# Exploring Complex and Big Data

**Special section in the International Journal of Applied Mathematics and Computer Science**

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## Motivations:

Machine learning and data mining have shown tremendous progress in the last decades. Nevertheless, many of current approaches assume processing static and conventional (usually tabular/relational) representations of data. However, this turns out to be too restrictive as modern information technologies give access to massive, complex, and dynamic data.

Many current automatic systems are able to collect larger data with increasing their structure and dimensionality. Furthermore new data sources often provide various heterogeneous representations. This growing complexity of data calls for discovering new types of knowledge representations. Mining more complex, larger and generally speaking "more difficult" datasets poses challenges for researchers and asks for novel and dedicated approaches.

The chasm between the demands arising from data characteristics and the capabilities of analytical tools is particularly visible in a rapidly developing field of processing and analyzing Big Data. Algorithms  face great difficulties in case of processing massive data, and often struggle to perform well with insufficient resources. The task becomes even more difficult when data are continuously generated at a high rate in a form of data streams, whose characteristics may also change with time. This also requires new solutions for scaling up the mining algorithms, sampling data, efficient summarization of data, or approximate computation.

In the proposed special section we would like to consider these challenges for data exploration, especially while dealing with data complexity or/and Big Data characteristics.

Our main aims are (1) to gather researchers coming from different communities and  interested in the aforementioned issues; (2) to present  algorithmic foundations and application aspects of analyzing real world non-standard or difficult data.

## Topics of interest:

Suggested topics include (but are not limited to) the following:
- Integration of heterogeneous and distributed data sources
- Pre-processing, structuring, and organizing complex data
- Mining text, web, multimedia, semi-structured, and graph data
- Learning from highly – dimensional data sets

- Scalability in processing large data volumes
- Sampling techniques for massive data
- Approximate processing
- Mining data streams, time series, and sequential data
- Classification, clustering, and frequent patterns from data
- Social network analysis
- Detecting and adapting to changes and concept drift in evolving data
- Knowledge discovery from ubiquitous environments
- Privacy preserving in knowledge discovery from data
- Intelligent analytical systems, self-service business intelligence
- Applications, especially in scientific data analysis, medicine, text processing, web mining, image or multimedia analysis, sensor networks, bio-informatics, energy management

## Paper format and requirements:

The special section is to appear in the *International Journal of Applied Mathematics and Computer Science,* published by the University of Zielona Góra (https://www.amcs.uz.zgora.pl/), which is indexed on Thomson Reuters' master journal list (IF 1.037) and in other bibliographical services.

The complete guide for authors is available at
https://www.amcs.uz.zgora.pl/?action=guide

*The papers must be prepared in LaTeX as instructed in the guide. For editorial convenience, please begin the keywords section of the paper with „BIG DATA SPECIAL SECTION" in block capitals.*

Paper submissions must be done on-line via
https://www.amcs.uz.zgora.pl/?action=submission

Each submitted paper will be reviewed by at least two reviewers.

Note that the authors are expected to pay a charge of approx. 30 EUR/page, which covers the costs of publication process in AMCS.

## Important dates:

- Short notice of the intention to contribute – as soon as possible, not later than August 15, 2016
- Paper submission – November 30, 2016 (via the AMCS online system, but please send also an email to Jerzy.Stefanowski@cs.put.poznan.pl notifying about the submission)
- Acceptance notification – March 31, 2017
- Camera ready – May 15, 2017