COLOR AND TEXTURE INTEGRATION USING CTEX

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Abstract

Segmentation refers to the process of partitioning a digital image into sets of pixels or superpixels. The goal of segmentation is to simplify and change the representation of an image for meaningful analysis. Image segmentation has wide applications as Medical Imaging for diagnosis, treatment planning, computer aided surgery, face recognition, fingerprint recognition, traffic control systems, brake light detection, machine vision etc. In this paper, natural images are segmented by combing color and texture information. For this an unsupervised image segmentation framework (referred as CTex) is used. CTex is based on the adaptive inclusion of color and texture in the process of data partition. It is new formulation for the extraction of color features that is evaluated using the input image in a multispace color representation. The key component is the inclusion of the Self Organizing Map (SOM) network in the computation of the dominant colors and estimation of the optimal number of clusters in the image. The texture features are computed using a multichannel texture decomposition scheme based on Gabor filtering. This paper is implemented using the image processing, neural network and the statistical toolboxes of Matlab.