

## EDUCATION

### MASSACHUSETTS INSTITUTE OF TECHNOLOGY

**B.S. in Electrical Engineering & Computer Science**  
*Minors in Mathematics and Applied International Studies*  
**Expected May 2022 | Cambridge, MA**

**Relevant Coursework:** Numerical Modeling and Simulation (G), Parallel Computing and Scientific Machine Learning (G), Computation Structures, Circuits and Electronics, Fundamentals of Programming, Math for Computer Science, Elements of Software Construction, Microcomputer Project Laboratory, Introduction to Algorithms, Introduction to Computer Graphics

## SKILLS

### PROGRAMMING

Over 100,000 lines:

Javascript • Python • MATLAB

Over 10,000 lines:

Java • R • LaTeX

Over 1,000 lines:

C • C++ • Assembly • Verilog • Julia • Bluescript

### SOFTWARE EXPERTISE

CUDA • Pytorch • Node • Git • HTML • SolidWorks • Fusion 360 • UP (3D printing) • MeshLab • GIMP • Photoshop • Illustrator • Microsoft Office • Visio

### HARDWARE EXPERTISE

3D Printers • Laser Cutters • CNC Mills • Vinyl Cutters • Load Testing (Instron)

## MAJOR AWARDS

- 2020 Adobe Research \$10,000 Women-in-Technology Scholarship Recipient
- 2015 White House Science Fair Exhibitor
- 2014 Broadcom MASTERS National Science Fair \$25,000 Samueli Foundation Grand Prize

## PRESENTATIONS

- 2020 **Guest Speaker at Max Planck Institute of Astronomy (Heidelberg, Germany – Virtual)** – presented pre-print of my publication [1] in a virtual seminar.
- 2018 **Private Conference at the Museum voor Communicatie (The Hague, Netherlands)** – presented my research on virtually unfolding 3D CT scan data of 17th century locked letters on a full-paid trip.
- 2017 **MIT MacVicar Day (Cambridge, MA)** – presented my research as guest of Dr. Neil Gershenfeld (MIT, CBA).
- 2017 **AIAA SciTech (Grapevine, TX)** – presented my research on genetic algorithms for programmable 3D trusses conducted at NASA Ames.

## RESEARCH AND WORK EXPERIENCE

### ADOBE RESEARCH | Summer Intern

May 2020 – present | San Francisco, CA (Virtual)

- Developing adaptive B-splines using deep learning methods.
- Working under Dr. Noam Aigerman at the Creative Intelligence Lab.

### UNIVERSIDAD DIEGO PORTALES, ASTROPHYSICS DEPARTMENT | Intern

June 2019 – present | Santiago, Chile

- Developed pipelines to generate phylogenetic trees to map the chemical evolution of stars in the galaxy based on their elemental makeup.
- Collaborated with Time's *100 NEXT* Dr. Paula Jofré (Universidad Diego Portales), Keaghan Yaxley (University of Cambridge), and Dr. Robert Foley (University of Cambridge).

### MIT MEDIA LAB, CSAIL, AND LIBRARIES | Intern

July 2016 – present | Cambridge, MA

- Developed an algorithm to virtually unfold 3D CT scans of unopened historical documents.
- Collaborated with Amanda Ghassaei (Adobe Research), Jana Dambrogio (MIT Libraries), Dr. Erik Demaine (CSAIL - Computer Science and Artificial Intelligence Lab), Dr. Neil Gershenfeld (Center for Bits and Atoms), and Martin Demaine (CSAIL).

### NASA AMES RESEARCH CENTER | Intern

July 2018 – Aug 2018 | Mountain View, CA

- Developed systems for robotic assembly of truss structures.
- Worked under Dr. Kenneth Cheung at Coded Structures Lab (through SGT - Stinger Ghaffarian Technologies).

### NASA AMES RESEARCH CENTER | Intern

June 2015 – Aug 2017 | Mountain View, CA

- Developed genetic algorithms for the automatic generation of programmable 3D truss structures. Created prototypes and performed physical stress testing.
- Worked under Dr. Kenneth Cheung at Coded Structures Lab.

## PUBLICATIONS

- [1] Journal paper in progress. **Jackson, H.M.**, Jofré, P., Yaxley, K.J., Das, P., de Brito Silva, D., & Foley, R.A. Using heritability of stellar chemistry to reveal the history of the Milky Way. <https://arxiv.org/abs/2011.06453>.
- [2] Journal paper in progress. Dambrogio, J., Ghassaei, A., Smith, D., **Jackson, H.**, Demaine, M., Davis, G., Mills, D., Ahrendt, R., Akkerman, N., van der Linden, D., & Demaine, E. Unlocking history through automated virtual unfolding of sealed documents imaged by X-ray microtomography.
- [3] Jofré, P., **Jackson, H.**, & Tucci Maia, M. (2020). Traits for chemical evolution in solar twins. *Astronomy & Astrophysics*, 633, L9. <https://doi.org/10.1051/0004-6361/201937140>.
- [4] **Jackson, H.M.** (2017). Topological Optimization of a Cuboct Truss Structure Using a Genetic Algorithm, presented at *58th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference*, Grapevine, Texas, 2017. <https://doi.org/10.2514/6.2017-1301>.