

# Preface

This volume contains proceedings of the fourth conference on Analysis of Images, Social Networks and Texts (AIST'2015)<sup>1</sup>. The first three conferences in 2012–2014 attracted a significant number of students, researchers, academics and engineers working on interdisciplinary data analysis of images, texts, and social networks.

The broad scope of AIST makes it an event where researchers from different domains, such as image and text processing, exploiting various data analysis techniques, can meet and exchange ideas. We strongly believe that this may lead to crossfertilisation of ideas between researchers relying on modern data analysis machinery. Therefore, AIST brings together all kinds of applications of data mining and machine learning techniques. The conference allows specialists from different fields to meet each other, present their work, and discuss both theoretical and practical aspects of their data analysis problems. Another important aim of the conference is to stimulate scientists and people from the industry to benefit from the knowledge exchange and identify possible grounds for fruitful collaboration.

The conference was held during April 9–11, 2015. Following an already established tradition, the conference was organised in Yekaterinburg, a cross-roads between European and Asian parts of Russia, the capital of Urals region. The key topics of AIST are analysis of images and videos; natural language processing and computational linguistics; social network analysis; pattern recognition, machine learning and data mining; recommender systems and collaborative technologies; semantic web, ontologies and their applications.

The Program Committee and the reviewers of the conference included well-known experts in data mining and machine learning, natural language processing, image processing, social network analysis, and related areas from leading institutions of 22 countries including Australia, Bangladesh, Belgium, Brazil, Cyprus, Egypt, Finland, France, Germany, Greece, India, Ireland, Italy, Luxembourg, Poland, Qatar, Russia, Spain, The Netherlands, UK, USA and Ukraine.

This year the number of submission has doubled and we have received 140 submissions mostly from Russia but also from Algeria, Bangladesh, Belgium, India, Kazakhstan, Mexico, Norway, Tunisia, Ukraine, and USA. Out of 140 only 32 papers were accepted as regular oral papers (24 long and 8 short). Thus, the acceptance rate of this volume was around 23%. In order to encourage young practitioners and researchers we included 5 industry papers to the main volume and 25 papers to the supplementary proceedings. Each submission was reviewed by at least three reviewers, experts in their fields, in order to supply detailed and helpful comments.

The conference also featured several invited talks and tutorials, as well as an industry session dedicated to current trends and challenges.

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<sup>1</sup> <http://aistconf.org/>

Invited talks:

- Pavel Braslavski (Ural Federal University, Yekaterinburg, Russia), Questions Online: What, Where, and Why Should we Care?
- Michael Khachay (Krasovsky Institute of Mathematics and Mechanics UB RAS & Ural Federal University, Yekaterinburg, Russia), Machine Learning in Combinatorial Optimization: Boosting of Polynomial Time Approximation Algorithms.
- Valeri Labunets (Ural Federal University, Yekaterinburg, Russia), Is the Human Brain a Quantum Computer?
- Sergey Nikolenko (National Research University Higher School of Economics & Steklov Mathematical Institute, St. Petersburg, Russia), Probabilistic Rating Systems
- Andrey Savchenko (National Research University Higher School of Economics, Nizhny Novgorod, Russia), Sequential Hierarchical Image Recognition based on the Pyramid Histograms of Oriented Gradients with Small Samples
- Alexander Semenov (International laboratory for Applied Network Research at HSE, Moscow, Russia), Attributive and Network Features of the Users of Suicide and Depression Groups of Vk.com

Tutorials:

- Alexander Panchenko (Technische Universität Darmstadt, Germany), Computational Lexical Semantics: Methods and Applications
- Artem Lukanin (South Ural State University, Chelyabinsk, Russia), Text Processing with Finite State Transducers in Unitex

The industry speakers also covered a wide variety of topics:

- Dmitry Bugaichenko (OK.ru), Does Size Matter? Smart Data at OK.ru
- Mikhail Dubov (National Research University Higher School of Economics, Moscow, Russia), Text Analysis with Enhanced Annotated Suffix Trees: Algorithmic Base and Industrial Usage
- Nikita Kazeev (Yandex Data Factory), Role of Machine Learning in High Energy Physics Research at LHC
- Artem Kuznetsov (SKB Kontur), Family Businesses: Relation Extraction between Companies by Means of Wikipedia
- Alexey Natekin (Data Mining Labs), ATM Maintenance Cost Optimization with Machine Learning Techniques
- Konstantin Obukhov (Clever Data), Customer Experience Technologies: Problems of Feedback Modeling and Client Churn Control
- Alexandra Shilova (Centre IT), Centre of Information Technologies: Data Analysis and Processing for Large-Scale Information Systems

We would also like to mention the best conference paper selected by the Program Committee. It was written by Oleg Ivanov and Sergey Bartunov and is entitled “Learning Representations in Directed Networks”.

We would like to thank the authors for submitting their papers and the members of the Program Committee for their efforts in providing exhaustive reviews. We would also like to express special gratitude to all the invited speakers and industry representatives.

We deeply thank all the partners and sponsors, and owe our gratitude to the Ural Federal University for substantial financial support of the whole conference, namely, the Center of Excellence in Quantum and Video Information Technologies: from Computer Vision to Video Analytics (QVIT: CV  $\rightarrow$  VA). We would like to acknowledge the Scientific Fund of Higher School of Economics for providing AIST participants with travel grants. Our special thanks goes to Springer editors who helped us, starting from the first conference call to the final version of the proceedings. Last but not least, we are grateful to all organisers, especially to Eugeniya Vlasova and Dmitry Ustalov, and the volunteers, whose endless energy saved us at the most critical stages of the conference preparation.

Traditionally, we would like to mention the Russian word “aist” is more than just a simple abbreviation (in Cyrillic), it means a “stork”. Since it is a wonderful free bird, a symbol of happiness and peace, this stork brought us the inspiration to organise the AIST conference. So we believe that this young and rapidly growing conference will be bringing inspiration to data scientists around the World!

April, 2015

Mikhail Yu. Khachay  
Natalia Konstantinova  
Alexander Panchenko  
Radhakrishnan Delhibabu  
Nikita Spirin  
Valeri G. Labunets

## Organisation

The conference was organized by a joint team from Ural Federal University (Yekaterinburg, Russia), Krasovsky Institute of Mathematics and Mechanics, Ural Branch of Russian Academy of Sciences (Yekaterinburg, Russia), and the National Research University Higher School of Economics (Moscow, Russia). It was supported by a special grant from Ural Federal University for the Center of Excellence in Quantum and Video Information Technologies: from Computer Vision to Video Analytics (QVIT: CV  $\rightarrow$  VA).

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