

Young Scientists on Trends in Information Processing

3rd International Workshop, YSIP-3

Stavropol and Arkhyz, Russian Federation, September 17–20, 2019

Proceedings

Editorial Board Members

Steffen Hölldobler and Andrey Malikov

Preface

This volume contains the papers presented at YSIP-3: the 3rd International Workshop for Young Researchers working in Information Processing (YSIP), which was organized by the North-Caucasus Federal University and the International Center for Computational Logic of the Technische Universität Dresden. This years YSIP was held in Stavropol and Arkhyz during September 17-20, 2019.

YSIP aims at bringing together master and PhD students from Russia, Europe, and beyond to present and to discuss their new scientific results in the area papers are welcome in, but are not limited to, the following areas of Semantic Methods, Semantic Web, Languages for Semantic Information Processing, Applications of Semantic Information Processing, Formal Concept Analysis, Big Data, Indexing in Big Data, Integrity and Quality of Data, Information Retrieval, Question-Answering Systems, Information Security, Problem Solving, Knowledge Representation and Reasoning, Common Sense Reasoning, Deep Learning, Explainable Artificial Intelligence, Ethical Decision Making, Pattern Recognition, Data and Workflows, Cognitive Processes and Applications, Multiagent Systems, and Computer Simulation.

YSIP-3 received 54 submissions. Each submission was reviewed by at least two international Program Committee members. To reach a final decision there was a Program Committee discussion period. The committee decided to accept 22 papers. The program also includes two invited talks.

We would like to thank all members of the Program Committee for providing the reviews. The workshop would not have been possible without the tremendous amount of help and support by Maria Lapina and her team from the North-Caucasus Federal University and by Johannes Fichte and the team from the Technische Universität Dresden. Many thanks.

Dresden and Stavropol
September 2019

Steffen Hölldobler
Andrey Malikov

Program Committee

Isara Anantavasilp	King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand
Maxim Bakaev	Novosibirsk State Technical University, Novosibirsk, Russia
Irina Bolodurina	Orenburg State University, Orenburg, Russia
Alexander Chefranov	Eastern Mediterranean University, Famagusta, Turkey
Khang Tran Dinh	Hanoi University of Science and Technology, Hanoi, Vietnam
Uwe Egly	Technische Universität Wien, Vienna, Austria
Anna Fensel	University of Innsbruck, Innsbruck, Austria
Oleg Finko	Kuban State Technological University, Krasnodar, Russia
Ulrich Furbach	Universität Koblenz-Landau, Koblenz, Germany
Steffen Hölldobler	Technische Universität Dresden, Dresden, Germany (co-chair)
Alex Rayón Jerez	University of Deusto, Bilbao, Spain
Evgeny Kharlamov	University of Oslo and Bosch AI center, Oslo, Norway and Renningen, Germany
Maja Hanne Kirkeby	Roskilde University, Roskilde, Denmark
Matthias Knorr	Universidade NOVA de Lisboa, Lisbon, Portugal
Evgeny Kostyuchenko	Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia
Maria Lapina	North-Caucasus Federal University, Stavropol, Russia
Andrey Malikov	North-Caucasus Federal University, Stavropol, Russia (co-chair)
Massimo Mecella	Sapienza – Università di Roma, Rome, Italy
Oksana Mezentseva	North-Caucasus Federal University, Stavropol, Russia
Evgeny Nikolaev	North-Caucasus Federal University, Stavropol, Russia
Sergey Paramonov	KU Leuven, Leuven, Belgium
Denis Parfenov	Orenburg State University, Orenburg, Russia
Peter Peer	University of Ljubljana, Ljubljana, Slovenia
Vyacheslav Petrenko	North-Caucasus Federal University, Stavropol, Russia
Josef Schneeberger	University of Applied Science Deggendorf, Deggendorf, Germany
Zykin Sergey	Siberian Branch of the Russian Academy of Sciences, Russia
Nafisa Yusupova	Ufa State Aviation Technical University, Ufa, Russia

Invited Speakers**Information based Smart Decisions**

Prof. Hong-In Cheng

Kyungsoong University, Department of Industrial and Management Engineering, South Korea

This keynote speech introduces diverse intelligent decisions made based on gathered information. Some examples are historically famous and others are contemporary. Florence Nightingale (1820-1910) is well known as “The Lady with the Lamp” and “The White Angel.” Her rose diagram, a skillful infographic, was effective in decreasing the death rate of soldiers. Abraham Wald’s work on aircraft survivability was also a prominent study with intelligent decisions. Recent case studies of global companies would show how useful information creates value. This keynote address will broaden your perspective on data analysis and information gathering.

Intelligent Analysis of Medical and Psychophysiological Data

Prof. Nafisa Yusupova

Ufa State Aviation Technical University, Ufa, Russia

The paper is dedicated to the application of intelligent methods of data analysis on the examples of medical and psychophysiological tasks. Although there is pretty much research in this field, unified complex methodology of medical data analysis does not exist. In this paper we present the short overview of using various means of data analysis in medical applications: big data, machine learning, text mining, multi-agent systems. We present two cases of intelligent data analysis performed by the researchers from Ufa State Aviation Technical University in collaboration with experts and researchers from the medical institutions in the city of Ufa. The first case consists in analysis of weak-structured data about acute poisonings in the Republic of Bashkortostan. The second case was connected to analysis of the results of psychophysiological diagnostics of students in order to determine recommendations for their physical activity.