Ardavan Bidgoli, PhD

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Education

2022 **Ph.D. in Computational Design,** Carnegie Mellon University, Pittsburgh, PA, USA.
Dissertation: A Situated Collaborative Framework for ML-Based Toolmaking for Creative Practitioners.
Advisor: Dr. Daniel Cardoso Llach,
GPA: 3.98

2015 **M.Arch. in Design Computing,** Pennsylvania State University, State College, PA, USA.
Thesis: *Motion Grammar for Robotic Fabrication.*
Advisor: Dr. Daniel Cardoso Llach,
GPA: 3.95

2012 **Master of Architecture,** University of Tehran, Tehran, Iran.
Thesis: Application and Evaluation of Algorithmic Procedures in Dwelling Projects.
GPA: 3.7

2009 **Bachelor of Architecture,** University of Tehran, Tehran, Iran.
GPA: 3.7

Work Experiences

2019 **Autodesk Robotics Lab**, San Francisco, CA, USA.
Robotics Creative Technologist Intern. Researcher and Developer at *Project Chivo*, a Maya Machine Learning-based Plug-in for robotic Cinematography.

2018 **Autodesk BUILD Space**, Boston, MA, USA.
Robotic Construction Intern. Researcher and Developer at Project Automated *Robotic Construction*, a Platform for Human-Robot Collaboration in for Timber Structures. [link]

2017 **Autodesk Emerging Technologies**, San Francisco, CA, USA.
Design and Fabrication for AR/VR Intern. Researcher 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. 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**
International Conference of the Association for Computer Aided Design in Architecture Conference (CAADRIA), 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**
International Conference of the Association for Computer Aided Design in Architecture Conference (ACADIA) 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 M. Keshavarzi and Hans Kellner. [link]

2019 **A Machine Learning Framework for Developing Creativity Support Tools**
International Conference on Computer Creativity (ICCC), Doctoral Consortium.

2019 **Machinic Surrogates: Human-Machine Relationships in** Computational **Creativity**
International Symposium on Electronic Arts (ISEA), 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**

International Conference of the Association for Computer Aided Design in Architecture Conference (ACADIA), with Pedro Veloso. [link]

2018 **Image Classification for Robotic Plastering with Convolutional Neural Network**
Robotic Fabrication in Architecture, Art, and Design (Rob|Arch), with Josh Bard, Wei Wei Chi. [link]

2017 **Assisted Automation: Three Learning Experiences in Architectural Robotics**
International Journal of Architectural Computing (IJAC), with Daniel Cardoso and Shokofeh Darbari. [link]

2015 **Towards a Motion Grammar for Robotic Stereotomy**
International Conference of the Association for Computer-Aided Architectural Design Research in Asia (CAADRIA), 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]

2021-2022 **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 a 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 of Robotic Arms.

2016-2018 **Robotic Plastering Research,** CMU.
Developing Computer Vision System (Hardware and Software) for ML-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 Dr. Daniel Cardoso Llach and Jamie Heiman, The Pennsylvania State University.

Teaching Experiences

2021-2022 **Inquiries into Machine Learning and Design,** Lead Instructor, CMU.
2017-2022 **Introduction to Architectural Robotics,** Lead 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 (ACADIA).
2016 **Best Project Prize, 15-112 Project**, 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	●●●○
Robotics Framework	ROS	●●○○
Prototyping	Arduino	●●○○
Other	Java Script	●●○○
	HTML	●●○○
	Processing	●●○○

Hands-on Skills:

Robotics	ABB Robots	●●●●
Digital Fabrication	3D Print, CNC	●●○○

Software Skills:

Grasshopper	●●●●
RobotStudio	●●●●
Rhinoceros	●●●●
Adobe Suite	●●●●
Motive Motion Capture	●●○○
Unity	●●○○