

**Emma Steinhardt**  
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## EDUCATION

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**Massachusetts Institute of Technology** – June 2016  
*Bachelor of Science in Mechanical Engineering, GPA: 4.6/5.0*

Software: SolidWorks, AutoCAD, MATLAB, OMAX, CorelDRAW, Mastercam, Java, MS Office  
Machines: 3D Printer (Objet Connex, Fortus, MakerBot), Laser Cutter, Water Jet, CNC, Mill, Lathe, etc.

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## ENGINEERING PROJECTS (see website [estein.mit.edu](http://estein.mit.edu))

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Designed an all-terrain hexapod that can climb and manipulate objects.  
Engineered, built, and flew a cluster ballooning apparatus.  
Manufactured and designed a working Stirling Engine.

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## RESEARCH EXPERIENCE

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**MIT - STE@M (Sports Technology at MIT)** – June 2015 - Present  
Collaborated with Kopin on their product SOLOS, smart glasses for cyclists. Created a mathematical model for cycling performance based on a power model for the biological system, kinematics, and course topography, and optimized performance using quadratic programming. Currently working, as first author, on a paper documenting the work.

**MIT MechE - 2.671 (Measurement and Instrumentation)** – February 2015 - May 2015  
Analyzed thermal insulation properties of different winter jackets. Worked with the Natick Army Research Center, using their test equipment to develop a nondestructive methodology for measuring thermal resistance as a function of jacket thickness and material composition. Wrote a technical final paper on the original research.

**MIT CSAIL - Computational Fabrication Group** – September 2013 - February 2015  
Investigated the use of 3D printing technologies to manufacture mechanical assemblies. Researched passive dynamic walker design. Designed and built passive walkers using 3D printing. Generated a geometrically parameterized model to make a variety of distinct walkers. Publication in preparation.

**Walt Disney Imagineering - Disney Research Boston** – Summer 2014  
Collaborated to develop Autoconnect: a new automatic method that creates customized, 3D-printable connectors attaching two physical objects together. Engineered and invented novel 3D printable parameterized connectors for a variety of surfaces. Paper published in SIGGRAPH.

**Booz Allen Hamilton - Rapid Prototyping Group** – Summer 2012, 2013  
Established the first UAV laboratory at Booz Allen Hamilton. Analyzed different quadrotor frames and their lift capacity. Examined the relationship of the battery and rotor size to flight time. Initiated and led the development of multicopter platforms. Produced a functioning quadcopter and octocopter, still used today.

**University of Maryland - Autonomous Vehicle Laboratory** – Summer 2011  
Assisted in research conducted on biologically inspired robotics. Modeled vehicle dynamics and conducted flight tests

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## AWARDS

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**MIT Whitelaw Prize - 2.007 Design and Manufacturing I** – May 2014  
Best original robot design in 2.007. Design Contest Finalist - 4<sup>th</sup>/137 students in the annual 2.007 competition.

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## LEADERSHIP

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MIT Outing Club Mountaineering Leader (2014-2016), MIT 2.007 Undergraduate Teaching Assistant (2015, 2016), MIT MechE Student Advisory Committee Member (2014-2016), FIRST Robotics Judge Assistant (2013, 2014), Simmons Hall Workshop Chair (2012-2013)

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## PUBLICATIONS

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**AutoConnect: Computational Design of 3D-Printable Connectors**  
Yuki Koyama, Shinjiro Sueda, Emma Steinhardt, Takeo Igarashi, Ariel Shamir, and Wojciech Matusik  
ACM Transactions on Graphics, 34 (6) 231:1-231:11 (SIGGRAPH Asia), 2015.