

Special Issue of the Journal “Pattern Recognition” on Analysis and Recognition of Indirect Immunofluorescence Images

Preliminary Call for Papers

In the recent years we have assisted to a progressive growing number of Pattern Recognition applications, mainly devoted to the exploitation of cutting edge scientific methodologies for the solution of problems of relevant interest to civil society. In the field of medical image analysis this trend has been even more evident than in other ones, as the availability of assisted diagnosis tools would allow the medical community to increase their productivity jointly with an improvement of the quality and precision of the diagnostic act.

Among all, rather novel interests are concentrating on the indirect immunofluorescence images (IIF), i.e. images obtained by “staining” a biological tissue with antibodies that carry a fluorescent chemical compound and that bind to other specific antibodies, so as to generate fluorescence images representing the distribution of the target antibodies within the tissue. This kind of assay is considered the *gold standard* to evaluate the presence of several autoimmune diseases. Due to its effectiveness, diagnostic tests for systemic autoimmune diseases are now becoming more and more interesting to industrial communities; there is a consequently strong demand for a complete automation of the process that would result in increased repeatability and reliability, easier and faster result reporting, higher productivity and lower costs.

The automation of this process is a topic that is meeting a growing interest among PR scientists, that in the last few years have provided innovative contributions to the different aspects of the analysis of these kind of images; a clear evidence of this interest has been recently demonstrated in occasion of the first edition of the “HEp-2 cells classification” contest hosted by the ICPR 2012. The initiative got a large participation of the scientific community being the ICPR 2012 contest with the highest number of submissions. In light of this interest and considering that, up to now, no journal has dedicated a special issue to this topic, it appears evident the need of presenting the state of the art of these emerging applied Pattern Recognition systems. The occasion of connecting this special issue with the contest is particularly important: it would be not merely an issue devoted to collect papers on a single interesting topic, but also the unmissable opportunity to assess the performance of different methods, by comparing them on the common database used for the ICPR 2012 contest.

The special issue aims at gathering contributions analyzing the state of the art in this field and describing the ongoing research activities by inviting manuscripts on the most recent developments in this applicative area, and welcoming those validated on the dataset used for the ICPR 2012 contest (see <http://mivia.unisa.it/contest-hep-2/>). Topics of interest include, but are not limited to:

- ⤴ Image acquisition and pre-processing
- ⤴ Cells segmentation
- ⤴ Mitotic cell detection
- ⤴ Image fluorescence intensity classification
- ⤴ Image staining pattern recognition
- ⤴ CAD systems based on IFI images

Tentative Dates (to be confirmed on the web page):

Manuscript submission deadline:	March 15, 2013
First notification:	May 30, 2013
Revised manuscript submission:	June 30, 2013
Notification of final decision:	July 31, 2013
Planned publication date of special issue:	Winter 2013

Special issue web page: <http://mivia.unisa.it/pr-ifi-special-issue>

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