



THE WEIZMANN INSTITUTE OF SCIENCE
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Vision and Robotics Seminar

Room 1 ,Ziskind Building
on Thursday, Jan 05, 2017
at 12:15

Shai Avidan
Tel Aviv University

Taking Pictures in Scattering Media

Abstract:

Pictures taken under bad weather conditions or underwater often suffer from low contrast and limited visibility. Restoring colors of images taken in such conditions is extremely important for consumer applications, computer vision tasks, and marine research. The common physical phenomena in these scenarios are scattering and absorption - the imaging is done either under water, or in a medium that contains suspended particles, e.g. dust (haze) and water droplets (fog). As a result, the colors of captured objects are attenuated, as well as veiled by light scattered by the suspended particles. The amount of attenuation and scattering depends on the objects' distance from the camera and therefore the color distortion cannot be globally corrected. We propose a new prior, termed Haze-Line, and use it to correct these types of images. First, we show how it can be used to clean images taken under bad weather conditions such as haze or fog. Then we show how to use it to automatically estimate the air light. Finally, we extend it to deal with underwater images as well. The proposed algorithm is completely automatic and quite efficient in practice. Joint work with Dana Berman (TAU) and Tali Treibitz (U.of Haifa)