

Evaluation of Robust Feature Descriptors for Texture Classification

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Abstract : Texture is an important characteristic in real and synthetic scenes. Texture analysis plays a critical role in inspecting surfaces and provides important techniques in a variety of applications. Although several descriptors have been presented to extract texture features, the development of object recognition is still a difficult task due to the complex aspects of texture. Recently, many robust and scaling-invariant image features such as SIFT, SURF and ORB have been successfully used in image retrieval and object recognition. In this paper, we have tried to compare the performance for texture classification using these feature descriptors with k-means clustering. Different classifiers including K-NN, Naive Bayes, Back Propagation Neural Network, Decision Tree and Kstar were applied in three texture image sets – UIUCTex, KTH-TIPS and Brodatz, respectively. Experimental results reveal SIFTs as the best average accuracy rate holder in UIUCTex, KTH-TIPS and SURF is advantaged in Brodatz texture set. BP neuro network works best in the test set classification among all used classifiers.

Keywords : texture classification, texture descriptor, SIFT, SURF, ORB

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