(1)

Incorporating Prior Information in the Fuzzy C-mean Algorithm with Application to Brain Tissues Segmentation in MRI

Moumen El-Melegy, and Hashim Mokhtar

Abstract:

This paper introduces a new formula for the objective function of the famous fuzzy C-means algorithm. Two weighted terms are added to the objective function to reflect any available information about the class center and class pixels distribution throughout the datasets. The algorithm is evaluated for the task of the segmentation of medical MRI brain volume. The results show that the algorithm has a considerable robustness against noise and partial volume effects, and it needs a smaller number of iterations to reach convergence compared with other similar algorithms.

Keywords:

Fuzzy classification, prior information, MRI segmentation

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(2)

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(3)

Heat Kernels for Non-Rigid Shape Retrieval: Sparse Representation and Efficient Classification

Abdelrahman, M. ; Comput. Vision & Image Process. Lab., Univ. of Louisville, Louisville, KY, USA ; El-Melegy, M. ; Farag, A.

Abstract:

One of the major goals of computer vision and machine intelligence is the development of flexible and efficient methods for shape representation. This paper presents an approach for shape retrieval based on sparse representation of scale-invariant heat kernel. We use the Laplace-Beltrami eigen functions to detect a small number of critical points on the shape surface. Then a shape descriptor is formed based on the heat kernels at the detected critical points for different scales, combined with the normalized eigen values of the Lap lace-Beltrami operator. Sparse representation is used to reduce the dimensionality of the calculated descriptor. The proposed descriptor is used for classification via the collaborative representation-based classification with regularized least square algorithm. We compare our approach to two well-known approaches on two different data sets: the nonrigid world data set and the SHREC 2011. The results have indeed confirmed the improved performance of the proposed approach, yet reducing the time and space complicity of the shape retrieval problem.

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Computer and Robot Vision (CRV), 2012 Ninth Conference , ,

(4)

Acomparative Study Of Classification Methods for Automatic Multimodal Brain Segmentation

Moumen El-Melegy, Khaled A. Mohamed

Abstract:

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Keywords:

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The international conference on innovation trends in computer Engineering , NULL , NULL

(5)

Extraction Characters from Scene Image Based On Shape Properties and Geometric Features

Abdel-Rahiem A. Hashem, Mohd. Yamani Idna Idris, Moumen T. El-Melegy

Abstract:

Text extraction from scene images is a defy subject in light of low resolution, complex background and textual style/text size varieties. In this paper, we design a scheme to detect text based on shape features like Euler Number, a number of pixels for each region which candidate to be a character and vertical distances as a geometric feature between these regions. We divide these features into base features to collect the text regions, and the other features as a filter to discard the non-text regions. We use some threshold with the features either those to extract text regions or to discard non-text regions. The proposed method outperforms some existed method through the basis metric.

Keywords:

Scene text, Shape properties, Connected-components analysis.

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(6)

A Comparison study on text detection in scene images based on connected component analysis

Abdel-Rahiem A. Hashem, Mohd. Yamani Idna Idris, Ahmed Gawish, Moumen T. El-Melegy

Abstract:

Text detection from scene images is a challenging topics because of low resolution, complex background and font/font size variations. In this paper, we design a method to detect text based on Naïve Bayes classifier and connected component analysis. We used Naïve Bayes classifier to convert original gray level image into binary image, then connected component analysis is used to identify candidate text regions. In the last step we use empirical rules to determine threshold which used to discard non-text regions and keep the text regions. The proposed method compares between three classifiers outcome; the first is based on Otsu method, the second classifier outcome is derived using Naïve Bayes classifier based on mean feature and standard deviation feature, we named this method Bayes_Two_Features or shortly Bayes2. The last classifier outcome is derived using Naïve Bayes classifier based on just the mean feature, we named this method Bayes_Single_Feature or shortly Bayes1. Otsu's method is used to convert grayscale image to binary image by assuming that image contains two classes; foreground and background. Experimental results show that Bayes2 classifier outperforms the other two methods, in the case of big letters especially when these letters are in non-horizontal and skewed form.

Keywords:

Connected Component Analysis, Bayesian Classifier, Otsu's method

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