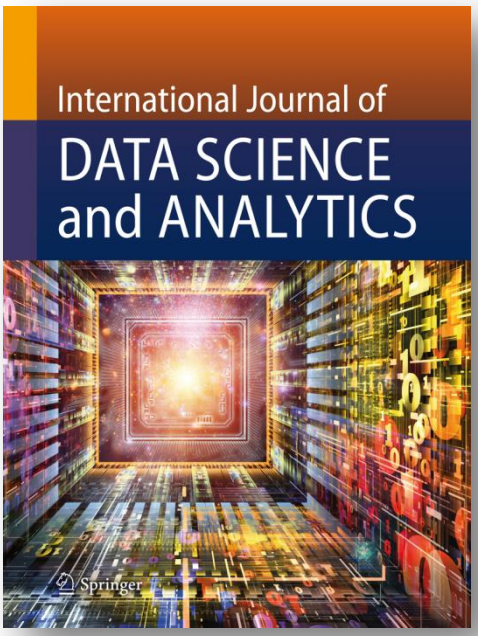

International Journal of Data Science and Analytics

http://www.springer.com/41060

Call for papers

Special Issue on

Semantic Data Science, Analytics and Applications

Data Science is an extensive, practically demanded and ever-maturing scientific area comprising many methodologies, methods, algorithms and tools intended for but not limited to data processing in order to extract hidden knowledge and insights from it. The current mainstream of Data Science is mostly focused on dealing with Big Data, either structured, or unstructured, or both.

Among various disciplines of Data Science scope, an advanced role belongs to the Semantic Data Science that is specifically focused on semantic processing of Big Data. According to a recently published book [Semantic Applications: Methodology, Technology, Corporate Use. Thomas Hoppe, Bernhard Humm, Anatol Reibold (Eds.). Springer. 2018], semantics has "to capture and normalize the relationships between words (respectively terms, phrases, symbols, etc.) and their meaning" assigned by the human. Therefore, "semantic computation" is a kind of computation providing for semantically understandable and unambiguously interpretable input, intermediate and output data exchanged between the users and the computers. Accordingly, Semantic Data Science is about efficient and effective methodologies, methods, algorithms and software tools constituting together semantic technologies for data processing.

In this context, Semantic Data Analytics is about extraction of hidden knowledge and insights from Big Data using semantic computations and "a semantic application is a software application, which explicitly or implicitly uses semantics of a domain" [1].

The proposed Special Issue will call for papers presenting novel unpublished theoretical and applied results and industry oriented innovations specifically dedicated to various aspects of semantic data science having a great potential to have a substantial impact in a large spectrum of domains such as engineering, security, text analysis, social sciences, health care, etc.

From high-level point of view, the following disciplines constitute the scope of Semantic Data Science:

(i) Ontology engineering, representation and use;

(ii) Semantic resources, methodologies, methods, algorithms and tools designed to extract semantics from Natural Language (NL) entities (words, terms, phrases, symbols, etc.).

(iii) Formal models specifying semantics of NL-primitives like semantic similarity or semantic distance together with associated methods, algorithms and tools.

(iv) Semantic methods, algorithms and tools for understanding multimedia data (images, audio, video, etc.)

(v) Accordingly, the proposed Special issue will call for novel and unpublished contributions to the scope of the Semantic Data Science outlined above as well as in Semantic Data Analysis and semantic applications within the topics listed below but not limited to:

1. Ontologies: Engineering, Representation and Use cases

- Automated and automatic ontology engineering: Methodologies, algorithms, software tools, and success stories;
- Novel ontology-based data and knowledge representation structures for big data analytics in various use cases;
- Novel methodologies and algorithms for ontology-based knowledge graph visualization;
- Formal methods, languages (e.g. based on description logics) and algorithms for efficient analysis of formal ontology properties and implementation of various ontology use cases;
- Algorithms for automated ontology engineering with simplified data logistics specifically designed for implementation within supercomputing ecosystems;
- Surveys, benchmarks and case studies.

2. Semantic resources

- Semantic resources for ontology engineering: Usage methodologies, algorithmic support and dedicated software tools;
- Linked data and Semantic Web extending semantic resources;
- Surveys, benchmarks and case studies.
- Semantic annotation of real-world data.

3. Formal models for data semantics and semantic similarity

- Novel methodologies and algorithms for Word Sense Disambiguation;
- Semantic primitives for text semantics segmentation and representation;
- Semantic similarity measures and distances (e.g., word embedding);
- Surveys, benchmarks and case studies.

4. Semantic Data Analytics I: Formal models and software tools for Big Data Lake structuring

- Text data dimensionality reduction for efficient and stable semantic clustering of large corpora of text Data Lakes;
- Distributed and parallel algorithms for text data semantic clustering;
- Hadoop ecosystem for text data semantic clustering;
- Algorithms for semantic clustering of large corpora of text data with simplified data logistics specifically designed for implementation within supercomputing ecosystems;
- Surveys, benchmarks and case studies of semantic Data Lake clustering.

5. Semantic Data Analytics II: Machine learning for semantic classification of unstructured and semi-structured Big Data

- Learning data dimensionality reduction and feature selection;
- Novel methodologies and semantic algorithms for machine learning on large-scale text and multimedia data;
- Methodologies and algorithms for integration of classification rules in semantic context of data and knowledge ontologies;
- Semantic causal discovery and classification for unstructured and semi-structured data;
- Distributed and parallel algorithms for semantic machine learning and classification;
- Hadoop ecosystem for parallel semantic machine learning and classification;
- Algorithms for semantic machine learning with simplified data logistics specifically designed for implementation within supercomputing ecosystems;
- Utilizing semantics for explainable machine learning models and algorithms;
- Surveys, benchmarks and case studies for semantic machine learning and classification.

6. Semantic Applications in various scopes, e.g. in cyber security, telecommunications, engineering, libraries, mass media, social networks, business, medicine, manufacturing, space, unmanned vehicles, Internet of Things, etc.

Guest Editors

Prof. Vladimir Gorodetsky, TRA Robotics, gor@iias.spb.su, vladim.gorodetsky@gmail.com
Prof. Igor Kotenko, SPIIRAS, ivkote@comsec.spb.ru
Prof. Mark Last, BGU, mlast@bgu.ac.il

Important Dates

Paper submission due	February 10, 2019
Review result dissemination	April 1, 2019
Final paper submission due	April 22, 2019

Submission Guidelines

Please submit your paper via Springer's Editorial System at https://www.editorialmanager.com/jdsa/.

Papers submitted to this special issue for possible publication must be original and must not be under consideration for publication in any other journal or conference. All papers are to be submitted by referring to http://www.springer.com/41060. During submission please select "S.I.: Semantic Data Science, Analytics & Applications" under Manuscript Category.

All manuscripts must be prepared according to the journal publication guidelines which can also be found on the website (http://www.springer.com/41060). Papers will be reviewed following the journal standard review process.

For more information please contact the guest editors.