MA, Feb-May, 2018).
 "Talking about Spatial Configurations: Pilot Study on Description Styles," Exhibited at the poster session of DCC'16 - International Conference on Design Computing and Cognition (Northwestern University, Chicago, June 2016)
 "Berlin Award 2016 Heimat in der Fremde", Exhibited at the German Pavilion at the 15th Venice Architecture Biennale (Venice, May 2016).
 "Ouroboros", Nasa Centennial Challenge: 3D Printed Habitat, Exhibited at Maker Faire by Maker Media, MIT Digital Structures Group (New York, October, 2015). **MIT News**, October 15, 2015
 "Paperwave Pavilion", Exhibited at the International Association of Shell and Spatial Structures, with MIT Digital Structures Group (Amsterdam, August, 2015).
 Proposal for the "National Ideas Competition for the Recreation of Public Spaces", Exhibited at the Byzantine Museum and the Center of Architecture of Thessaloniki (November, 2013).
- Non-Profit Co-founder of Archstudies.gr, a non-profit online newspaper platform focused on publishing and archiving student work from Schools of Architecture and Visual Arts in Greece (2011 - today).
- Membership **Association for Computing Machinery** (2014 -)
Association for Computer-Aided Design in Architecture (2014-)
American Society for Aesthetics (2020-)
MIT Hellenic Student Assosiation (Member, 2014-2020)
- Pedagogical Training **Advancing Your DEI Strategy Across Viewpoints**, Academic Impressions, 2022
Implicit Bias in Admissions Processes, MIT Institute Community and Equity Office, 2021
- Volunteer Teaching **Instructor**, Development of an Art and Science Course "Arithmetic with Shapes" for K-12 students from the Boston area. MIT Educational Studies Program (ESP), July-August 2017
- Other
- Semi-professional electronic music producer and performer. Discography (2009-2015): 4 personal EPs, multiple remixes for other artists, appearances in 5 music compilations (Record releases in Greece, Italy, Norway, Germany)
 - MIT Tennis Club