

Non-Uniform SURF Feature Point Detection and Matching

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Abstract

This paper presents a method for detecting feature points from an image and locating their matching correspondence points across images. The proposed method leverages a novel rapid LBP feature point detection to filter out texture-less SURF feature points. The detected feature points, also known as Non-Uniform SURF feature points, are used to match corresponding feature points from other frame images to reliably locate positions of moving objects. The proposed method consists of two processing modules: Feature Point Extraction (FPE) and Feature Point Mapping (FPM). First, FPE extracts salient feature points with Feature Transform and Feature Point Detection. FPM is then applied to generate motion vectors of each feature point with Feature Descriptor and Feature Point Matching. Experiments are conducted on both artificial template patterns and real scenes captured from moving camera at different speed settings. Experimental results show that the proposed method outperforms the commonly-used SURF feature point detection and matching approach.

Keyword : Block Matching, Feature Point Detection, Motion Vector Detection