מכון ויצמן למדע

THE WEIZMANN INSTITUTE OF SCIENCE

FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Vision and Robotics Seminar

Room 1 ,Ziskind Building
on Thursday, Apr 06, 2017
at 12:15

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Occlusion-Aware Template Matching via Consensus Set Maximization

Abstract:

We present a novel approach to template matching that is efficient, can handle partial occlusions, and is equipped with provable performance guarantees. A key component of the method is a reduction that transforms the problem of searching a nearest neighbor among N high-dimensional vectors, to searching neighbors among two sets of order sqrt(N) vectors, which can be done efficiently using range search techniques. This allows for a quadratic improvement in search complexity, that makes the method scalable when large search spaces are involved.
For handling partial occlusions, we develop a hashing scheme based on consensus set maximization within the range search component. The resulting scheme can be seen as a randomized hypothesize-and-test algorithm, that comes with guarantees regarding the number of iterations required for obtaining an optimal solution with high probability.
The predicted matching rates are validated empirically and the proposed algorithm shows a significant improvement over the state-of-the-art in both speed and robustness to occlusions.
Joint work with Stefano Soatto.