

# MADDIE HAAS

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## EDUCATION

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<b>Texas A&amp;M University</b>	8.2020 – 2024
<i>Ph.D. in Aerospace Engineering</i>	<i>GPA: 3.9/4.0</i>
<b>Massachusetts Institute of Technology</b>	6.2013 – 6.2017
<i>Bachelor of Science in Aerospace Engineering</i>	<i>GPA: 4.6/5.0</i>
<i>Minor in Spanish</i>	

## RESEARCH EXPERIENCE

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**Aerospace Human Systems Laboratory** 8.2020 – Present  
*Graduate Research Assistant – Texas A&M University – College Station, TX*

Dissertation: Modeling of Human Thermoregulation Response in the Leg to Changes in Gravitational Dose Applied to the Technological Design of EVA Liquid Cooling and Ventilation Garments (LCVG)  
*Supported by a NASA Space Technology Graduate Research Opportunity, starting 8.2022*

Advisor: Professor Bonnie J. Dunbar, Ph.D.

- Authoring a literature review on topics including digital human modeling, anthropometry, human thermoregulation, infrared thermography, and computational human thermal models
- Conducting trade studies, writing standard operating procedures, experimental protocols, and research reports, and peer reviewing laboratory work
- Designing experimental hardware/software, analyzing collected data, and testing statistical significance
- Performing human subject experiments on a tilt table and with 3D anthropometric capture
- Training on a variety of lab equipment, including a high-fidelity photogrammetric motion scanner, a stationary laser scanner, a handheld IR camera, a handheld 3D scanner

**MIT International Science and Technology Initiatives** 6.2017 – 8.2017  
*Almaty & Nur-Sultan, Kazakhstan*

- Consulted in a diverse international workplace in the fields of satellite image marketing, innovation investments, city thermal networks, and convention planning

**The Impact of Communication on Team Performance Affected by Imperfect Decision Support** 2.2016 – 12.2016

*MIT Computer Science and Artificial Intelligence Laboratory (CSAIL) – Cambridge, MA*

- Created an experiment to test how structured communication between teammates impacts collaborative score in computer game while players use an imperfect decision support system for gameplay advice
- Executed a human subject experiment, including IRB approval, to evaluate experimental hypothesis and analyzed qualitative and quantitative data with statistical analysis

**Solar Hot Water Heater** 3.2016 – 5.2016  
*MIT D-Lab – Cambridge, MA*

- Redesigned prototype and ran tests to optimize material and design within project limitations

**Seismic Penetrating Antarctic Explorer** 9.2015 – 12.2015  
*MIT Aero/Astro – Cambridge, MA*

- Designed a communications system between an explorer and Iridium satellites for data transmission
- Collaborated with team to prepare and present system requirements and design reviews

**MIT Space Propulsion Laboratory- Time Capsule to Mars** 1.2014 – 5.2014  
*MIT Space Propulsion Laboratory – Cambridge, MA*

- Studied the feasibility of a crowd-funded CubeSat mission to Mars
- Researched communications, avionics, and power subsystems of a CubeSat

## **WORK EXPERIENCE**

**Karem Aircraft** 8.2017 – 8.2020

*Structures Engineer – Lake Forest, CA*

- Designed and analyzed metallic and composite structural and mechanical parts for flight and test
- Collaborated with manufacturing to build designs and troubleshoot interfacing problems
- Implemented fuel system for aircraft ground test stand, with safety and operational procedures
- Researched and presented early-stage aircraft system overviews for multiple applications

**Space Exploration Technologies** 5.2016 – 8.2016

*Structures Test Engineering Intern – Hawthorne, CA*

- Created test plans and designed and analyzed test structures for qualification tests of flight parts
- Supported test technicians and engineers to prepare and conduct structural tests

**Northrop Grumman Corporation** 6.2015 – 8.2015

*Composite Structures Analysis Engineering Intern – Redondo Beach, CA*

- Completed static structural analysis of military aircraft external skins & doors
- Analyzed manufacturing defects to repair and improve manufacturing processes

**3M Corporation** 5.2014 – 8.2014

*Quality Engineering Intern – Menomonie, WI*

- Developed test methods, documentation, and experiments to move a new product into production
- Analyzed data and developed a model for a multi-step chemical process

## **TEACHING EXPERIENCE AND LEADERSHIP**

**Aerospace Engineering Graduate Student Association (AEGSA)** 10.2021 – Present

*President (8.2022-present) & Treasurer (10.2021-7.2022) – College Station, TX*

**Youth Innovation Workshop** 9.2016 – 1.2017

*Cambridge, MA & Soroti, Uganda*

- Designed and led 10-day workshop curriculum for Ugandan youth covering science entrepreneurship
- Worked with Ugandan college students to teach & mentor youth on each team's design project

**Global Teaching Labs** 1.2016

*Santiago de Querétaro, Mexico*

- Taught organic chemistry and sustainability to several high school classes
- Created educational games, gave bilingual presentations, and assisted in a laboratory environment

**Gordon-MIT Engineering Leadership Program** 9.2015 – 6.2017

*Cambridge, MA*

- Participated in a selective leadership training program focused on developing effective and emerging leaders of teams in engineering industry
- Coached, advised, and assessed the performance of first year program students

## **HONORS AND AWARDS**

**AERO Graduate Excellence Fellowship**, Texas A&M University, Fall 2022 & Summer 2021

**Jean Wirths Scott Leadership Award for Outstanding Change Leadership**, Pi Beta Phi Region 1, 2017

## **TECHNICAL PUBLICATIONS AND PRESENTATIONS**

**Haas, M.**, Hagee, K., Kaercher, J., Dunbar, B.J., Evaluation of Infrared Thermography for Measuring Leg Skin Temperature Changes in a Microgravity and Partial Gravity Analog. *51<sup>st</sup> International Conference on Environmental Systems*. Received 2<sup>nd</sup> place in Student Poster Competition.

Hall D., **Haas M.**, Dunbar, B.J., Determining Spacesuit Reach and Range of Motion (ROM) Using 3D Photogrammetric Motion Capture. *2022 IEEE Aerospace Conference*.