

ALEXANDROS HARIDIS

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EDUCATION

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

RESEARCH & TEACHING EXPERIENCE

- 2017-Present **PhD Researcher**, *MIT Department of Architecture*
Research topics: Computability of Aesthetic Evaluation; Mathematics of Shapes and Shape Grammars; Foundations, History, and Pedagogy of Artificial Intelligence.
Advisor: Prof. George Stiny
- 2014-2021 **Graduate Teaching Assistant**, *MIT Department of Architecture*
- Proseminar in Computation (4.542/4.581), Fall/Spring 2016-2021
 - Introduction to Shape Grammars I (4.540), Fall 2019-2021
 - Introduction to Shape Grammars II (4.541), Spring 2016-2021
 - Architecture Design Studio II (4.024), Spring 2020
 - Special Subject in Computation: Superseding Parts, Computing Wholes (4.s56), Spring 2020
 - Design Across Scales and Disciplines (4.110/MAS.650), Spring 2015
 - Architecture Design Option Studio (4.154), Fall 2014
- 2016, 2018 **Graduate Teaching Assistant**, *MIT Department of Electrical Engineering & Computer Science*
Artificial Intelligence (6.034/6.844), with Prof. Patrick Winston, Dr. Kimberle Koile, Prof. Randall Davis
- 01–05/2017 **Lecturer**, *Boston Architectural College*
- 09–12/2016 **Research Affiliate**, *Genesis Group, MIT Computer Science & Artificial Intelligence Lab*
With Prof. Patrick H. Winston
- 06–12/2015 **Research Assistant**, *Digital Structures Group, MIT Architecture/Building Technology*
With Prof. Caitlin Mueller

AWARDS & HONORS

- 2022 **Hyzen Fellowship**, Massachusetts Institute of Technology
- 2019 - 2022 **Onassis Foundation Scholar**
- 2018 **Bill Mitchell++ Award**, Massachusetts Institute of Technology
- 2018 **Graduate Student Council Travel Grant**, Massachusetts Institute of Technology
- 2017 **Presidential Fellowship**, Massachusetts Institute of Technology
- 2015 - 2017 **AG Leventis Foundation Scholar**
- 2017 **Luys Foundation Grant**
- 2015 **Hyzen Fellowship**, Massachusetts Institute of Technology
- 2015 **Finalist, NASA Centennial Challenge: 3D Printed Habitat** (as team member)
- 2015 **Gerondelis Foundation Grant**
- 2014 - 2016 **Department of Architecture Graduate Fellowship**, Massachusetts Institute of Technology
- 2014 **Highest Honors, Diploma Architect-Engineer**, Aristotle University, Greece
- 2011, 2013 **15th and 16th Biennale of Young Artists**, BJCEM

PUBLICATIONS

[Book-length Teaching Notes](#)

- 2021 **Introduction to Artificial Intelligence at MIT: 6.034 Teaching Notes**. Alexandros Haridis.
Department of Electrical Engineering & Computer Science, Massachusetts Institute of Technology.
- Distributed internally since Fall 2020 to staff and students of "6.034/6.844 Artificial Intelligence".

[Peer-reviewed Journal Articles](#)

- 2022 **The geometry of point-line arrangements containing shapes: mathematical properties and applications in shape grammars**. Alexandros Haridis.
Computer-Aided Design [Forthcoming]
- Analysis of shape grammars: continuity of rules**. [Alexandros Haridis](#) and George Stiny.
Environment and Planning B: Urban Analytics and City Science. doi:10.1177/23998083211044734
- 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**. Alexandros Haridis.
Journal of Mathematics and the Arts 14(3):199–238
- The topology of shapes made with points**. Alexandros Haridis.
Environment and Planning B: Urban Analytics and City Science 47(7):1279–1288

[Expository Articles and Preprints](#)

- 2020 **Some open problems regarding the number of lines and slopes in arrangements that contain shapes**. Alexandros Haridis, *arXiv:2011.10700*, November 2020
- 2020 **The geometry of arrangements that contain shapes**. Alexandros Haridis.
arXiv:2010.14250, December 2020

Conference Activities

- 2018 **Notes for an improvisational specification of design spaces.** Alexandros Haridis.
Proc. 8th International Conference on Design Computing and Cognition (DCC), Politecnico di Milano, Lecco campus, Italy, July 2018
- Some issues concerning the use of design-space formalisms in creative domains**
Alexandros Haridis. *Proc. 5th International Conference on Design Creativity (ICDC)*, University of Bath, UK, January 2018
- 2016 **Talking about architectural compositions: pilot study on description styles and envisioning**
Alexandros Haridis and Patrick Winston. *Poster: 7th International Conference on Design Computing and Cognition*, Northwestern University, Chicago, June 2016
- Specification of a spatial design space: shape descriptions and continuity**
Alexandros Haridis. *Presentation at the "Design Descriptions" Workshop, 7th International Conference on Design Computing and Cognition*, Northwestern University, Chicago, June 2016

Invited Talks and Other Presentations

- Analysis of Rule Continuity in Shape Grammars**
Nov 2021 Guest lecture at 4.540: Intro to Shape Grammars I
Massachusetts Institute of Technology, Cambridge, MA
- Research Topics in Computation and Design**
Dec 2020 Guest lecture at the Post-Graduate Research Program in Architecture
National Technical University of Athens, Athens, Greece
- Algebras of Shapes U_{ij}**
Nov 2019 Guest lecture at 4.540: Intro to Shape Grammars I
Massachusetts Institute of Technology, Cambridge, MA
- Aesthetic Measure and Algorithmic Aesthetics**
Apr 2019 Guest lecture at 4.542: Proseminar in Computation
Massachusetts Institute of Technology, Cambridge, MA
- Improvisation, calculating with imagination**
Aug 2017 Talk at the Dalcroze Studies Conference, *Universite Laval, Quebec City, Canada*
- Design Spaces and their improvisational specification**
Oct 2016 Talk at the Third Annual Workshop on Audio and Visual Synthesis, *Dartmouth College, NH*
- Design applications of shape blending**
Dec 2015 Internal talk, Digital Structures Group, *Massachusetts Institute of Technology, Cambridge, MA*

PhD Dissertation

- 2022 **Mathematics of Shape Grammars and Computability of Evaluation in Aesthetic Systems**
Massachusetts Institute of Technology, Cambridge, MA
Committee: George Stiny (advisor), Terry Knight, Caitlin Mueller

SERVICE

- Reviewing *Journals:*
 Environment and Planning B: Urban Analytics and City Science (2019-2021)
 Artificial Intelligence for Engineering Design, Analysis and Manufacturing (AI EDAM) (2019-2021)
 Nexus Network Journal (2018); Technology, Architecture+Design (TAD) (2018-2019)
Conferences: Design Computing and Cognition (DCC) (2018-2022)
- 2021 **Graduate Admissions Committee Member**, *SMArchS & PhD in Computation, MIT*
- 2018-2020 **Cabinet Representative for PhD students**, *Architecture Student Council (ASC), MIT*
- 2015-2021 **Interdepartmental Subjects Listing in Computation, Contributor**, *MIT Department of Architecture*
- Organization **Co-organizer, "Quantifying Shape Complexity"**, *Eurographics 2021, SHREC'21 Workshop Track on 3D Objects Retrieval, Spring 2021*
- Co-organizer and Project Leader, "Algorithmic & Mathematical Methods in Design"**
MIT Department of Architecture SWAP program, Summer 2020
- Co-organizer, "Design without Disciplines" Workshop**, *MIT Computation Group and UAI Design Lab January 2018 (Santiago, Chile) and January 2019 (Cambridge, MA). Funded by MIT MISTI-Chile.*
- Co-organizer, 4.583 Forum in Computation**, *MIT Computation Group, Lecture series with invited speakers, Fall 2017, Fall/Spring 2018*
- 2017 **Volunteer Instructor, Summer Course "Arithmetic with Shapes"**, *K12 students from the greater Boston area, MIT Educational Studies Program, July-August 2017, Cambridge, MA*

PROFESSIONAL EXPERIENCE

- 06—09/2019 **Computational Design & Software Development**, *OPT Industries Inc, Cambridge, MA*
- Developed computational tools and algorithms for complex geometric problems
 - Led research on efficient digital communication workflows between an in-house CAD system and a CNC manufacturing machine
- 06—10/2017 **Machine Learning Scientist and Advisor**, *Hosta a.i., Cambridge, MA*
- Led internal research on automatic 3D space inference from 2D image information
 - Developed prototype system for image segmentation and classification using deep neural network technology, and presented the system at professional venues
- 07—08/2016 **Computational Design Specialist**, *10xBeta, New Lab, New York*
- 06—07/2016 **Computational Design Specialist**, *Anmahian and Winton Architects, Cambridge, MA*
- 2013-2015 **Project Architect & Computational Design Consultant**, *Horotechniki S.A., Thessaloniki, Greece*
- Assistant Architect**, *Egnatia Group S.A., Thessaloniki, Greece*
- 2009-2013 • Participated in design teams for more than fifteen built projects in Greece

OUTREACH & OTHER ACTIVITY

- 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
- Mentoring & Advicing Graduate (MArch, SMArchS) students from the MIT Department of Architecture
Undergraduate (BSc) students from the MIT Departments of Mathematics and EECS
List of Names available upon request.
- Membership Association for Computing Machinery (ACM)
Association for Computer-Aided Design in Architecture (ACADIA)
American Society for Aesthetics (ASA)
- Pedagogical Training Implicit Bias in Admissions Processes, *MIT Institute Community and Equity Office, 2021*
Kaufman Teaching Certificate Program, *MIT Teaching + Learning Lab, 2018*
- Languages Greek (Native)
English (Fluent)
Armenian (Conversational, Mother's Language)
German (Beginner)
- 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).
 - Member, Volunteer, MIT Hellenic Student Association
 - MIT Tennis Club

REFERENCES

References are available upon request.