ASHLEY J. HARTWELL

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EDUCATION

06/2018 **Massachusetts Institute of Technology**, Cambridge, Ma
S.M., Mechanical Engineering
Thesis: Shape Memory Alloys for Small Scale Actuation

06/2016 **Stanford University**, Stanford, Ca
B.S., Mechanical Engineering

FELLOWSHIPS, AWARDS, HONORS

2016 - Alfred P. Sloan Foundation Scholar
2016 MIT Presidential Fellow
2013 - 2016 Stanford University STEM Fellow

RESEARCH EXPERIENCE

09/2019 – Current

Design for Thermal and Environmental Performance of Filler Slab Components Using Multi-Objective Optimization
Advisor: Professor Caitlin Mueller (MIT – Dept. of Architecture, Dept. of Civil Engineering)

- Performs computational optimization in Rhino/Grasshopper to re-design horizontal spanning structures with less concrete and better thermal performance in regions of interest.
- Implements construction complexity constraints into design optimization algorithms.

11/2016 – 08/2019

Investigations in Thermomechanical Behavior of Shape Memory Alloys for Actuation and Cooling Time Minimization
Advisor: Professor Christopher Schuh (MIT – Dept. Material Science and Engineering)

- Developed deterministic and scalable methods for cooling time reduction with cable architecture design optimization
- Conducted mechanical testing and characterization of NiTi and Cu-Based Shape Memory Alloys
- Determined relationship between processing of materials and microstructure and texture
- Imaged small scale samples using electron microscopy techniques

06/2015 – 10/2015

Cyclic Loading of High Performance Fiber Reinforced Cementitious Composites
Advisor: Professor Sarah Billington (Stanford – John A. Blume Earthquake Center)

- Modeled experimental mechanical behavior for engineered cementitious composites (ECC) using FEA and verified material properties using Instron testing
- Casted reinforced column specimens to desired reinforcement ratios for cyclic FEMA protocol testing
- Interpreted trends in strength degradation and cracking of ECC vs reinforce concrete behavior for a variety of loading protocols.

INTERNSHIP EXPERIENCE

03/2016 – 06/2016

Campus Technology Evangelist
Autodesk Inc.

- Led various computer aided design workshops for over 50 Stanford University Students
- Designed parametric and iterative workspace for rocket fuel grain designs in Fusion 360 software and MATLAB
- Performed user interaction surveys for Fusion 360 software through social media and campus advertising campaigns

TEACHING

2020 **Teaching Assistant**, Introduction to Structural Design
Instructors: Dr. Paul Mayencourt (MIT)

2019 **Teaching Assistant**, Design and Manufacturing II
Instructors: Professor Warren Seering, Dr. Dawn Wendell (MIT)

2019 **Teaching Assistant**, Micro/Nano Engineering Laboratory
Instructors: Professor Nicholas Fang, Dr. Benita Comeau (MIT)

2016, 2013 **Teaching Assistant**, Introduction to Java, Summer Course
Instructors: Dr. Cynthia Bailey Lee (Stanford University)

MENTORSHIP

2016 **MIT Summer Research Program Group Leader**
Massachusetts Institute of Technology, Office of Graduate Education

- Coached 8 undergraduate researchers weekly in groups and 1:1 on a variety of topics related to grad school including research communication, poster presentations, and securing faculty mentorship
- Conducted performance reviews with students and their primary research supervisors to ensure progress through the ten-week program

2016 **Resident Fellow, Stanford Summer Engineering Academy**
Stanford University, School of Engineering – Engineering Diversity Programs

- Managed a staff of 6 undergraduate students for a residential engineering summer program, coordinated communication between program participants and program administrators
- Organized community building activities and field trips in the Bay Area for 50+ students.
- Advised a group of 8 incoming freshmen to ensure a successful transition to Stanford via, 4 year course planning, resume workshops, and hands on lab instruction

LEADERSHIP

2019 Graduate Community Fellow, Office of Graduate Education (MIT)

2017 - 2019 Environmental Health and Safety Chair, Schuh Lab (MIT)

TECHNICAL SKILLS AND OTHER EXPERIENCE

Sample Preparation: Metallographic Specimen Prep (Annealing, Mounting, Polishing, Quartz Encapsulation, Etchant Prep and Use),

Materials Characterization: Optical Microscopy, SEM, EDS, AFM, DSC, Mechanical Testing (DMA, Instron, Custom Equipment)

Design and Prototyping: Solidworks, Fusion 360, Rhino/Grasshopper, Milling, Turning, Laser Cutting, Waterjet, General Shop Equipment Use

Data Analysis and Visualization: Image J, MATLAB, Microsoft Office Suite