

## HRBRC Speaker Series

### Logan Beaver



**Location:** HRBRC HQ, 1070 University Blvd Suite 2105, Portsmouth, VA 23703, Room # 2111

**Date:** Thursday, February 13<sup>th</sup>, 2025

**Time:** 12:00 p.m.

**Hybrid Seminar:** <https://tinyurl.com/2hhz6e5n>

## Controlling Microrobot Teams for Manipulation of Bio-engineered Cells

Please join us at the HRBRC HQ, room 2111 for a fun and informal seminar! We will have ping-pong ready to go to de-compress after the seminar. In-person attendance is encouraged. :) This session will also be hosted virtually on Microsoft Teams.

In-person attendees can enjoy pizza, snacks, and beverages during the event.

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### Abstract:

Organoids are miniaturized organs with the potential to revolutionize modern medicine—through personalized medicine, drug discovery, and disease models. This talk will explore how a team of microrobots can be controlled to manipulate individual cells as part of a larger bio-engineering project to create organoids in vitro. The first part of the talk explores how a single global magnetic field can be used to control the entire team of microrobots, which we use to physically manipulate bio-engineered cells. The second part covers how Gaussian process regression can be used to improve the microrobot model for more accurate and precise control of the system. The talk will conclude with future directions and a discussion of next steps.

### Speaker Bio:

Logan Beaver is an assistant professor in the mechanical and aerospace engineering department at Old Dominion University, where he directs the Intelligent Systems Laboratory. Prior to this appointment, he was a postdoctoral scholar at Boston University in the division of systems engineering. He received his PhD in 2022 from the University of Delaware, and he received his MS and BS degrees from Marquette University and the Milwaukee School of Engineering—all in mechanical engineering. His research focuses on optimization-based control for multi-agent and swarm systems, and optimal control for mobile robots and manipulator.