Stony Brook University

Department of Civil Engineering

FALL 2021 SEMINAR SERIES

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Monday, November 15, 1:00 – 1:55 PM (Virtual)

ZOOM LINK: Meeting ID: 950 8981 9867; Passcode: 860265
https://stonybrook.zoom.us/j/95089819867?pwd=NzdKQUJXU3J3NFN4VlpBUlp4bDFhUT09

Interactive structures: creating (meta)materials that move, walk, compute

Abstract

We propose unifying material and machine. We investigate and develop interactive computational design tools that enable digital fabrication of complex structures for novice users. Interactive structures embed functionality within their geometry such that they can react to simple input with complex behavior. Such structures enable materials that can, e.g., embed robotic movement, can perform computations, or communicate with users. We focus on material discovery by broadening participation. We develop optimization-based interactive design tools that enable novices to contribute their creativity and experts to apply their intuition in order to foster the advancement of high-tech materials. We investigate the entire pipeline, i.e., their mechanical structure, the algorithms for efficient design, the unforeseen application areas and fabrication methods.

About the Speaker: Dr. Alexandra Ion is an Assistant Professor at the Human-Computer Interaction Institute at Carnegie Mellon University's School of Computer Science, where she directs the Interactive Structures lab. Her research and expertise lie at the intersection of human-computer interaction, computational fabrication and material engineering. Her work has been published in and awarded by premier venues, including the Association for Computing Machinery (ACM) Symposium on User Interface Software and Technology (UIST) and Conference on Human Factors in Computing Systems (CHI). Dr. Ion obtained her PhD degree at the Hasso Plattner Institute in Germany and was a post-doctoral researcher at ETH Zurich in Switzerland.