מכון ויצמן למדע

THE WEIZMANN INSTITUTE OF SCIENCE

FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Vision and Robotics Seminar

Room 1 ,Ziskind Building
on Thursday, Mar 19, 2015
at 12:15

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Inverting RANSAC: Global Model Detection via Inlier Rate Estimation

Abstract:

This work presents a novel approach for detecting inliers in a given set of correspondences (matches). It does so without explicitly identifying any consensus set, based on a method for inlier rate estimation (IRE). Given such an estimator for the inlier rate, we also present an algorithm that detects a globally optimal transformation. We provide a theoretical analysis of the IRE method using a stochastic generative model on the continuous spaces of matches and transformations. This model allows rigorous investigation of the limits of our IRE method for the case of 2D translation, further giving bounds and insights for the more general case. Our theoretical analysis is validated empirically and is shown to hold in practice for the more general case of 2D affinities. In addition, we show that the combined framework works on challenging cases of 2D homography estimation, with very few and possibly noisy inliers, where RANSAC generally fails. Joint work with Roee Litman, Alex Bronstein and Shai Avidan.