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Call for Papers

Special session "**Combined Learning Methods and Mining Complex Data**"

In conjunction with the 7th Conference Rough Sets and New Trends in Computing Conference
(RSCTC 2010) – to be held in Warsaw, Poland (date of the conference June 28-30, 2010)

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Motivation and Goals:
Data mining and machine learning have shown tremendous progress in the last decades. Numerous methods have been introduced to discover different representations of knowledge from data and the number of their applications in various fields is growing. Nevertheless, many of approaches are based on using a single learning algorithm to static and standard representations of data (mainly tabular forms). However, the rapid growth of information technology gives access to more complex, larger and, generally speaking, "more difficult" data sets that pose new challenges for researchers and ask for a variety of dedicated approaches.

Hence, in this session we would like to focus on data characteristics related to the following modern challenges:

(1) *Processing data streams* and learning in changing and distributed environments. Many sources generate continuous and time changing data, where the data distributions and target concepts change over time. Mining them and adapting to concept drifts is of great interest.

(2) *Semi-supervised learning*. In many domains only a limited number of labelled examples is available, therefore learning approaches should take as much advantages of unlabelled data as possible to produce an efficient solution. In case of classification, it leads to development of such approaches as co-training or active learning. On the other hand, supervised information is also taken into account in new clustering algorithms.

(3) *Learning from imbalanced data*, where one class contains much smaller number of examples than the remaining classes. The imbalanced distribution of classes constitutes a difficulty for standard learning algorithms and calls for specialized approaches.

The other aim of this session is to promote complex learning methods such as combining several strategies, with *classifier ensembles* being of particular interest. Although the multiple classifiers are still "young" they have already proved to be accurate, flexible and sometime more efficient than single classifiers. The scope of this session also covers other combined methods such as regression ensembles, hierarchical classifiers or meta-learning, and their integration with feature processing.

Both methodological and application-oriented papers are appropriate for the session. In particular, we encourage researchers to study the use of combined learning methods to the abovementioned challenges. Other applications are also encouraged, including relationships to generalisations of rough sets for knowledge discovery.

The main aim of this session is to gather researchers interested in these issues and to demonstrate results in these and related areas of mining difficult data.

Important Dates:
Paper submission site open: January 1, 2010
Paper submission due: February 28, 2010
Acceptance notices: March 21, 2010
Camera-ready papers due: April 4, 2010
Conference: June 28-30, 2010 (the special session will be scheduled in one of these days)

Topics of interest:

Supervised ensemble learning problems and multiple classifier systems
Theoretical aspects of constructing combined learning systems
Combined learning methods for regression and ordinal data
Classification, clustering and frequent patterns from data streams
Ensemble learning in changing environments
Detecting changes and concept drift in evolving data
Knowledge discovery from ubiquitous environments
Incremental online learning algorithms
Active learning and co-training
Semi-supervised approaches (including clustering)
Sampling techniques for imbalanced data
Handling class imbalance by modifying inductive bias and post-processing of learned models
Pre-processing, structuring and organizing complex data
Applications, especially in data mining, medicine, text processing, web mining, image or
multimedia analysis, bioinformatics.

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Program Committee of the Session

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Alexey Tsymbal (Corporate Technology Division, Siemens AG, Erlangen, Germany)

Proposed Format of the Session

The special session will consist of a few "slots in the conference schedule" depending on the
number of the accepted contributions. These slots will be grouped together in one track during one
of the RSCTC'2010 days.

Submission Requirements

Papers submitted to a special session will undergo the normal submission process by means of the same on-line submission system as for RSCTC'2010 regular papers (this system will be opened since January 1, 2010). Please see RSCTC'2010 conference Web page http://www.rsctc2010.org/ for more details.
Papers will be reviewed on overall quality, originality and relevance to the session.

Each special session paper should have no more than ten (10) pages in the Springer-Verlag LNCS style, including figures, tables and references. Springer-Verlag author instructions are available at: http://www.springer.com/lncs.

Publication:

All accepted special session papers will be published in the conference proceedings by Springer-Verlag in the Lecture Notes in Artificial Intelligence (LNAI) series, which is published, in parallel to the printed books, in full-text electronic form via http://www.springerlink.com.

Fees:

Submitting a paper to the session means that if the paper is accepted, at least one author must attend the conference and present the paper.

The session will be located inside the main RSCTC 2010 conference and authors of the accepted papers should register to the main conference as its participants – see the RSCTC 2010 conference Web page for more information.