

# Computational Design of Origami and Compliant Robots

Friday, February 2<sup>nd</sup>, 2024

12:30 PM

**\*NEW LOCATION\*** Equad Room D221

MAE Seminar Series



*Cynthia Sung*

*University of Pennsylvania*

Soft and compliant robots provide new opportunities for machines that are flexible, adaptable, safe, and robust. Origami-inspired engineering enables custom robots to be designed and fabricated within days, or even hours. These robots are capable of executing a variety of shape-changing and dynamical tasks by taking advantage of their folded shape and programmable mechanics. In this talk, I will show how the kinematics and compliance of a thin-shell mechanism can be designed algorithmically. I will also discuss how we can leverage these designs for better performance and simpler control, and how these approaches provide robots with capabilities such as dynamical hopping, swimming, and flight.

Cynthia Sung is the Gabel Family Term Assistant Professor in the Department of Mechanical Engineering and Applied Mechanics (MEAM) and a member of the General Robotics, Automation, Sensing & Perception (GRASP) lab at the University of Pennsylvania. She received a Ph.D. in Electrical Engineering and Computer Science from MIT in 2016 and a B.S. in Mechanical Engineering from Rice University in 2011. Her research interests are computational methods for design automation of robotic systems, with a particular focus on origami-inspired and compliant robots. She is the recipient of a 2023 ONR Young Investigator award, a 2020 Johnson & Johnson Women in STEM2D Scholars Award, and a 2019 NSF CAREER award.

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