

# Ardavan Bidgoli

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Portfolio: <https://www.ardavan.io> | GitHub: <https://github.com/ardibid> | LinkedIn: <https://www.linkedin.com/in/ardavanbidgoli>

## Education

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- 2022 (expected) **Carnegie Mellon University**, Pittsburgh, PA.  
Ph.D. Candidate in Computational Design, Prof. Daniel Cardoso Llach.  
Thesis topic: A Context-aware Approach to Creative Computing Toolmaking: Machine Learning-based Meta-Tools for Designers, Architects, and Makers.
- 2015 **The Pennsylvania State University**, University Park, PA.  
M.Arch. II, P.P.T.A. in Design Computing, Prof. Daniel Cardoso Llach.  
Thesis Topic: Motion Grammar for Robotic Fabrication
- 2012 **School of Architecture, Faculty of Fine Arts, University of Tehran**, Tehran, Iran.  
Master of Architecture  
Thesis subject: Application and Evaluation of Algorithmic Procedures in Dwelling Projects.
- 2009 **School of Architecture, Faculty of Fine Arts, University of Tehran**, Tehran, Iran.  
Bachelor of Architecture

## Work Experiences

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- 2019 **Autodesk Robotics Lab**, San Francisco, CA, USA.  
Robotics Creative Technologist Intern, Autodesk Research, Office of Chief Technology Officer (OCTO). Project Lead and Researcher on *Project Chivo*, a Maya Machine Learning-based Plug-in for Robotic Cinematography.
- 2018 **Autodesk BUILD Space**, Boston, MA, USA.  
Robotic Construction intern, OCTO. Project Lead, Researcher, and Developer in Automated *Robotic Construction Project*, a platform for human-robot collaboration in construction of timber structures. [\[link\]](#)
- 2017 **Autodesk Emerging Technologies**, San Francisco, CA, USA.  
Design and Fabrication for AR/VR Intern, OCTO. Project Manager and Developer at Project *V-Dream*, an Immersive Platform for High Dimensional Solution Space Navigation. Integrating Stingray Platform and Project Dreamcatcher Using Machine Learning Methods. [\[link\]](#)
- 2016 **Autodesk Applied Research Lab**, San Francisco, CA, USA.  
Computational Design and Fabrication Intern, OCTO. Designer at Project *MeshBot*, Collaborative Automated Robotic Fabrication Platform. Integrating Industrial Robotic Arms, Computer Vision, and Computer Aided Manufacturing (CAM). Designing Robotic End-effectors. Developing Electronic Systems for Robotic End-effectors. [\[link\]](#)
- 2015 **Bentley Systems**, Exton, PA, USA.  
Product Management Intern at Generative Component (GC) Team.

## Peer-reviewed Publication & Exhibitions

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- 2022 **“Bubble2Floor: A Pedagogical Experience With Deep Learning for Floor Plan Generation**  
Association for Computer Aided Design in Architecture Conference 2022, with Pedro Veloso, Jinmo Rhee, and Manuel Ladron de Guevara. [\[link\]](#)
- 2020 **“Towards a Distributed, Robotically Assisted Construction Framework: Using Reinforcement Earning to Support Scalable Multi-Drone Construction in Dynamic Environments”**  
Association for Computer Aided Design in Architecture Conference 2020, with Zhihao Fang, Yuning Wu, Ammar Hassonjee, and Daniel Cardoso Llach. [\[link\]](#)
- 2020 **“Artistic Style in Robotic Painting; a Machine Learning Approach to Learning Brushstroke from Human Artists”**  
International Conference on Robot and Human Interactive Communication (RO-MAN), with Manuel Ladron De Guevara, Cinnie Hsiung, Jean Oh, and Eunsu Kang. [\[link\]](#)
- 2020 **“V-Dream: Immersive Exploration of Generative Design Solution Space”**  
International Conference on Human-Computer Interaction, with Mohammad Keshavarzi and Hans Kellner. [\[link\]](#)
- 2019 **“A Machine Learning Framework for Developing Creativity Support Tools”**

- 2019 International Conference on Computer Creativity 2019, Doctoral Consortium.  
**“Machinic Surrogates: Human-Machine Relationships in Computational Creativity”**
- 2018 International Symposium on Electronic Arts 2019, with Eunsu Kang, Daniel Cardoso Llach. [[link](#)]  
**“DeepCloud”**
- 2018 Exhibited in the NIPS Creativity Workshop Gallery 2018, with Pedro Veloso. [[link](#)]  
**“DeepCloud: the application of a data-driven generative model in design”**
- 2018 Association for Computer Aided Design in Architecture Conference 2018, with Pedro Veloso. [[link](#)]  
**“Automated Construction”**
- 2018 Autodesk’s Spotlight Lecture Series, Boston, MA.  
**“Image Classification for Robotic Plastering with Convolutional Neural Network”**
- 2017 Rob|Arch2018, Robotic Fabrication in Architecture, Art, and Design, with Josh Bard, Wei Wei Chi.  
[\[link\]](#)
- 2017 **“Assisted Automation: Three Learning Experiences in Architectural Robotics”**  
 International Journal of Architectural Computing, with Daniel Cardoso Llach and Shokofeh Darbari.  
[\[link\]](#)
- 2016 **“Of Hands and Robots: ‘Assisted Automation’ and ‘Robotic Enactments’ in Creative Robotics Pedagogy”**  
 FABLEARN 2016: 6th Annual Conference on Creativity and Making in Education (ACM SIGCHI), with Daniel Cardoso Llach and Shokofeh Darbari, Stanford, CA, U.S.A.
- 2016 **“Robotic Motion Grammar”**  
 Published in the Proceedings of the SimAUD, UCL, London, U.K.
- 2015 **“Towards a Motion Grammar for Robotic Stereotomy”**  
 Published in the Proceedings of CAADRIA 2015, May 2015, with Daniel Cardoso Llach. [[link](#)]

## Academic Projects/Positions Involved

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- 2021-Now **Lead Graduate Instructor, CMU.**  
 Course Founder and Lead instructor, 48-770 Introduction into Machine Learning in Design, a Graduate-level Course on the Applications of Machine Learning Generative Models for Designers.
- 2020-Now **Team CRAIDL, CMU.**  
 Co-Founder of Creative AI And Design Launchpad, a Research Group Focused on Shaping the Future of Design Fields through AI. [[link](#)]
- 2020-2021 **Rethinking Autonomy in Construction, CMU.**  
 Research Lead in The Team of Researchers Developing a Semi-Autonomous Drone Construction Using Reinforcement Learning Algorithm.
- 2018-2020 **Robotics Fellow, CMU.**  
 Architectural Robotics Researcher and Instructure, Leading Research Projects in CMU dFab Robotic Team.
- 2018-2020 **Robot|Art Research Team, CMU.**  
 Developing Machine Learning methods for creative application in robotics.
- 2016-2018 **Robotic Plastering Research, CMU.**  
 Developing computer vision system (hardware and software) for machine-learning based computer vision feedback loops. Under supervision of Josh Bard, CMU dFab.
- 2014-2016 **SALA Robotic Fabrication Lab Initiative Team, Penn State.**  
 Member of Initiative Team, R.A, with Prof. Daniel Cardoso Llach and Jamie Heiman, The Pennsylvania State University.
- 2014-2015 **Studies on Robotic Hot Wire Cutting, Penn State.**  
 Research project, in collaboration with SALA Fabrication Lab.

## Honors and Awards

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- 2021 **Computational Design Research Support Micro Grant, School of Architecture, CMU.**
- 2018 **ACADIA 2018 Conference Travel Grant, Association for Computer Aided Design in Architecture.**
- 2016 **Best Project Prize, 15-112 Project Review, School of Computer Science, CMU.**
- 2016 **3<sup>rd</sup> Grand Prize and Best Use of API Prize, 112 Hackathon, CMU.**
- 2016 **Full Tuition Waiver and Stipend for PhD Program, CMU School of Architecture.**
- 2015-2016 **SCDC Student Research Grant for PhD studies, Penn State.**
- 2015-2016 **Robert Graham Endow Grad Fellowship, Penn State.**
- 2015 **Architectural Research Centers Consortium (ARCC) King Student Medal, Penn State.**
- 2015 **Stuckeman School Graduate student travel Grant, Penn State.**

2013-2015

**Full Tuition Waiver and Stipend for Masters' program**, Penn State.

## Teaching Experiences

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2021-Now

**Inquiries into Machine Learning and Design, Lead Instructor**, CMU.

2017-2020

**Introduction to Architectural Robotics, Instructor**, CMU.

2017-2018

**Fundamentals of Computation Design, T.A.**, CMU.

2016

**Inquiry into Computation, Architecture, and Design, T.A.**, CMU.

2016

**Robotic Fabrication Workshop, Tutor**, Penn State.

## Skills

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### *Programming Skills:*

Programming Languages **Python**  
**Processing**  
ML Packages **PyTorch**

### *Software Skills:*

**Rhinoceros**  
**Motive Motion Capture**  
**Adobe Suite**  
**RobotStudio**

### *Hands-on Skills:*

Prototyping **3D Print, Laser Cut**  
Robotics **ABB, Rotrics**