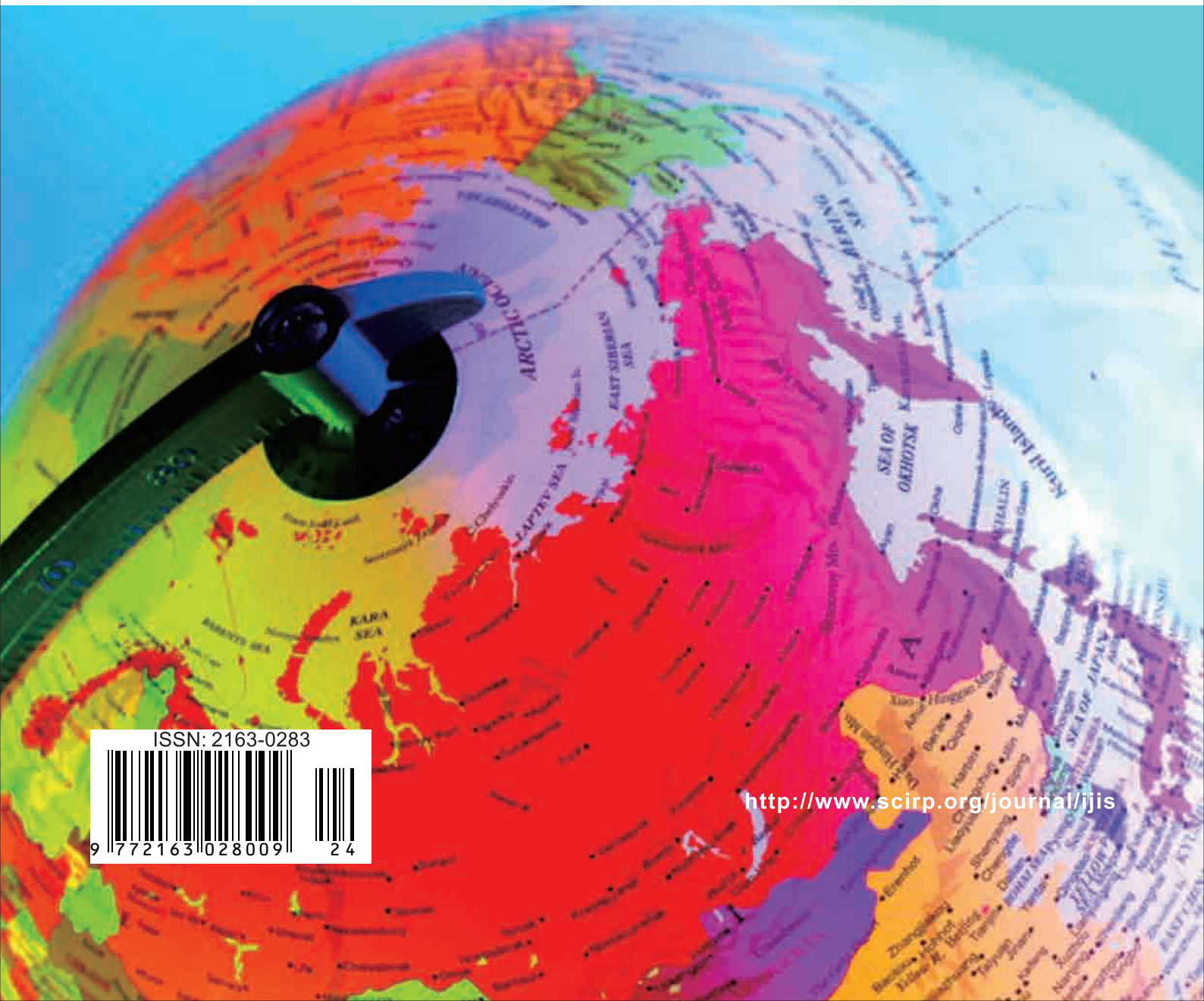




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Introduction to the Special Issue on Data-Oriented Intelligence (DOI)

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Due to the ever-growing applications of computing technology, huge amount of data is generated at unprecedented rate in diverse fields such as economic business, medical examinations, social activities, daily educations, sensor networks, etc. Though useful information might lie in the collected data, extracting them into insightful knowledge with human-accessible form presents a demanding and sophisticated undertaking. One of the prominent evidences on the importance and necessity of developing data-oriented intelligent technology can be witnessed by the recent explosive research interests on topics related to big data.

Within the past three decades, considerable theories and techniques have been proposed to processing, analyzing, modeling and visualizing data-intensive tasks in automatic and intelligent ways. Despite the great achievements gained so far, there are numerous fascinating yet challenging issues to be further investigated. This special issue is thus organized to provide a dedicated platform to present recent cutting-edge and promising progresses in data-oriented intelligence research.

We have received a total of 18 submissions from 11 countries and regions in Asia, Europe and North America. Each paper has been rigorously reviewed by anonymous referees in single-blind manner. Based on the returned reviews, 10 papers have been finally accepted for this special issue. The contents of this special issue cover a broad range of issues on data-oriented intelligence, including building useful models from data with state-of-the-art techniques, designing comprehensible framework for knowledge captured from data, exploring various applications to real-world data, and reviewing recent progresses on business data analysis.

Briefly, Mahdis Monajati *et al.* present a model to categorize between human emotions (negative vs. neutral) by utilizing fuzzy-adaptive resonance theory on physiological characteristics such as intensity and valence; Gulshan Kumar and Krishan Kumar present a model for

detecting abnormal network traffics (intrusion patterns) by employing multi-objective genetic algorithm to build an ensemble of artificial neural networks; Ingo Schwab and Norbert Link aim to improve the comprehensibility of models learned from data by proposing a knowledge representation framework based on symbolic regression; Péron Franck provides an interesting discussion on different studies towards extracting collected data of animal mind into insightful knowledge using human designed languages.

Khamisi Kalegele *et al.* studied the application of named entity identification methods under scenarios where entities consist of multiple sub-entities of higher cardinality level and are not speech compliant by their natures; Zhihua Li *et al.* have applied the redefined responsibility and availability of nodes in wireless sensor network to the problem of clustering network topology control; Yao-Zong Liu *et al.* have applied the timed automata (TA) theory for accurate radio frequency identification (RFID) complex event detection in real-time locating system; Zachary Miller *et al.* report an application of popular machine learning algorithms to gender prediction on streaming twitter texts based on selected N-gram character features; Finally, two timely reviews on business data analyses have been included, one by Xiao-Lin Li and Yu Zhong on personal credit scoring and another one by Jose Azevedo *et al.* on short-term stocks prediction via time-series data mining.

This special issue would not have been successful without the contributions of many people. Firstly, we wish to sincerely thank all the authors for choosing to submit their work to this special issue. Secondly, we are indebted to all the reviewers for their expertise and dedication in providing efficient and valuable reviews. Last but not least, we are grateful to IJIS Editor-in-Chief, Prof. Zhongzhi Shi, for his support and encouragement, and the editorial office for their consistent help.



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Intelligent science is an interdisciplinary subject which dedicates to joint research on basic theory and technology of intelligence by brain science, cognitive science, artificial intelligence and others. The journal will provide an international forum for researchers, scholars, and engineers in above area to publish high quality and refereed papers, disseminate latest theoretical results as well as their applications in this field all over the world.

Editor-in-Chief

Prof. Zhongzhi Shi

Institute of Computing Technology, CAS, China

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