

MARQUETTE UNIVERSITY
DEPARTMENT OF BIOMEDICAL ENGINEERING

BIOMEDICAL ENGINEERING SYMPOSIUM

Anthony Sances Jr. Memorial Lecture

Thursday, March 26, 2009

1:00pm – 5:00pm

Marquette University's
Raynor Memorial Library

1355 West Wisconsin Avenue
Beaumier Suites - Lower Level Conference Area

Keynote Address 1:00 - 2:00

Oral Presentations from PhD Candidates 2:00 - 4:00

Poster Session and Wine and Cheese Reception 4:00- 5:00

Keynote Speaker

Mitra J. Hartmann, Ph.D.

Assistant Professor

Departments of Mechanical Engineering and Biomedical Engineering
Northwestern University

From Biomechanics to Behavior: Active Sensing in the Rat Whisker System

Rats are nocturnal, burrowing animals that use their vibrissae (whiskers) to tactually explore the environment. Using only its whiskers, a rat can determine object size, shape, orientation, and texture. This makes the rat vibrissal system an excellent model to explore the structure of movements that subserve sensing. I will describe recent experiments in our laboratory that have aimed to understand neural encoding and processing in the vibrissal system using both a "bottom-up" and a "top-down" approach. In the bottom-up approach, a basic analysis of whisker mechanics has provided insight into the physical variables (forces and moments) encoded by primary sensory neurons in the trigeminal ganglion. This analysis has suggested some mechanisms by which the animal might determine the radial distance to an object. In the top-down approach, behavioral studies have helped to constrain the types of neural processing that may enable object localization in the horizontal plane. Our laboratory now aims to merge the two approaches using a new laser-light sheet technology developed to visualize whisker-object contact patterns. I will describe some preliminary results from this system and suggest some ways that the nervous system may interpret the spatiotemporal "flow" of sensory information across the whisker array during natural exploratory behaviors.

To RSVP or for more information contact:

Brigid.lagerman@mu.edu

Marquette University Biomedical Engineering
(414) 288-7856

This event is funded in part by a grant from the Frank and Frieda K. Brotz Family Foundation

Parking is available in the parking structure located on 16th St. between Wisconsin Ave. and Wells St.