COLLEGE OF ENGINEERING, COMPUTER SCIENCE, & TECHNOLOGY

Seminar in Interdisciplinary STEM Research

April 10 – Thursday, 3:05-4:20 PM PST

Location: E&T A-256

HOSTED BY CREST-CATSUS AND SIKAND SITI CENTERS



Dr. Amina Kinkhabwala

Visiting Assistant Professor of Biology at Occidental College and Visiting Scientist at Caltech

Amina Kinkhabwala is currently a Visiting Assistant professor of Biology at Occidental College and a Visiting Scientist at Caltech. When she's not rock climbing with Jeff Santner (her climbing partner/husband) she has been building microscopes and looking at how fish sleep and socialize while at Caltech as a Staff Scientist the last several years. She earned her B.A. and M.A. in Physics and a Ph.D. in Neurobiology and Behavior from Cornell University. Dr. Kinkhabwala has studied many things over the years, including brain-machine interfaces, discovering a brain cell type that helps us calculate distances to objects, and will tell us more today about how state-of-the-art custom microscopes are used in neuroscience.

Cutting-edge Microscopy in Neuroscience

Abstract: The discovery of fluorescent proteins introduced a new era of discovery in biology. In neuroscience, novel bioengineered fluorescing sensors enable the noninvasive detection of activity within the brain. For zebrafish, the entire brain's activity can be monitored simultaneously at cellular resolution every second. I will discuss these methods of brain activity detection and the corresponding development of microscopes to track the patterns of brain activity. I will present preliminary findings from a custom microscope that uses machine learning and computer vision to track freely behaving zebrafish and image activity throughout the fish brain at cellular resolution simultaneously.

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