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Fast and Robust Long-term Tracking with Effective Searching Model

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Abstract : Kernelized Correlation Filter (KCF) based trackers have gained a lot of attention recently because of their accuracy and fast calculation speed. However, this algorithm is not robust in cases where the object is lost by a sudden change of direction, being obscured or going out of view. In order to improve KCF performance in long-term tracking, this paper proposes an anomaly detection method for target loss warning by analyzing the response map of each frame, and a classification algorithm for reliable target re-locating mechanism by using Random fern. Being tested with Visual Tracker Benchmark and Visual Object Tracking datasets, the experimental results indicated that the precision and success rate of the proposed algorithm were 2.92 and 2.61 times higher than that of the original KCF algorithm, respectively. Moreover, the proposed tracker handles occlusion better than many state-of-the-art long-term tracking methods while running at 60 frames per second.

Keywords : correlation filter, long-term tracking, random fern, real-time tracking
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