hjackson@mit.edu • **HOLLY JACKSON** • Cambridge, MA

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 Graduate Coursework: Numerical Modeling and Simulation, Parallel Computing and Scientific Machine Learning, Shape Analysis

Relevant Undergraduate Coursework: Design and Analysis of Algorithms, Introduction to Algorithms, Introduction to Computer Graphics, Microcomputer Project Laboratory, Elements of Software Construction, Computation Structures, Circuits and Electronics

SKILLS

PROGRAMMING

Over 100,000 lines:
Javascript • Python • MATLAB
Over 10,000 lines:
Java • R
Over 1,000 lines:
C • C++ • Assembly • Verilog • Julia • Bluescript

SOFTWARE EXPERTISE

CUDA • Pytorch • Node • Git • HTML • LaTeX • SolidWorks • Fusion 360 • UP (3D printing) • MeshLab • GIMP • Photoshop • Illustrator • 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 [2] 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 Center for Bits and Atoms).
2017 AIAA SciTech (Grapevine, TX) – presented my research on genetic algorithms for programmable 3D trusses conducted at NASA Ames.

RESEARCH AND WORK EXPERIENCE

MIT GEOMETRIC DATA PROCESSING GROUP | Undergraduate Researcher

June 2021 – August 2021 (planned) | Cambridge, MA

MIT COMPUTATIONAL DESIGN & FABRICATION GROUP | Undergraduate Researcher

February 2021 – present | Cambridge, MA (Virtual)

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. Collaborating with Dr. Michaël Gharbi & Dr. Michal Lukác.

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.
- Collaborating with Amanda Ghassaei, Jana Dambrogio (MIT Libraries), Dr. Erik Demaine (MIT CSAIL), Dr. Neil Gershenfeld (MIT Center for Bits and Atoms), & Martin Demaine (CSAIL).

UNIVERSIDAD DIEGO PORTALES, ASTROPHYSICS DEPARTMENT | Intern

June 2019 – January 2021 | Santiago, Chile

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

NASA AMES RESEARCH CENTER | Intern

June 2015 – Aug 2017, July 2018 – Aug 2018 | Mountain View, CA

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

PUBLICATIONS

[1] Dambrogio, J.*, Ghassaei, A.*, Smith, D.*, **Jackson, H.***, Demaine, M., Davis, G., Mills, D., Ahrendt, R., Akkerman, N., van der Linden, D., & Demaine, E. (2021). Unlocking history through automated virtual unfolding of sealed documents imaged by X-ray microtomography. *Nature Communications*. https://doi.org/10.1038/s41467-021-21326-w. **(* These authors contributed equally)**

[2] **Jackson, H.M.**, Jofré, P., Yaxley, K.J., Das, P., de Brito Silva, D., & Foley, R.A. (2021). Using heritability of stellar chemistry to reveal the history of the Milky Way. *Monthly Notices of the Royal Astronomical Society*, 502 (1), 32–47. https://doi.org/10.1093/mnras/staa4028.

[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 *AIAA SciTech Forum*, Grapevine, Texas, 2017. https://doi.org/10.2514/6.2017-1301.