

# ME 586: **Biology- inspired robotics**

Prof. Sawyer B. Fuller

Goals:

- introduce paper 4
- paper 3 presentations

# context for paper 4 (visual motion control in insects)

- robotic context: visual localization and mapping is impressive, but requires a powerful computer

Parallel Tracking and Mapping  
for Small AR Workspaces

ISMAR 2007 video results

Georg Klein and David Murray  
Active Vision Laboratory  
University of Oxford

## 4. Ewok rampage

Here the camera is used to aim Darth Vader's laser pistol. Movement is controlled with the keyboard.

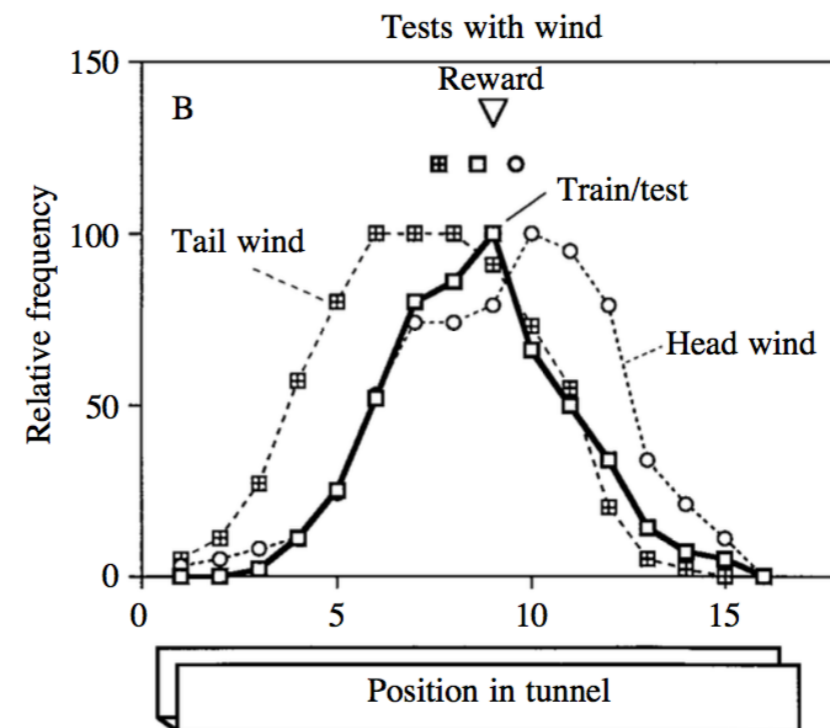
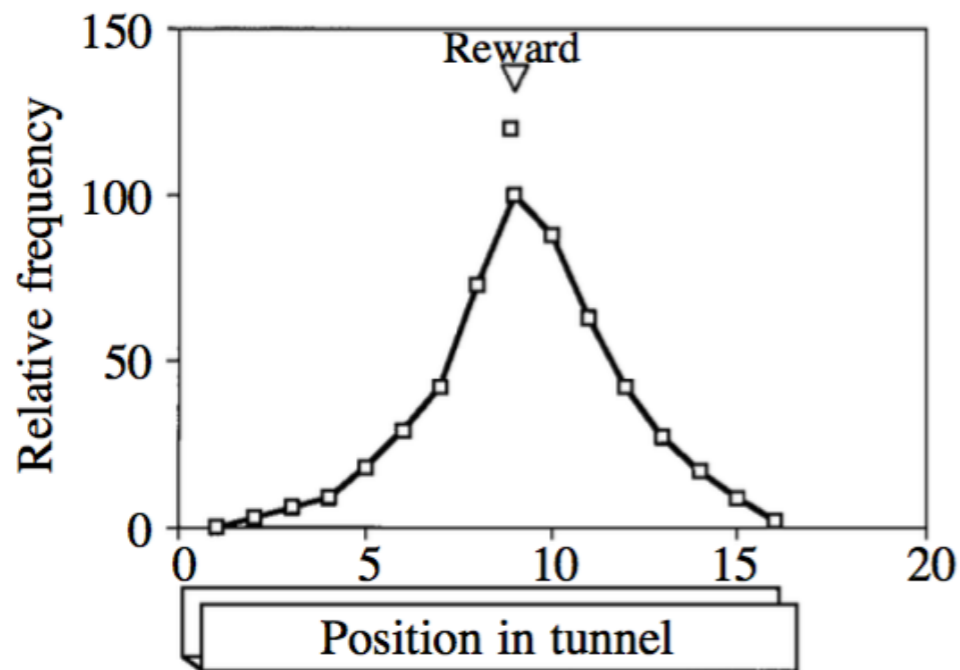
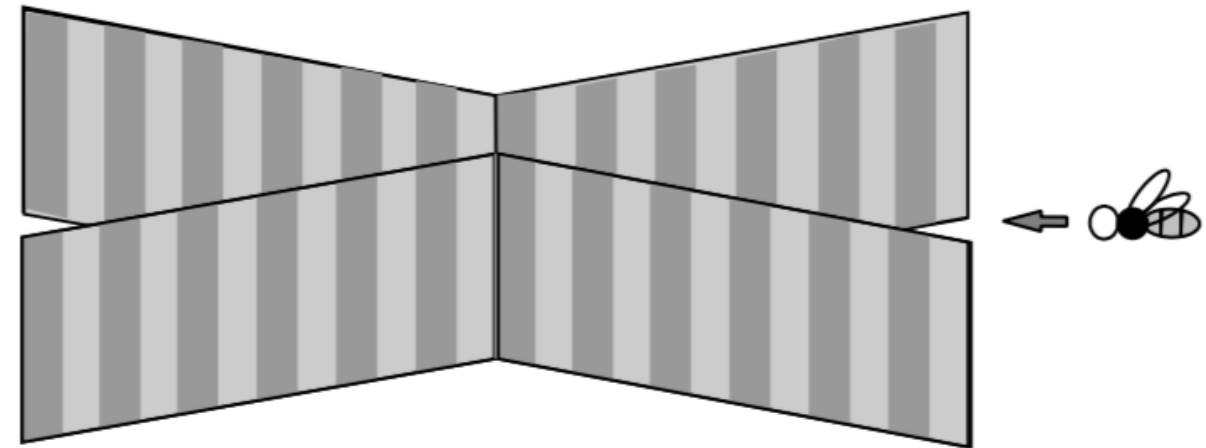
“HONEYBEE NAVIGATION *EN ROUTE* TO THE GOAL:  
VISUAL FLIGHT CONTROL AND ODOMETRY” by  
Srinivasan, Zhang, Lehrer, and Collett (1996)

- are there other ways to do visual navigation?
- how do tiny animals like bees with tiny brains navigate to food and back?



# “HONEYBEE NAVIGATION *EN ROUTE* TO THE GOAL: VISUAL FLIGHT CONTROL AND ODOMETRY” by Srinivasan, Zhang, Lehrer, and Collett (1996)

- confined space navigation
- smooth landings
- visual odometry (measuring distance travelled)



# paper 4b: visual delay in free-flight flies



*Drosophila melanogaster*  
1.1 mg  
3 mm

