



THE WEIZMANN INSTITUTE OF SCIENCE  
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Vision and Robotics Seminar

Room 1 ,Ziskind Building  
on Thursday, Jan 11, 2018  
at 12:15

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## Computational Challenges and Algorithms in Planning for Robotic Systems

Abstract:

In recent years, robots have played an active role in everyday life: medical robots assist in complex surgeries, low-cost commercial robots clean houses and fleets of robots are used to efficiently manage warehouses. A key challenge in these systems is motion planning, where we are interested in planning a collision-free path for a robot in an environment cluttered with obstacles. While the general problem has been studied for several decades now, these new applications introduce an abundance of new challenges.

In this talk I will describe some of these challenges as well as algorithms developed to address them. I will overview general challenges such as compression and graph-search algorithms in the context of motion planning. I will show why traditional Computer Science tools are ill-suited for these problems and introduce alternative algorithms that leverage the unique characteristics of robot motion planning. In addition, I will describe domains-specific challenges such as those that arise when planning for assistive robots and for humanoid robots and overview algorithms tailored for these specific domains.