

Texture image analysis: Methods and Applications

Thematic Session within VIPIMAGE2009

II ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing

Porto, Portugal, 14-16 October 2009

www.fe.up.pt/~vipimage

http://paginas.fe.up.pt/~vipimage/conference/thematic_sessions.html

Description

Texture is an important characteristic in image understanding.

There is no formal definition of texture; usually definitions of texture depend on the particular application considered. Texture descriptors provide measures of properties such as smoothness, coarseness and regularity; the principal approaches used in texture analysis are statistical, structural and transform-based-method. Characteristics of texture like smoothness and coarseness are well analyzed by statistical approaches; these are mainly related to the use of statistical moments of the gray level histogram of an image or a region. When we are interested in identifying texture primitives, structural approaches are suited. Spectral approaches are based on the properties of the Fourier spectrum; it describes the directionality of periodic or almost periodic patterns in an image.

In texture analysis important aspects are related to texture classification; usually the goal of texture classification is to produce a classification map of the image in order to assign each textured region to a texture class. Texture segmentation allows to obtain a boundary map, whereas texture synthesis is generally used for image compression applications. Certain properties of texture are significant in the extraction of surface geometry; this allows to recover shape from texture.

Texture analysis arises in many applications, such as medical image analysis, satellite imagery, industrial inspection, remote sensing, for example. In medical imaging texture analysis is particularly useful for classification and segmentation of liver tissue, or of intracardiac masses in echocardiograms or for the identification of microcalcifications in mammography for breast cancer diagnosis. Also for the analysis of bone structure, for example in presence of fractures or osteoporosis, texture parameters are considered. Texture analysis is currently used in the interpretation of SAR images and in the classification of geologic structures. Also surveillance demands, for example for crowd monitoring, or biometric measures, for example for iris and fingerprints identification, may be accomplished with texture analysis.

The aim of this session is to discuss recent developments in texture image analysis both from a methodological point of view and from its interest in various field applications.

Topics of interest include (but are not restricted to):

Texture analysis

Texture descriptors

Fractal analysis

Neural networks and texture analysis

Texture segmentation

Texture synthesis

Texture classification

Texture in medical images

Publications

The proceedings book will be published by the Taylor & Francis Group, as happened with VipIMAGE 2007 (ISBN: 9780415457774). The organizers will encourage the submission of extended versions of the accepted papers to related International Journals; in particular for special issues dedicated to the conference. One possibility already confirmed is the International Journal for Computational Vision and Biomechanics (IJCV&B).

As what happened with VipIMAGE 2007, the organizers will also propose the publishing of a book by SPRINGER (ISBN: 978-1-4020-9085-1), under the Computational Methods in Applied Sciences series, with invited works from the most important ones presented in conference.

Important dates

- Submission of extended abstracts: March 15, 2009
- Lectures and Final Papers: June 15, 2009

Organizers

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