

Ardavan Bidgoli, PhD

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

Education

- 2022 **Carnegie Mellon University**, Pittsburgh, PA, USA.
Ph.D. in Computational Design, GPA: 3.98
Advisor: Prof. Daniel Cardoso Llach.
Thesis topic: A Situated Collaborative Framework for Machine Learning-Based Toolmaking for Creative Practitioners.
- 2015 **The Pennsylvania State University**, University Park, PA, USA.
M.Arch. II, P.P.T.A. in Design Computing, GPA: 3.95
Advisor: 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, GPA: 3.7
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, GPA: 3.7

Work Experiences

- 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

- 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”**
International Conference on Computer Creativity 2019, Doctoral Consortium.
- 2019 **“Machinic Surrogates: Human-Machine Relationships in Computational Creativity”**
International Symposium on Electronic Arts 2019, with Eunsu Kang, Daniel Cardoso Llach. [\[link\]](#)
- 2018 **“DeepCloud”**
Exhibited in the NIPS Creativity Workshop Gallery 2018, with Pedro Veloso. [\[link\]](#)
- 2018 **“DeepCloud: the application of a data-driven generative model in design”**
Association for Computer Aided Design in Architecture Conference 2018, with Pedro Veloso. [\[link\]](#)
- 2018 **“Image Classification for Robotic Plastering with Convolutional Neural Network”**
Rob|Arch2018, Robotic Fabrication in Architecture, Art, and Design, with Josh Bard, Wei Chi. [\[link\]](#)
- 2017 **“Assisted Automation: Three Learning Experiences in Architectural Robotics”**
International Journal of Architectural Computing, with Daniel Cardoso and Shokofeh Darbari. [\[link\]](#)
- 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

- 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. [\[link\]](#)
- 2021 **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.
- 2020-2021 **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.

Teaching Experiences

- 2021-2022 **Inquiries into Machine Learning and Design, Lead Instructor, CMU.**
- 2017-2020 **Introduction to Architectural Robotics, Instructor, CMU.**

Honors and Awards

- 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.**
- 2015 **Robert Graham Endow Grad Fellowship, Penn State.**
- 2015 **Architectural Research Centers Consortium (ARCC) King Student Medal, Penn State.**

Skills

Programming Skills:

Programming Languages **Python**
ML Framework **PyTorch**
Robot Programming **RAPID**

Hands-on Skills:

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

Software Skills:

3D Modeling **Rhinoceros**
2D Design **Adobe Suite**
Game Engine **Unity**
Robotic Simulation **RobotStudio**
Motion Capture **Motive Motion Capture**