**BRINT: Binary Rotation Invariant and Noise Tolerant Texture Classification**

**ABSTRACT:**

In this paper, we propose a simple, efficient, yet robust multiresolution approach to texture classification—binary rotation invariant and noise tolerant (BRINT). The proposed approach is very fast to build, very compact while remaining robust to illumination variations, rotation changes, and noise. We develop a novel and simple strategy to compute a local binary descriptor based on the conventional local binary pattern (LBP) approach, preserving the advantageous characteristics of uniform LBP. Points are sampled in a circular neighborhood, but keeping the number of bins in a single-scale LBP histogram constant and small, such that arbitrarily large circular neighborhoods can be sampled and compactly encoded over a number of scales. There is no necessity to learn a texton dictionary, as in methods based on clustering, and no tuning of parameters is required to deal with different data sets. Extensive experimental results on representative texture databases show that the proposed BRINT not only demonstrates superior performance to a number of recent state-of-the-art LBP variants under normal conditions, but also performs significantly and consistently better in presence of noise due to its high distinctiveness and robustness. This noise robustness characteristic of the proposed BRINT is evaluated quantitatively with different artificially generated types and levels of noise (including Gaussian, salt and pepper, and speckle noise) in natural texture images.

**EXISTING SYSTEM:**

Among local texture descriptors, LBP has emerged as one of the most prominent and has attracted increasing attention in the field of image processing and computer visiondue to its outstanding advantages: (1) ease of implementation, (2) no need for pre-training, (3) invariance to monotonic illumination changes, and (4) low computational complexity, making LBP a preferred choice for many applications. Although originally proposed for texture analysis, the LBP method has been successfully applied to many diverse areas of image processing: dynamic texture recognition, remote sensing, fingerprint matching, visual inspection, image retrieval, biomedical image analysis, face image analysis, motion analysis, edge detection, and environment modeling. Consequently many LBP variants are present in the recent literature.

**DISADVANTAGES OF EXISTING SYSTEM:**

* Although significant progress has been made, most LBP variants still have prominent limitations, mostly the sensitivity to noise, and the limiting of LBP variants to three scales, failing to capture long range texture information.
* Although some efforts have been made to include complementary filtering techniques, these increase the computational complexity, running counter to the computational efficiency property of the LBP method.

**PROPOSED SYSTEM:**

In this paper, we propose a novel, computationally simple approach, the Binary Rotation Invariant and Noise Tolerant (BRINT) descriptor, Motivated by the recent CLBP approach, which was proposed by Guo et al. to include both the signs and the magnitudes components between a given central pixel and its neighbors and the center pixel intensity in order to improve the discriminative power of the original LBP operator, we extend BRINT to include a magnitude component and to code the intensity of the center pixel. Based on these methods we develop a discriminative and robust combination for multi- resolution analysis, which will be demonstrated experimentally to perform robustly against changes in gray-scale, rotation, and noise without suffering any performance degradation under noise-free situations.

**ADVANTAGES OF PROPOSED SYSTEM:**

* It is highly discriminative, has low computational complexity, is highly robust to noise and rotation, and allows for compactly encoding a number of scales and arbitrarily large circular neighborhoods. At the feature extraction stage there is no pre-learning process and no additional parameters to be learned.

**SYSTEM ARCHITECTURE:**

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**SYSTEM REQUIREMENTS:**

**HARDWARE REQUIREMENTS:**

* System : Pentium IV 2.4 GHz.
* Hard Disk : 40 GB.
* Floppy Drive : 1.44 Mb.
* Monitor : 15 VGA Colour.
* Mouse : Logitech.
* Ram : 512 Mb.

**SOFTWARE REQUIREMENTS:**

* Operating system : Windows XP/7.
* Coding Language : MATLAB
* Tool : MATLAB R 2007B

**REFERENCE:**

Li Liu, Member, IEEE, Yunli Long, Paul W. Fieguth, Member, IEEE, Songyang Lao, and Guoying Zhao, Senior Member, IEEE ,“**BRINT: Binary Rotation Invariant and Noise Tolerant Texture Classification**”, IEEE TRANSACTIONS ON IMAGE PROCESSING, VOL. 23, NO. 7, JULY 2014.