Special Issue on Granular Mining and Knowledge Discovery

Aim and Scope

Granulation is a computing paradigm, among others such as self-reproduction, self-organization, functioning of brain, Darwinian evolution, group behavior, cell membranes, and morphogenesis that are abstracted from natural phenomena. Granulation is inherent in human thinking and reasoning processes. Granulation of a universe involves the decomposition of the universe into parts, or the grouping of individual elements into classes, based on available information and knowledge, and thus leads to information compression. Granular computing (GrC) can be treated as a unified framework for theories and methodologies that make use of granules in the process of problem solving. Therefore, computing with granules, rather than objects provides gain in computation time, thereby making the role of granular computing significant in knowledge discovery and data mining. From the viewpoint of granular computing, concept formation, knowledge discovery, and data mining can be considered as characterizing individual granules and finding relationships between these granules. Several modes of relationship can be identified, such as one-way and two-way implications, and their strength can be quantified.

The structure of granulation can often be defined using methods based on rough sets, fuzzy sets or their combination, among others. In this consortium, rough sets and fuzzy sets work synergistically, often with other soft computing approaches, and use the principle of granular computing. The systems, so developed, exploit the tolerance for imprecision, uncertainty, approximate reasoning and partial truth and are capable of achieving tractability, robustness, and close resemblance with human-like (natural) decision-making for pattern recognition in ambiguous situations. The theories are also useful for modelling perception based computation.

The objective of the special issue on “Granular Mining and Knowledge Discovery” is to provide a much needed overview of this interdisciplinary research area as it enters maturity, hosting novel research contributions which (i) augment current tools, models and languages by means of granulation.
techniques (ii) provide facilities for representing uncertain knowledge and for reasoning in presence of uncertainty, and (iii) potentially applied for PR and data mining tasks. The special issue would provide a forum to help academics, practitioners, post-graduates and policy makers, working in the area of granular computing to disseminate information and to learn from each other's work.

**Topics of interest include but are not limited to:**

- Granular methodologies
- Interactive granular computations
- Granular algorithms in mining and knowledge discovery
- System modeling with granular models, e.g., granular neural networks, granular neuro-fuzzy networks, granular rough-fuzzy networks
- Application of granular models to pattern recognition, data mining and knowledge discovery tasks in real life applications.

**Important Dates:**

- Deadline for submissions: September 15th, 2014
- First review decision: Jan. 30th, 2015
- Revised review decision: May 15th, 2015
- Final manuscript due: July 15th, 2015

**Submission Format:**

Papers will be evaluated based on their originality, presentation, relevance and novelty, as well as their suitability to the special issue, and for their overall quality. The submitted papers must be written in excellent English and describe original research. Guest editors will make an initial determination of the suitability and scope of all submissions. All submitted papers will be strictly peer-reviewed by at least two independent reviewers. Author guidelines for preparation of manuscript can be found at [http://www.elsevier.com/journals/pattern-recognition-letters/0167-8655/guide-for-authors](http://www.elsevier.com/journals/pattern-recognition-letters/0167-8655/guide-for-authors).

**Submission Guidelines**

Manuscripts and any supplementary material should be submitted through the Pattern Recognition Letters website ([http://ees.elsevier.com/patrec](http://ees.elsevier.com/patrec)).
Type” step in the submission process

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