

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 three 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

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Invited Speakers**Information based Smart Decisions**

Prof. Hong-In Cheng

Kyungshung 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 are 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. First case consist 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.

**Smart Time: a Context-Aware Conversational Agent
for Suggesting Free Time Activities**

Prof. Carlos Grilo

Polytechnic of Leiria, Portugal

This work describes a conversational agent, integrated into the Google Assistant platform, which is able to recommend personalised leisure activities for a user’s free time. Smart Time is a context-aware Action on Google capable of extracting free slots from a user’s calendar and recommend customised activities – which include book, restaurant or outdoor recommendations – in accordance to his/her specific context computed with basis on data extracted from the smart device’s various sensors. Additionally, the conversational agent integrates a constantly evolving recommendation engine, which is able to adapt in accordance to the user’s choices.