

## 2<sup>nd</sup> CALL FOR PAPERS

### **Special Issue of the Journal of New Mathematics & Natural Computing**

#### **Big Data Analytics: Fundamentals and applications**

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Big data have become a strategic resource for industry, business, and national security. Big Data are also a key enabler of exploring business insights and economics of services. Big Data are generated from various instruments, sensors, Internet transactions, emails, videos, click streams, social networking services and other sources, characterized with at least eight bigs: big volume, big velocity, big variety, big value, big veracity, big challenge, big opportunity and big difficulty to manage using traditional (database) tools and technologies.

Big Data Analytics has been drawing increasing attention in academia of computer science, information technology, mathematics, business, management and industry of healthcare, medical science. Big Data Analytics is an emerging science and technology armed by thoroughly multidisciplinary advancement of information and communication technology (ICT), mathematics, operations research (OR), and decision sciences for big data. The main components of Big Data Analytics include descriptive analytics, predictive analytics and prescriptive analytics, which correspondingly address the three questions in related to big data: when and what happened? What is likely to happen? And what should happen with the best outcome under uncertainty? All these questions are often encountered in almost every part of science, technology, business, management, organization and industry. Mathematics, optimization, machine learning, data mining, cloud computing, statistical modelling, as well as visualization technology, to name a few, are proved fundamentals for research and development of Big Data Analytics.

Big Data Analytics generates new opportunities and challenges for the research and development of business, management, decision science, mathematics and ICT including machine learning, visualization techniques. Big Data Analytics with applications are changing the world and society, how people and organizations are doing things and making decisions in the future. Big Data Analytics is also changing business models, revenue models, management and decision making processes in companies and organizations, and affecting usage of resources including data in creating products and services.

There is significant need for better understanding of Big Data Analytics through an in-depth investigation of mathematics, optimization, statistical modelling, machine learning, data mining, cloud computing and visualization technology for big data with applications because much of fundamental research in big data analytics remains to be done at the moment.

#### **1 Objective and topics**

The objective of this Special Issue in *Journal of New Mathematics and Natural Computing* is to

present the current state of art research and practical experiences on Big Data Analytics from a viewpoint of mathematics, statistics, graph theory, optimization, ICT, intelligent systems, machine learning, decision science and economics and beyond.

Topics of interest include, but are not limited to, the following:

### 1. Fundamentals of Big Data Analytics

- Big Data Analytics as a science
- Big Data Analytics as a technology
- Big Data Analytics as a service
- Big Data Science and Foundations
- New Computational Models for Big Data
- Mathematical fundamentals of Big Data Analytics
- Graph theory for Big Data Analytics
- ICT fundamentals for Big Data Analytics
- Visualization techniques for Big Data Analytics
- Decision science for Big Data Analytics
- Statistical modelling for Big Data Analytics
- Machine learning for Big Data Analytics
- Optimization techniques for Big Data Analytics
- Research methodology for Big Data Analytics
- Data mining for Big Data Analytics
- Business models for Big Data Analytics
- Real-time algorithms for Big Data Analytics
- Statistical thinking and computing thinking for Big Data Analytics

### 2. Applications of Big Data Analytics

- Big Data Analytics based services innovation
- Big Data Analytics in business ecosystems
- Big Data Analytics with public and open data
- Big Data Analytics and data markets
- Big Data Analytics for e-commerce
- Big Data Analytics for web services
- Big Data Analytics in business decision making
- Big Data Analytics in healthcare
- Big Data Analytics in banking industry
- Big Data Analytics in social networking services
- Visualization Analytics for Big Data
- Big data intelligence
- Big Data Search and Mining
- Big Data Security & Privacy
- Big Data processing and management
- Big Data analytics for risk management

### 3. Challenges on Big Data Analytics

1. Challenges for Big Data Analytics research
2. Challenges for Big Data Analytics applications
3. Challenges for Big Data Analytics tools
4. Challenges for Big Data Analytics methodologies

## 2 Notes for Intending Authors

We are seeking original, genuine, innovative, scientifically rigorous research papers on fundamentals and applications of Big Data Analytics. Empirical research, case studies or theory based qualitative and quantitative studies on Big Data Analytics are also welcome.

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere.

Author guidelines can be found at: [http://www.worldscinet.com/style\\_files/nmnc/202-readme\\_2e.shtml](http://www.worldscinet.com/style_files/nmnc/202-readme_2e.shtml). All submissions will be refereed by at least three reviewers. Submissions and submission intentions should be directed by email to [zsun@dbs.unitech.ac.pg](mailto:zsun@dbs.unitech.ac.pg), [zhaohao.sun@gmail.com](mailto:zhaohao.sun@gmail.com) and [ppw@ee.duke.edu](mailto:ppw@ee.duke.edu)

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## 3 Important dates

- Full paper submission: June 30, 2015
- Notification of acceptance: September 15, 2015
- Revised submission: October 20, 2015
- Final acceptance notification: November 20, 2015
- Camera ready version of paper: December 20, 2015
- Publication: January – May, 2016

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