

Ardavan Bidgoli

Curriculum Vitae

E-mail: abidgoli@andrew.cmu.edu

Web: www.ardavan.io | GitHub: www.github.com/ardibid | LinkedIn: www.linkedin.com/in/ardavanbidgoli

Education

- Aug'21 (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: Application of Machine Learning in Developing Toolmaking Apparatus in Art, Design, and Making.
- Aug'15* **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
- Sep'12* **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.
- Feb'09* **School of Architecture, Faculty of Fine Arts, University of Tehran**, Tehran, Iran.
Bachelor of Architecture

Work Experiences

- May'19 - Aug'19* **Autodesk Robotics Lab**, San Francisco, CA, USA.
Robotics Creative Technologist Intern, Autodesk Research, Office of chief technology officer (OCTO).
- May'18 - Aug'18* **Autodesk BUILD Space**, Boston, MA, USA.
Robotic Construction intern, OCTO.
Developer and designer for Automated Robotic Construction Project, a platform for human-robot collaboration in construction of timber structures.
- May'17 - Aug'17* **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.
- May'16 - Aug'16* **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.
- Jun'15 - Aug'15* **Bentley Systems**, Exton, PA, USA.
Product Manager Intern at Generative Component (GC) Team.

Academic Projects/Positions Involved

- May'20-Now* **Rethinking Autonomy in Construction**, CMU.
Leading the team of researchers developing a Semi-Autonomous drone construction using reinforcement learning algorithm.
- Aug'18-Now* **Robotics Fellow**, CMU.
Architectural Robotics Researcher and Instructure.
- Jan'18- May'20* **Robot|Art Research Team**, CMU.
Developing Machine Learning methods for creative application in robotics.
- Aug'16- Aug'18* **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.
- Jul'14 – Aug'16* **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.
- Aug'14 - Aug'15* **Studies on Robotic Hot Wire Cutting**, Penn State.
Research project, in collaboration with SALA Fabrication Lab.

Research Interests

Creative Machine Learning
Creative Robotics
Robotic Fabrication

Peer-reviewed Publication & Exhibitions

- 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. (Forthcoming)
- 2020 **“V-Dream: Immersive Exploration of Generative Design Solution Space”**
International Conference on Human-Computer Interaction, with Mohammad Keshavarzi and Hans Kellner.
- 2019 **“A Machine Learning Framework for Developing Creativity Support Tools”**
International Conference on Computer Creativity 2019, Doctoral Consortium.
- 2019 **“Machinic Surrogacy”**
International Symposium on Electronic Arts 2019, with Eunsu Kang, Daniel Cardoso Llach.
- 2018 **“DeepCloud”**
Exhibited in the NIPS Creativity Workshop Gallery 2018, with Pedro Veloso.
- 2018 **“DeepCloud: the application of a data-driven generative model in design”**
Association for Computer Aided Design in Architecture Conference 2018, with Pedro Veloso.
- 2018 **“Automated Construction”**
Autodesk’s Spotlight Lecture Series, Boston, MA.
- 2018 **“Image Classification for Robotic Plastering with Convolutional Neural Network”**
Rob|Arch2018, Robotic Fabrication in Architecture, Art, and Design, with Josh Bard, Wei Wei Chi.
- 2017 **“Assisted Automation: Three Learning Experiences in Architectural Robotics”**
International Journal of Architectural Computing, with Daniel Cardoso Llach and Shokofeh Darbari.
- 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.

Honors and Awards

- Nov’18 **ACADIA 2018 Conference Travel Grant**, Association for Computer Aided Design in Architecture.
- Dec’16 **Best Project Prize, 15-112 Project Review**, School of Computer Science, CMU.
- Nov’16 **3rd Grand Prize and Best Use of API Prize, 112 Hackathon**, CMU.
- Aug’16 **Full Tuition Waiver and Stipend for PhD Program**, CMU School of Architecture.
- Aug’15- Aug’16 **SCDC Student Research Grant for PhD studies**, Penn State.
- Aug’15 & Jan’16 **Robert Graham Endow Grad Fellowship**, Penn State.
- May’15 **Architectural Research Centers Consortium (ARCC) King Student Medal**, Penn State.
- Feb’15 **Stuckeman School Graduate student travel Grant**, Penn State.
- Jan’13- Aug’15 **Full Tuition Waiver and Stipend for Masters’ program**, Penn State.

Teaching Experiences

- Spring '20 **Learning Matters: Exploring Artificial Intelligence in Architecture and Design, Instructor**, CMU.
- Fall’17-Now **Introduction to Architectural Robotics, Instructor**, CMU.
- Spring’17, '18 **Fundamentals of Computation Design, T.A.**, CMU.
- Fall’16 **Inquiry into Computation, Architecture, and Design, T.A.**, CMU.
- Spring’16 **Robotic Fabrication Workshop, Tutor**, Penn State.

Peer-Review Contributions

2020 CAADRIA Conference 2020, paper reviewer.
2019 ACM SIGGRAPH Conference 2019, paper and project reviewer.
2019 Graduate Admission Committee - Master of Computational Design, board member, CMU.
2016 International Research Journal of Automation in Construction.

Skills

Programming:

Languages

Python
JavaScript
Processing, Arduino
Tensorflow, Keras

ML Packages

Software Skills:

Autodesk **AutoCAD**
Rhinoceros
Adobe Suite
ABB **RobotStudio**

Hands-on Skills:

Prototyping

Robots **ABB**
Fab. **3D Printing, CNC, Laser Cut**