

# Melody Liu

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## EDUCATION

### Massachusetts Institute of Technology (MIT)

Cambridge, MA

Candidate for Bachelor of Science in Mechanical Engineering; **GPA: 5.00/5.00**

June 2016

Relevant Coursework Taken (by Summer 2014): Design and Manufacturing I (2.007) – Electric Vehicle Section; Toy Product Design (2.00b); Electronics for Mechanical Systems (2.678); Differential Equations (18.03); Numerical Computation for M.E.'s (2.086); Dynamics and Controls I and II; Mechanics and Materials I and II; Biomechanics and Neural Control of Movement

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## DESIGN EXPERIENCE

### 2<sup>nd</sup> Place – MIT Mobile Autonomous Systems Laboratory (MASLAB) Competition

Cambridge, MA

January IAP Term 2014 + 2013

- MIT's premier IAP robotics competition; 1 month long
- Used Solidworks, lasercutter, and machine shop to design and rapidly prototype mechanisms
- Created a complete CAD model of the robot in Solidworks
- Worked in a team of 5 to build a robot that can navigate autonomously to collect, transport, and deposit balls over a wall

### Toy Product Design Experience – MIT Department of Mechanical Engineering

Cambridge, MA

Spring Semester 2013

- Brainstormed, designed, prototyped, and built an circuit strategy game in a team of 5
- I worked in Solidworks to design the laser cut game board in CAD. I used blue foam and wood to rapidly prototype and design the game idea. I also took charge of testing the gameplay rules and designing the game's puzzle mode
- Learned rapid prototyping and design process; acquired basic machine shop experience
- Play-tested game at Boston science museum and MIT Game Lab; Presented toy to audience at end of the semester

### Summer Student – Optical Infrared Lab, Academia Sinica of Taiwan

Taipei, Taiwan

June 2013 – August 2013

- Worked on thermal design for telescope camera for TAOS II and telescope filters on SPICA
- Used radiometry and Solidworks to calculate radiation heat load on the TAOS telescope camera
- Tested SPICA's astronomical filters at helium temperatures; designed configurations for maximum thermal transfer between filter and cryochamber
- Presented findings to Academia Sinica community at end of summer

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## RESEARCH EXPERIENCE

### Undergraduate Researcher – MIT Computer Science and Artificial Intelligence Lab

Cambridge, MA

Oct 2013 – Dec 2013

- Designing mechanical properties for a family of "Smart Objects" using Solidworks and openSCAD
- This software allows users to customize their 3D printed object, preventing users from making 3D objects that will fail mechanically. I program the mechanical constraints for each customizable object into openSCAD

### Geology Field Experience – MIT Earth, Atmosphere, Planetary Science Department

Ladakh, India

August 2013

- Drove through Indian Himalaya plate system and noted plate boundaries in field notebook
- Drilled rocks for paleomagnetic testing back at MIT labs

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## ACTIVITIES

### MIT Tour Guide - MIT Information Center

February 2013 – Present

Lead tours of MIT to a group of 20 people, introducing the campus and answering questions for 1.5 hours

### Associate Advisor

September 2013 – Present

Aid faculty advisor to offer support and academic advice to the freshmen

### MIT New House Housing Chair

January 2013 – Present

Represent the dormitory and communicate housing assignments between communities and administration; create housing process to welcome freshmen to dorm

### UPOP – Undergraduate Practice Opportunities Program

September 2013 - Present

MIT's professional development program; reflecting on communication and teamwork skills to start an effective engineering career

### Astronomy Club

September 2010 – June 2012

*Founder, Leader*; Created an astronomy community at school and organized star-watching with school telescope

### Science Counts

October 2012 – January 2013

*Club Leader*; Teaching weekly at a science club at local middle school

### New Jersey Science Olympiad

September 2009 – June 2012

*Team Captain for Earth Science*; organized meetings and led team of students in statewide science competition

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## SKILLS

Computer: Matlab, Java

Lab: Solidworks; Machine Shop Experience; Lasercutter; Rapid Prototyping and Design Process; Glassblowing

Language: French (proficient), Mandarin Chinese (conversational), Taiwanese (proficient)