

Molly Carton

(240)380-0184 • molly.a.carton@gmail.com
3004 NW Market St. Apt. 3
Seattle, WA 98107

Education

- PhD in Mechanical Engineering** 2015–2020 (expected)
University of Washington – Seattle, WA
Dissertation Title (prospective): *Programming Structures for Transformative Robotics and Devices*
Committee Chair: Jeffrey Lipton
GPA 3.85
- MS in Applied Math** 2017–2018
University of Washington – Seattle, WA
- Graduate Studies in Mechanical Engineering** 2014–2015
University of Maryland – College Park, MD
- AB in Physics** 2010–2014
Princeton University – Princeton, NJ
Thesis Title: *Curvature Relocation of MreB Using AFM Control of Cell Shape*
(<http://arks.princeton.edu/ark:/88435/dsp01j098zb29w>)
Thesis Advisor: Joshua Shaevitz

Research Interests

Computational design • Novel manufacturing techniques • Graphics algorithms
Additive manufacturing • Metamaterials and functionally graded materials

Publications and Presentations

- Carton M., and Lipton, J. I. “Mechanical Metamaterial Continuum Materials Realized through 3D Printing using Compliant Mechanisms Techniques.” Paper to be presented at the 2020 Society for the Advancement of Material and Process Engineering Conference (Seattle, WA - postponed due to COVID-19).
- Carton, M., and Ganter, M. “Fast and Simple Printing of Graded Auxetic Structures”. Paper presented at the 2019 Annual International Solid Freeform Fabrication Symposium (Austin, TX).
- Storti, D., Yurtoglu, M., Carton, M., and Uchytel, C. “A Modern Voxel Approach to Numerical Integration on Implicit Domains using Python/Numba/CUDA” Poster presented at 2018 NVIDIA GPU Technology Conference (San Jose, CA)

- Yurtoglu, M., Carton, M, and Storti, D. "Treat All Integrals as Volume Integrals: A Unified, Parallel, Grid-Based Method for Evaluation of Volume, Surface, and Path Integrals on Implicitly Defined Domains." ASME J. Comput. Inf. Sci. Eng 18.2 (2018): 021013.

Research and Employment

University of Washington • Transformative Robotics Laboratory 2019-present
Research Assistant. • group-theoretical approach to design of mechanical metamaterials.

University of Washington • Solheim Additive Manufacturing Laboratory 2015-2019
Research Assistant. • Design, construction, and testing of novel modeling and 3D printing techniques, with emphasis on GPU parallel computing.

Teaching Assistant Spring 2020
University of Washington – Department of Mechanical Engineering • ME 230: Kinematics and Dynamics. Supervised online discussions and remote help sessions.

Teaching Assistant Summer 2019
Johns Hopkins Center for Talented Youth Summer Program • Principles of Engineering Design. A comprehensive introduction to physics and engineering for academically gifted students in grades 7-10.

Teaching Assistant Autumn 2017
University of Washington – Department of Mechanical Engineering • ME 480: Introduction to Computer-Aided Technology. Supervised labs and Mathematica coding help sessions, graded coursework, and assisted with project design, supply, and construction of open-source 3D printers and experimental 3D printed orthoses. Spring 2017.

Logos Technologies Summer 2016
Engineering Intern. Developed image analysis software in MATLAB and Python and worked as onsite data analyst for field testing of wide-area surveillance imaging.

Princeton University • Shaevitz Laboratory 2013–2014
Undergraduate Research Assistant. • Tested, experimentally and in simulation, a new method for examining protein localization *in vivo* due to curvature of cell walls in bacteria. Atomic force microscopy, fluorescence microscopy, *E.coli* strain development and growth, MATLAB 3D image processing and simulation of cell wall curvatures.

Princeton University • advised by Professor Daniel Marlow 2012
Undergraduate Research Assistant. • Built and wrote code to take input from instruments in order to develop a procedure for measuring cosmic background radiation in an undergraduate lab setting.

University of Maryland • Collective Dynamics and Control Laboratory Summer 2012
Undergraduate Research Assistant. • Wrote and visualized MATLAB simulations in order to examine how collective behavior can arise from simple rules.

Awards and Honors

- Graduate School Top Scholar Fellowship Award – University of Washington (Autumn 2015)
- ACTIVE: Faculty Development and Leadership Intensive – University of Colorado (Summer 2019)

Professional Associations

- American Society of Mechanical Engineers (ASME) student member
- UW Women in Science and Engineering
- UAW Local 4121