

Matthew A. Estrada

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Education

Stanford University: Stanford, CA

PhD Candidate, Mechanical Engineering

MS, Mechanical Engineering

GPA 3.7

Expected 2018

June 2015

Fellowships: National Science Foundation Graduate Research Fellowship

Relevant Coursework: Advanced Dynamics and Simulation, Kinematic Synthesis of Mechanisms, Convex Optimization, Smart Product Design

Massachusetts Institute of Technology: Cambridge, MA

BS, Mechanical Engineering

GPA 4.7/5.0

June 2012

Relevant Coursework: Biomechanics & Neural Control of Movement, Precision Machine Design, Analysis of Feedback Control, Dynamics & Control II, Design & Manufacturing II

Experience and Projects

Biomimetics and Dexterous Manipulation Lab: Stanford, CA

Fall 2012 – present

Graduate Researcher, **Stanford University**

- Creating and modelling gecko-inspired adhesive grippers for “Assistive Free Flyer” aimed at aiding astronauts on the ISS. ¹
- Designed and validated lightweight robot capable of dynamically perching on vertical glass and climbing. ²
- Design, sensing, and experiments on mechanisms for dynamic perching of micro air vehicles with gecko-inspired adhesives.
- [1] “Free Flyer Acquisition of Spinning Objects with Gecko-Inspired Adhesives,” **Estrada**, Hockman, Bylard, Hawkes, Cutkosky, Pavone (ICRA 2016, in print)
- [2] “Perching and Crawling: Design of a Multimodal Robot,” **Estrada**, Hawkes, Christensen, Cutkosky; (ICRA 2014)

Best Conference Paper Award Finalist

iCub Facility: Genoa, Italy

Summer 2012

Summer Researcher, **Italian Institute of Technology**

- Provided a proof-of-concept for a redesign of the hand on the anthropomorphic iCub robot, utilizing 3D printing and water jet cutter. Experimentally validated the strength of the design.
- Projected adoption reduced cost for a single hand from about €15,000 to €3,500.

Biomimetic Robotics Laboratory: Cambridge, MA

Winter 2010 – Spring 2012

Undergraduate Researcher, **Massachusetts Institute of Technology**

- Developed physical structure of novel force sensor to integrate within footpad of running, robotic cheetah platform. Included layered casting of polymers and embedded woven fibers for strength.
- Designed and built the lab’s experimental gantry for testing planar bounding of robotic cheetah leg
- [3] “Composite force sensing foot utilizing volumetric displacement of a hyperelastic polymer”, Chuah, **Estrada**, Kim; (IROS 2012).
- Award: 2nd place MIT DeFlorez Undergraduate Design Competition (May 2012)
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Additional Experience

Head Teaching Assistant, ME112 Mechanical Systems Design: Stanford, CA

Winter 2016

- Co-developed assignments on gear stress analysis, motor efficiency and mechanism design for 150 student laboratory class.

ME218 Mechatronics: Stanford, CA

Fall 2012 – Spring 2013

- Three-quarter, project-based graduate course on prototyping embedded systems.

Skills

- **Computer Aided Design:** Solidworks, Pro/Engineer
- **Embedded Systems Design:** PIC, Freescale, and Arduino microcontrollers
- **Programming/Dynamic Modeling:** C++, C, Assembly, Python, MATLAB, MotionGenesis
- **Manufacturing:** Experience on lathe, CNC mill, injection molding. Rapid prototyping on 3D printer, lasercutter, waterjet. Mastercam for CNC toolpath generation.