

Texture image descriptors in Android Environment

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Resumo

Este trabalho apoia um Projeto de Doutorado na área de Content Based Image Retrieval (CBIR). Implementa um ambiente baseado em interface Android focando em descritores de textura.

Abstract

This activity is part of a Doctoral Project whose objective is to implement a Content Based Image Retrieval (CBIR) Environment based on Android interface, where the user can interact with the system by commands, images inputs and outputs, and, in addition, receive a feedback about its response. This project will also focus on study texture based descriptors and the viability to implement it on an Android environment.

Key words: CBIR, Descriptors, Android

Introduction

In order to retrieve an image from a database using another image as an input, different types of descriptors have been developed to extract the largest amount of information possible to obtain an accurate result.

This activity uses a texture descriptor, mainly the LBP (Local Binary Pattern) – including Bag of Words (BoW) - , an algorithm that analyses a single pixel per time and its surroundings to classify him.

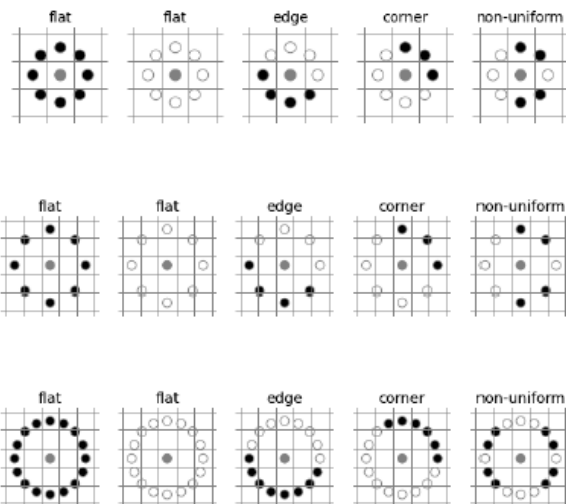


Image 1. Classification of a pixel based on its neighborhood.

This project will be implemented using the Android environment in Android Studio IDE, allowing testing in portable devices compatible with this Operational System.

Results and Discussion

In the first stage, it'll be developed a prototype to check the LBP's accuracy and efficiency compared with others descriptors.

This prototype will contain an interface where the user will be able to choose an image or even take a picture as an input and, as a result, the application will return the most similar images to the user.

A number of image databases – e.g. Caltech, Coil-100, Corel, ETH-80, MPEG7, MSRCORID, Pascal, Tattoo-Image-Base – is going to be used for evaluation and comparison of the implementations and results.

Conclusions

Using the results from the tests, we'll be able to evaluate the descriptor and make modifications to improve its response, if necessary. Also, others types of descriptors, e.g. color descriptors, would be used together with the LBP in order to analyze different characteristics from an image.

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¹OJALA, T.; PIETIKAINEN, M. and HARWOOD, D., A comparative study of texture measures with classification based on feature distributions, 1996.