



THE WEIZMANN INSTITUTE OF SCIENCE  
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Vision and Robotics Seminar

Room 1 ,Ziskind Building  
on Thursday, Jan 19, 2017  
at 12:15

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Robots in Clutter: Learning to Understand Environmental Changes

Abstract:

Robots today are confined to operate in relatively simple, controlled environments. One reason for this is that current methods for processing visual data tend to break down when faced with occlusions, viewpoint changes, poor lighting, and other challenging but common situations that occur when robots are placed in the real world. I will show that we can train robots to handle these variations by modeling the causes behind visual appearance changes. If robots can learn how the world changes over time, they can be robust to the types of changes that objects often undergo. I demonstrate this idea in the context of autonomous driving, and I will show how we can use this idea to improve performance for every step of the robotic perception pipeline: object segmentation, tracking, velocity estimation, and classification. I will also present some preliminary work on learning to manipulate objects, using a similar framework of learning environmental changes. By learning how the environment can change over time, we can enable robots to operate in the complex, cluttered environments of our daily lives.