***The First International Conference on Pattern Recognition and Artificial Intelligence***

**Concordia University, Montreal, Canada**

**14-17 May 2018**

[**http://www.icprai2018.com**](http://www.icprai2018.com)

**Call for papers**

**Special Session on Image Mining.**

**Theory and Applications (IMTA-VI-2018)**

**Special Sessions Co-chairs:**

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

The IMTA-VI will continue the successful series of workshops devoted to modern mathematical techniques of image mining and to corresponding applications (IMTA-I – Funchal, Madeira, Portugal; IMTA-II- Lisboa, Portugal; IMTA-III – Angers, France; IMTA-IV - Barcelona, Spain; IMTA-V – Berlin, Germany). The IMTA-VI-2018 will be conducted in cooperation 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 special session 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 special session 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.

**Intended audience**

Professionals, researchers and engineers, PhD students and graduate students interested in Mathematical Theory of Image Analysis, in Problem-Solving via modern mathematical techniques, in intellectual decision making, designers of automated image analysis systems.

**Prerequisites for participants**

* Technical University course in mathematics including a course in general algebra;
* Technical University courses in pattern recognition and/or image analysis;
* Interest to theory and methodology of image analysis and to new mathematical techniques for pattern recognition and/or image analysis.

**Important dates**

Paper Submission: **January 12, 2018**

Authors Notification: **January 15, 2018**

Registration and Camera-ready Submission: **February 15, 2018**

**Paper Submission**

To submit a paper you should send before January 12, 2018 filled registration form (see attachment) and Word or PDF File including the paper to the IMTA-6 secretariat address ([werayashina@gmail.com](mailto:werayashina@gmail.com)).

Prospective authors are invited to submit papers in any of the topics listed above.

1. Papers should have a length between four (4) and six (6) pages. For papers exceeding this limit, authors will be charged CAD$160 for each extra page.
2. Papers must be written in English.
3. Paper Format:

* US Letter Sized Pages (8.5" x 11.00").
* Two column text and images.
* Times New Roman font, 10-point font size
* **Margins:** **Top:** 0.75", **Bottom:** 1", **Left:** 0.62", **Right:** 0.62"

**Paper Templates**

For detailed description on paper format, please download the guidelines documentation in any of the following formats:

* [Microsoft Word](https://users.encs.concordia.ca/~icprai18/ICPRAI2018_FormatWord.zip)
* [Latex](https://users.encs.concordia.ca/~icprai18/ICPRAI2018_FormatLatex.zip)
* [Latex Bibliography](https://users.encs.concordia.ca/~icprai18/ICPRAI2018_FormatLatexBib.zip).

**Ethical Requirements:**

The authors acknowledge that the paper submitted is original work and has not been copied/plagiarized in any part or form. The authors acknowledge that the paper has not been submitted to another peer-reviewed conference, journal, or workshop during the ICPRAI 2018 review period.

ICPRAI 2018 may remove any papers violating these requirements.

By submitting to ICPRAI 2018, the authors acknowledge that the submitted paper has **not** previously and is **not** currently accepted for publication in its current form. This includes, but is not limited to, any conference, workshop, or journal.

The paper will be presented in person by its author(s).

**Paper reviewing process**

All papers will be peer-reviewed. The criteria for accepting the papers will be as follows.

A paper would be accepted if it satisfies to any of the following conditions and corresponds to the subject matter of IMTA-VI-2018 in a broad sense:

a) a reviewer likes it in general;

b) the author is a qualified person well known in the field;

c) a paper has a brand name - it came from a prominent scientific school, institution, university;

d) a paper includes a new idea, approach, etc., even without any practical confirmation;

e) a paper is devoted to an "interesting" application;

f) a paper is devoted to a new technique for an old application problem;

g) a paper is devoted to a new application for an old technique;

h) a paper is devoted to a problem or a topic important or prospective to the field.

**Special Session Proceedings**

IMTA-6-2018 papers will be published in full and included as part of the ICPRAI proceedings, like other conference proceedings, no pre- no post-. The proceedings will have an ISBN number to be indexed. We'll maintain the conference proceedings for at least 3 years and we'll co-operate with other organizations for referencing and indexing.

Best papers will be selected for a Special Issue in the International Journal of Pattern Recognition and Artificial Intelligence.

Papers of general interest will be considered for a new book in the Book Series of Language Processing, Pattern Recognition, and Intelligent Systems (<http://www.worldscientific.com/series/scpl> ), and depending on the submissions, we may also propose a Special Issue to another journal on papers of special interest on emerging topics.

Full revised texts of all papers presented at the special session 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), 2018-2019 (ACM Digital Library, Academic OneFile, CSA, EI-Compendex, Gale, Google Scholar, INSPEC, OCLC, PASCAL, ProQuest, SCImago, Scopus, Summon by ProQuest).

**Registration Information**

Each **accepted** paper must have at least ONE NON-STUDENT registered author in order to be included in the proceedings. A valid non-student registration may cover several papers. The deadline for author registration is February 15, 2018.

Papers that do not have an associated registered author by February 15, 2018 will not be included in the proceedings.

Discounted registration fee for Special Session participants would be in the range of Can$400 - 600 = US$312 - 468. Students will get a deeper discount, to be determined later. This fee will include the conference proceedings, program, banquet, coffee breaks, etc. The exact amount will be announced in the second part of January.

**All questions and additional information concerning IMTA-IV-2018 should be sent to Dr. Vera Yashina (**[werayashina@gmail.com](mailto:werayashina@gmail.com)**).**

**Special Session Contact**

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