

# The Medical College of Wisconsin

## Division of Biostatistics

Proudly Presents:  
A Statistical Research Seminar  
Talk By:



**Yali Amit, PhD**  
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**Title:** Statistical Object Models from Computer Vision to Biological Imaging

**ABSTRACT:** The goal of Computer Vision is the automatic labeling of images containing multiple objects as well as noise and clutter. Similar issues arise biological imaging, where massive amounts of images are generated at multiple scales: molecular, cellular, organismal. In all these settings several objects can interact creating configurations that may not have been encountered in the learning phase. I will present a unified approach which starts from simple statistical models for individual objects. With these models the important notion of invariance can be clearly formulated, as well as geometric instantiations. The individual object models can be composed to define models for object configurations. Decisions are likelihood based and do not depend on pretrained decision boundaries. The model formulation also leads to a coarse to fine strategy for efficient computation of the optimal scene annotation. These ideas will be illustrated in a range of applications reading handwritten zip codes, detecting faces, tracking vesicles in fluorescent microscopy and detecting worms and their shapes in light microscopy.

**Tuesday, February 5, 2019**  
**3:30 PM – 4:30 PM**  
**Medical College of Wisconsin**  
**M2050**  
*Light refreshment provided 3:10 PM*