

BIOLOGICAL SCIENCES  
COLLEGE OF ARTS & SCIENCES

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

FOR APPLICATION YEAR: 2024

PROJECT TITLE: Vision, Behavior, and Cognition in Jumping Spiders

Nathan Morehouse

---

Associate Professor, Department of  
Biological Sciences  
Director, Institute for Research in  
Sensing  
University of Cincinnati  
711H Rieveschl Hall  
Cincinnati, OH 45221-0006  
Office: (513) 556-9757  
<https://homepages.uc.edu/~morehonn/>

## Project Description

My research group studies how animals see the world, including color vision, depth perception, motion vision, and pattern detection. We are also interested in how these visual abilities are applied to behavioral decisions, such as where to go, what to eat, and who to mate with. Currently, we are focused on understanding these topics using jumping spiders, fascinating and often colorful predators with complex lives and remarkable visual systems. Ongoing projects in the lab include a worldwide project on jumping spider color vision, a series of investigations of how spiders perceive depth, projects on the evolution of jumping spider courtship (elaborate dances that males perform to convince females to mate with them), and questions around visual perception and cognition. Students joining the lab will learn a variety of skills, from cutting edge techniques in the quantification of light and color (microspectrophotometry, hyperspectral imaging, visual system modeling) to machine-learning-based computer vision and behavioral tracking methods to intensive fieldwork at local field sites to study these animals in their native habitats. We are a vibrant lab group of typically 15 people, so joining the lab includes a robust set of social supports and activities that support career development, scientific literacy, and teamwork skills.