5th International Workshop on Image Mining. Theory and Applications (IMTA-5 2015)

March 11-14, 2015 – Berlin, Germany

http://www.visigrapp.org/IMTA.aspx

In conjunction with the 10th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications - VISIGRAPP 2015

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The main purpose of the IMTA-workshop is to provide the fusion of modern mathematical approaches and techniques for image analysis/pattern recognition with the requests of applications.

The IMTA-5 will continue the successful series of workshops devoted to modern mathematical techniques of image mining and to corresponding applications. The IMTA-5 2015 will be conducted in cooperation with the Technical Committee No.16 "Algebraic and Discrete Mathematical Techniques in Pattern Recognition and Image Analysis" of the International Association for Pattern Recognition and with the National Committee for Pattern Recognition and Image Analysis of the Russian Academy of Sciences. The workshop will consist of invited talks, contributed talks and informal discussions, and a wrap-up session.

Scope
Automation of image mining is one of the most important strategic goals in image analysis, recognition and understanding both in scientific and technological aspects. The main subgoals are developing and applying of mathematical theory for constructing image models and representations allowable by efficient pattern recognition algorithms and for constructing standardized representation and selection of image analysis transforms. Automation of image-mining is possible by combined application of mathematical theory of image analysis/understanding/recognition and mathematical theory of pattern recognition.

Automation of image processing, analysis, estimating and understanding is one of the crucial points of theoretical computer science having decisive importance for applications, in particular, for diversification of solvable problem types and for increasing the efficiency of problem solving.

The role of an image as an analysis and estimation object is determined by its specific and inalienable informational properties. Image is a mixture and a combination of initial (raw, "real") data and its representation means, of computational procedures and of the physical nature and of the models of objects, events and processes to be represented via an image.

The specificity, complexity and difficulties of image analysis and estimation (IAE) problems stem from necessity to achieve some balance between such highly contradictory factors as goals and tasks of a problem solving, the nature of visual perception, ways and means of an image acquisition, formation, representation, reproduction and rendering, and mathematical, computational and technological means allowable for the IAE.

The mathematical theory of image analysis is not finished and is passing through a developing stage. It appeared not so long ago that only intensive creating of comprehensive mathematical theory of image analysis and recognition (in addition to the mathematical theory of pattern recognition) could bring a real opportunity to solve efficiently application problems via extracting from images the information necessary for intellectual decision making. The transition to practical, reliable and efficient automation of image-mining is directly dependent on introducing and developing of mathematical means for IAE.

The participants will enjoy the opportunity to discuss a methodology, mathematical and computational techniques for automation of image mining on the base of mathematical theory for IAE. Another important task of the workshop is to discuss linguistic tools for image mining – image knowledge bases and image science ontologies – and to estimate the prospects of the algebraic approach in representation of image analysis knowledge in this environment. The interpretation of mathematical and linguistic techniques will be illustrated by application problems, mainly from biology and medicine, automation of scientific research, industrial applications and many other domains generating breakthrough and difficult application tasks.

This workshop is intended to cover, but it is not limited to, **the following topics**:

1. New Mathematical Techniques in Image Mining

- Algebraic Approaches
- Discrete Mathematics Techniques
- Descriptive Techniques and Data Representation Problems
- Structural and Syntactic Techniques
- Multiple Classifiers
- Pattern Recognition Techniques in Image-Mining Environment
- Other Mathematical Techniques
- Machine Learning

2. Image Models, Representations and Features

3. Automation of Image Mining

- Image Mining, Computer Vision and Knowledge-Based Systems
- Image Databases
- Image Knowledge Bases
- Image Mining Technologies
- Biomedical Image Mining
- Knowledge Representation and Linguistic Tools
    - Image Science Ontologies
    - Image Science Thesauri

4. Applied Problems

- Bioinformatics
- Medical Applications
- Industrial Applications
- Image Analysis Technologies
- Other Important and Interesting Applied Problems.

Important dates

Paper Submission: **January 8, 2015**
Authors Notification: J**anuary 21, 2015**
Registration and Camera-ready Submission: **January 30, 2015**

Paper Submission

Prospective authors are invited to submit papers in any of the topics listed above. Instructions for preparing the paper are available at the conference "Authors Kit" web page. Papers should be submitted electronically via the web-based submission system.

Workshop Proceedings

All accepted papers will be published in the workshop proceedings book, under an ISBN reference, and in CD-ROM support. Full revised texts of all papers presented at the workshop will be published in the special issue of the international journal "Pattern Recognition and Image Analysis. Advances in Mathematical Theory and Applications" (MAIK "Nauka/Interperiodica" Pleiades Publishing, Moscow, distributed worldwide by SPRINGER), 2015.

Registration Information

At least one author of an accepted paper must register for the workshop. If the registration fees are not received by **January 30, 2015** the paper will not be published in the workshop proceedings book.

Secretariat Contacts

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