

## **Abstract**

Robots made from soft materials can be morphologically intelligent: their inherent compliance helps them deflect around obstacles, handle delicate objects, and match impedance with their environments with minimal centralized control. Yet, such robots are difficult to design and deploy because they stand outside existing frameworks for robot design, control and measurement.

My research incorporates continuum mechanics and machine learning to design and control soft, morphologically intelligent robots. I will discuss previous and ongoing work that leveraging physical models of soft matter and computation. I will discuss shape design of soft robots using auxetic meta-materials, link viscous phenomena in soft matter with mechanical memory, and share results from automated design of crawling soft robots. The work presented here will form the basis for intelligent and useful devices made from soft matter.