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A Speeded up Robust Scale-Invariant Feature Transform Currency Recognition Algorithm

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Abstract : All currencies around the world look very different from each other. For instance, the size, color, and pattern of the paper are different. With the development of modern banking services, automatic methods for paper currency recognition become important in many applications like vending machines. One of the currency recognition architecture’s phases is Feature detection and description. There are many algorithms that are used for this phase, but they still have some disadvantages. This paper proposes a feature detection algorithm, which merges the advantages given in the current SIFT and SURF algorithms, which we call, Speeded up Robust Scale-Invariant Feature Transform (SR-SIFT) algorithm. Our proposed SR-SIFT algorithm overcomes the problems of both the SIFT and SURF algorithms. The proposed algorithm aims to speed up the SIFT feature detection algorithm and keep it robust. Simulation results demonstrate that the proposed SR-SIFT algorithm decreases the average response time, especially in small and minimum number of best key points, increases the distribution of the number of best key points on the surface of the currency. Furthermore, the proposed algorithm increases the accuracy of the true best point distribution inside the currency edge than the other two algorithms.

Keywords : currency recognition, feature detection and description, SIFT algorithm, SURF algorithm, speeded up and robust features
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