

Tracking Image Features with PCA-SURF Descriptors

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Abstract

The tracking of moving points in image sequences requires unique features that can be easily distinguished. However, traditional feature descriptors are of high dimension, leading to larger storage requirement and slower computation. In this paper, Principal Component Analysis (PCA) is applied to the 64-Dimension (D) Speeded Up Robust Features (SURF) descriptor to reduce the descriptor dimensionality and computational time, and suggest the minimum number of dimensions needed for reliable tracking with the Kalman Filter (KF). Tests using image sequences, from an RGB-D camera, are used to validate the performance of the reduced PCA-SURF descriptors as compared to the standard SURF descriptor.