

Special Issue on FUZZY ROUGH SETS FOR BIG DATA – Deadline for Submissions 15.5.19

1. Aims and Scope

Recent advances in computing technology imply collecting vast amount of data coming from various sources, such as the Internet, sensor monitoring systems, social networks, mobile communication systems, transportation systems, and so on. We continue to encounter an explosive growth in big data coming with highly visible aspects of Volume, Variety, Velocity, Veracity and Value. These 'Five Vs' are the key features of big data; they also come with inherent uncertainties in the representation, processing, and analysis. Big data have emerged as a hot topic along their promising usefulness in many fields such as commerce and business, biology, medicine, public administration, and cognition in human brain. As big data often contain a significant amount of unstructured, uncertain and imprecise data, which are structurally complex and incomplete, traditional techniques and methods of data analysis are less effective when being considered in large-scale incomplete information system to extract knowledge. Installation of various sensors make possible for numerous variables to be captured and in turn, this leads to an exponential growth of the problem size to be handled. The benefits stemming from the management of big data are obvious: the larger the data, the higher the amount of potentially extracted knowledge. Real-life big data often refer to incompleteness, uncertainty and vagueness. The conventional techniques of knowledge discovery, ranging from models, algorithms, and system to their application, have been challenged on how to store, manage, process, and analyze big data.

In the recent past, the evolution of research interest has focused on fuzzy sets and rough sets. They provide two powerful conceptual and algorithmic vehicles for multiple-view data analysis, which is of vital importance for understanding of big data analysis completed at different granularity levels. Fuzzy sets and rough sets lead to several important advantages of robustness, simplification and efficiency for big data analysis. Fuzzy rough sets have appeared as a new emerging combination delivering the advantages of these two complementary areas (fuzzy sets and rough sets). It is considered to be a more powerful model for analyzing uncertainty in big data, and it can be directly applied to a variety of knowledge analytical problems of continuous or numerical large-scale datasets. In the fuzzy rough case, elements have a membership in the range, which allows for a greater flexibility in handling uncertain information. It has been a hot trend to address the classical and new-emerging data mining problems in big data. So there is a good potential to improve reasoning and understanding of big data by using the fuzzy rough sets method.

The goal of this Special Issue aims at providing an opportunity to feature the most recent developments in the state-of-the-art of fuzzy rough sets in big data and knowledge processing. It will bring both researchers from academia and practitioners from industry to discuss the latest progress, new research topics and potential application domains. Papers for the special issue are invited on but not limited to any of the topics listed below.

2. TOPICS COVERED

The topics include but are not limited to:

- Uncertain data presentation and modelling with fuzzy rough sets
- Multilevel fuzzy rough knowledge representation in big data processing
- Fuzzy rough networks learning for big data
- Fuzzy rough feature selection for big data analytics in uncertain environments
- Granular fuzzy rough sets for big data
- Fuzzy rough data reduction for large dimension problems
- Fuzzy rough clustering for big data
- Evolving and adaptive fuzzy rough systems for big data
- Fuzzy rough-based MapReduce model
- Fuzzy rough-based Spark model
- Unsupervised fuzzy rough sets for big data
- IT2 fuzzy rough sets for big data
- Incremental fuzzy rough model for big data
- Studies on scalability for fuzzy rough model

- Fuzzy rough model for multi-task modeling, multi-view modeling and co-learning
- Bio-inspired fuzzy rough set approaches
- Fuzzy rough sets-based decision support
- Applications of fuzzy rough sets to industrial and real-world big data problems

3. SUBMISSION GUIDELINES

Adhere to ‘Information for Authors’ before submitting a manuscript <http://cis.ieee.org/ieee-transactions-on-fuzzy-systems.html>

Submissions should be through the IEEE TFS journal website <http://mc.manuscriptcentral.com/tfs-ieee>. Submissions should also be in the correct format <http://ieeauthorcenter.ieee.org/create-your-ieee-article/use-authoring-tools-and-ieee-articletemplates/ieee-article-templates/templates-for-transactions/>

It is essential that your manuscript is identified as a Special Issue contribution:

- Ensure you choose ‘Special Issue’ when submitting.
- A cover letter must be included which includes the title ‘**Special Issue on Fuzzy Rough Sets for Big Data**’

4. IMPORTANT DATES

15 May 2019 – Submission Deadline

June 2019 – notification of first round reviews)
 August 2019 – revised submissions due) for guidance only
 October 2019 – final notice of acceptance/reject)

5. GUEST EDITORS

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