

Elizabeth “Bibit” Bianchini

I am a PhD student interested in what it takes to get robots out of labs and into the world. Specifically, I am currently working on how to build dynamics models of novel objects as quickly as possible, so that we can utilize mature model predictive control techniques for robotic manipulation in the wild.

Robotician, Mechanical Engineer
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Looking for 2023 internships.

EDUCATION

University of Pennsylvania - Ph.D. Mechanical Engineering

Expected Graduation: Spring 2025

- Advised by Michael Posa and Dan Koditschek

Stanford University - M.S. Mechanical Engineering

Class of 2020

- Specialization in Mechatronics

Massachusetts Institute of Technology - B.S. Mechanical Engineering

Class of 2018

- Concentration in Philosophy

PUBLICATIONS

- [1] B. Bianchini, M. Halm, N. Matni, and M. Posa, “Generalization bounded implicit learning of nearly discontinuous functions,” in *Learning for Dynamics and Control Conference*. PMLR, 2022, pp. 1112–1124.
- [2] B. Bianchini, P. Verma, and J. K. Salisbury, “Towards human haptic gesture interpretation for robotic systems,” in *2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE, 2021, pp. 7334–7341.
- [3] E. Bianchini, “Fabricating sand cast parts for a herreshoff steam engine,” Undergraduate Thesis, Massachusetts Institute of Technology, 2018.
- [4] S. Resnick, E. Bianchini, K. Kocher, and A. McInroy, “Tool attachment for raking mortar joints,” U.S. Patent 10,544,597, December, 2017. [Online]. Available: <https://patents.google.com/patent/US10544597>

AWARDS

National Defense Science and Engineering Graduate (NDSEG) Fellow

2020 to present

National Science Foundation (NSF) Graduate Research (GRFP) Fellow (declined)

2020

Ford Foundation Predoctoral Scholar (declined)

2020

Threshold Ventures Fellow (formerly known as DFJ Fellowship)

2019

1st Place in Undergraduate Division, Collegiate Inventors Competition [4]

2018

RESEARCH EXPERIENCE

Penn DAIR Lab and Kod*Lab Robotics Labs - PhD Student

June 2020 to present

Applies machine learning of contact dynamics to enable control of robotic systems [1].

Stanford Salisbury Robotics Lab - Graduate researcher and consultant

Dec. 2019 to Sept. 2020

Classified force data readings from UR5e robotic arm to interpret human touch gestures [2].

Stanford CHARM Lab - Graduate researcher

March 2019 to June 2019

Implemented the hardware and software for a haptic bracelet made with voice coils for use in virtual reality.

MIT Stress Line Additive Manufacturing Project - Undergraduate researcher

Sept. 2014 to Dec. 2014

Implemented non-planar additive manufacturing method using Kuka robotic arm to deposit material in response to 3D flow of forces in structures under load.

INDUSTRY EXPERIENCE

Intuitive Surgical - Mechanical Engineering Intern

June to Sept. 2019

Designed an injection-molded subassembly for Ion, a lung biopsy robot.

Designed, fabricated, and validated an electromechanical test fixture for a system part.

Uber Advanced Technologies Group - Hardware Engineering Intern

June to Sept. 2017

Compared 4 simulation methods against real-world data to guide simulation tool development.

Planned and executed testing to stress specific autonomous features on a test track.

- Fitbit** - Mechanical Engineering Intern *June to Aug. 2016*
Ran a cross-disciplinary project to balance electromechanical components with user considerations.
Oversaw the build of an injection-molded part at a factory in Shenzhen, China.
- Carnegie Robotics** - Mechanical Engineering Intern *June to Aug. 2015, 2014*
Generated 3D point cloud maps of city infrastructure for a confidential project.
Wrote data collection and analysis programs to quantify LIDAR scanner performance.
- New Valence Robotics** - Design Intern *Jan. 2015*
Worked for a startup providing schools with 3D printers and Common Core lesson plans utilizing the printers.
Headed a team of interns to generate lesson plans, CAD models, and documentation to teach students concepts.

TEACHING EXPERIENCE

- Penn MEAM 520 Introduction to Robotics** - Teaching Assistant *Jan. to June 2022*
Developed and ran written assignments and practical labs with Franka Panda robotic arms.
- Stanford ME 218 Mechatronics Series** - Teaching Assistant *Sept. 2019 to June 2020*
Collaboratively designed new game challenges for teams to design and construct mechatronic systems to compete.
Assisted with circuit design and implementation, and corresponding C and assembly programming.
Repaired lab equipment including microcontrollers, oscilloscopes, and printed circuit boards.
- MIT 2.007 Robotics Pappalardo Apprenticeship** - Teaching Assistant *Jan. to June 2018, 2017*
Assisted students in designing and fabricating their custom robots to compete in a new annual robotics challenge.
Sandcast and machined parts from original drawings of an 1897 Herreshoff steam engine, now on display at the MIT Museum, as part of a collaborative Pappalardo Apprentice project documented in my undergraduate thesis [3].
- Global Teaching Labs** - Teacher *Jan. 2017, 2018*
Led students aged 8-15 at the American School of Tangier in Morocco and Tecnológico de Monterrey Guadalajara in Mexico through makerspace projects, including a PID-controlled balancing robot, a hanging v-plotter robot using recycled inkjet motors, and electronically-actuated pinhole cameras.

SERVICE AND MENTORSHIP

- Penn Diversity, Equity, and Inclusion (DEI) MEAM Task Force** - DEI Scholar *Jan. 2022 to present*
Lead a DEI project as part of the Mechanical Engineering and Applied Mechanics (MEAM) department's DEI task force with goal of increasing representation of Under-Represented Minorities (URMs) in future PhD cohorts.
- Polygence** - Research Mentor *Jan. 2022 to present*
Mentor high school students through self-directed research projects, including writing review papers on a robotics topic and constructing an electromechanical system.
- More Active Girls in Computic (MAGIC)** - Project Mentor *Dec. 2020 to present*
Mentor high school girls in independent mechatronics projects, including a hanging drawbot and autonomous car.
- The Tech Challenge, San Jose Tech Museum** - Team Mentor *Oct. 2018 to April 2020*
Mentor a team of 3-4 middle school students through the 2019 and 2020 Tech Challenges, for which they built a hovercraft capable of traversing diverse terrain and a catapult to launch a self-expanding "interplanetary structure."
- MIT MakerWorkshop** - Mentor, Milling Machine Specialist *Jan. to June 2018*
Trained MIT graduate and undergraduate students on safe milling machine use.
Supervised and provided assistance to members of the MakerWorkshop machine shop.
- MIT Maker Lodge** - Freshmen Mentor, CAD/CAM Training Chair *Sept. 2016 to June 2018*
Qualified MIT freshmen for campus machine shop use through equipment training.
Developed a CAD and CAM training curriculum using SolidWorks and HSMWorks.

LEADERSHIP

- MIT Design for America (DFA)** - President, Project Director *Sept. 2015 to June 2018*
Recruited and provided resources for 8 project teams to tackle real-world design problems in the local community.
- MIT Camp Kesem** - Camp Counselor *Sept. 2016 to Aug. 2018*
Coordinated a unit of kids aged 13-16 years whose parents are/were affected by cancer for a week-long camp.
- MIT TechX, MakeMIT** - 2016 Event Director *Sept. 2014 to June 2016*
Directed a committee to organize and raised \$48K in corporate sponsorships for a 300 person hardware hackathon.
- MIT Robotics Team** - Executive Mechanical Engineer *Sept. 2014 to June 2016*
Designed and presented rovers at GITEX conference in Dubai, UAE for NASA Sample Return Centennial Challenge.