

Communications in Computer and Information Science

930

Commenced Publication in 2007

Founding and Former Series Editors:

Phoebe Chen, Alfredo Cuzzocrea, Xiaoyong Du, Orhun Kara, Ting Liu,
Dominik Ślęzak, and Xiaokang Yang

Editorial Board

Simone Diniz Junqueira Barbosa

*Pontifical Catholic University of Rio de Janeiro (PUC-Rio),
Rio de Janeiro, Brazil*

Joaquim Filipe

Polytechnic Institute of Setúbal, Setúbal, Portugal

Igor Kotenko

*St. Petersburg Institute for Informatics and Automation of the Russian
Academy of Sciences, St. Petersburg, Russia*

Krishna M. Sivalingam

Indian Institute of Technology Madras, Chennai, India

Takashi Washio

Osaka University, Osaka, Japan

Junsong Yuan

University at Buffalo, The State University of New York, Buffalo, USA

Lizhu Zhou

Tsinghua University, Beijing, China

More information about this series at <http://www.springer.com/series/7899>

Dmitry Ustalov · Andrey Filchenkov
Lidia Pivovarova · Jan Žižka (Eds.)

Artificial Intelligence and Natural Language

7th International Conference, AINL 2018
St. Petersburg, Russia, October 17–19, 2018
Proceedings

Editors

Dmitry Ustalov
Data and Web Science Group
University of Mannheim
Mannheim, Baden-Württemberg
Germany

Andrey Filchenkov
ITMO University
St. Petersburg
Russia

Lidia Pivovarova
University of Helsinki
Helsinki
Finland

Jan Žižka
Mendel University
Brno
Czech Republic

ISSN 1865-0929 ISSN 1865-0937 (electronic)
Communications in Computer and Information Science
ISBN 978-3-030-01203-8 ISBN 978-3-030-01204-5 (eBook)
<https://doi.org/10.1007/978-3-030-01204-5>

Library of Congress Control Number: 2018955420

© Springer Nature Switzerland AG 2018

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

The 7th Conference on Artificial Intelligence and Natural Language Conference (AINL), held during October 17–19, 2018, in Saint Petersburg, Russia, was organized by the NLP Seminar, ITMO University, and NLPub. Its aim was to (a) bring together experts in the areas of natural language processing, speech technologies, dialogue systems, information retrieval, machine learning, artificial intelligence, and robotics and (b) to create a platform for sharing experience, extending contacts, and searching for possible collaboration. The conference gathered more than 100 participants.

The review process was challenging. Overall, 56 papers were sent to the conference and only 19 were selected, for an acceptance rate of 34%. In all, 76 researchers from different domains were engaged in the double-blind reviewing process. Each paper received at least three reviews, in some cases, there were four reviews.

Altogether, 19 papers were presented at the conference, covering a wide range of topics, including morphology and word-level semantics, sentence and discourse representations, corpus linguistics, language resources, and social interaction analysis. Most of the presented papers were devoted to analyzing human communication and creating algorithms to perform such analysis. In addition, the conference program featured several special talks and events, including a plenary talk on societal challenges for information retrieval by Prof. Benno Stein, a tutorial on automatic text summarization by Dr. Sanja Štajner, a tutorial on creating virtual assistant skills in Just AI DSL by Darya Serdyuk and Svetlana Volskaya, industry talks and demos, and a poster session.

Many thanks to everybody who submitted papers and gave wonderful talks, and to those who came and participated without publication.

We are indebted to our Program Committee members for their detailed and insightful reviews; we received very positive feedback from our authors, even from those whose submissions were rejected.

We are grateful to our sponsors, Just AI, Huawei, and STC Group, for their support.

And last but not the least, we are grateful to our organization team: Anastasia Bodrova, Irina Krylova, Aleksandr Bugrovsky, Kseniya Buraya, Natalia Khanzhina, and Talgat Galimzhanov.

October 2018

Dmitry Ustalov
Andrey Filchenkov
Lidia Pivovarova
Jan Žižka

Organization

Program Committee

Mikhail Alexandrov	Autonomous University of Barcelona, Spain
Svetlana Alexeeva	Saint Petersburg State University, Russia
Artem Andreev	Institute for Linguistic Studies, Russian Academy of Sciences, Russia
Artur Azarov	Saint Petersburg Institute for Informatics and Automation, Russia
Rohit Babbar	Aalto University, Finland
Amir Bakarov	National Research University Higher School of Economics, Russia
Oleg Basov	Orel State University named after I.S. Turgenev, Russia
Erind Bedalli	University of Elbasan “Aleksandër Xhuvani”, Albania
Anton Bely	ITMO University, Russia
Siddhartha Bhattacharyya	RCC Institute of Information Technology, India
Chris Biemann	Universität Hamburg, Germany
Elena Bolshakova	Lomonosov Moscow State University, Russia
Pavel Braslavski	Ural Federal University, Russia
Maxim Buzdalov	ITMO University, Russia
John Cardiff	ITT Dublin, Ireland
Dmitry Chalyy	Yaroslavl State University, Russia
Mikhail Chernoskutov	Krasovskii Institute of Mathematics and Mechanics, Russia
Bonaventura Coppola	University of Trento, Italy
Frantisek Darena	Mendel University Brno, Czech Republic
Boris Dobrov	Lomonosov Moscow State University, Russia
Ekaterina Enikeeva	Saint Petersburg State University, Russia
Vera Evdokimova	Saint Petersburg State University, Russia
Elena Filatova	City University of New York, USA
Andrey Filchenkov	ITMO University, Russia
Tommaso Fornaciari	Bocconi University in Milan, Italy
Natalia Grabar	CNRS, Université de Lille, France
Jiri Hroza	GAUSS Algorithmic, Czech Republic
Dmitry Ignatov	National Research University Higher School of Economics, Russia
Vladimir Ivanov	Innopolis University, Russia
Alexander Jung	Aalto University, Finland
Nikolay Karpov	National Research University Higher School of Economics, Russia
Egor Kashkin	V.V. Vinogradov Russian Language Institute, Russia

Denis Kirjanov	Sberbank of Russia, Russia
Pavel Klinov	Stardog Union, USA
Daniil Kocharov	Saint Petersburg State University, Russia
Yury Kochetov	Sobolev Institute of Mathematics, Russia
Maxim Kolchin	ITMO University, Russia
Mikhail Korobov	ScrapingHub Inc., Russia
Evgeny Kotelnikov	Vyatka State University, Russia
Tomas Krilavičius	Baltic Institute of Advanced Technology, Lithuania and Vytautas Magnus University, Lithuania
Andrey Kutuzov	University of Oslo, Norway
Natalia Loukachevitch	Lomonosov Moscow State University, Russia
Artem Lukanin	European Patent Office, The Netherlands
Alexey Malafeev	National Research University Higher School of Economics, Russia
Vladislav Maraev	University of Gothenburg, Sweden
Roman Meshcheryakov	Tomsk State University of Control Systems and Radioelectronics, Russia
George Mikros	National and Kapodistrian University of Athens, Greece
Tristan Miller	Technische Universität Darmstadt, Germany
Alexander Molchanov	PROMT, Russia
Kirill Nikolaev	National Research University Higher School of Economics, Russia
Allan Payne	SORC, UK
Georgios Petasis	National Centre of Scientific Research “Demokritos”, Greece
Stefan Pickl	Bundeswehr University Munich, Germany
Lidia Pivovarova	University of Helsinki, Finland
Vladimir Pleshko	RCO, Russia
Alexey Romanov	University of Massachusetts Lowell, USA
Paolo Rosso	Universitat Politècnica de València, Spain
Yuliya Rubtsova	A.P. Ershov Institute of Informatics Systems, Russia
Eugen Ruppert	Universität Hamburg, Germany
Ivan Samborskii	National University of Singapore
Andrey Savchenko	National Research University Higher School of Economics, Russia
Christin Seifert	University of Twente, The Netherlands
Alexander Semenov	University of Jyväskylä, Finland
Alexey Sorokin	Lomonosov Moscow State University, Russia and Moscow Institute of Science and Technology, Russia
Aleksandr Tarelkin	EPAM, Russia
Irina Temnikova	Qatar Computing Research Institute, Qatar
Mike Thelwall	University of Wolverhampton, UK
Elena Tutubalina	Kazan (Volga Region) Federal University, Russia
Dmitry Ustalov	University of Mannheim, Germany
Elior Vila	University of Elbasan “Aleksandër Xhuvani”, Albania
Roman Yangarber	University of Helsinki, Finland

Wajdi Zaghouni
Marcos Zampieri
Alexey Zobnin

Hamad Bin Khalifa University, Qatar
University of Wolverhampton, UK
National Research University Higher School
of Economics, Russia

Nikolai Zolotykh
Jan Žižka

University of Nizhni Novgorod, Russia
Mendel University in Brno, Czech Republic

Contents

Morphology and Word-Level Semantics

Deep Convolutional Networks for Supervised Morpheme Segmentation of Russian Language	3
<i>Alexey Sorokin and Anastasia Kravtsova</i>	
Smart Context Generation for Disambiguation to Wikipedia	11
<i>Andrey Sysoev and Irina Nikishina</i>	
A Multi-feature Classifier for Verbal Metaphor Identification in Russian Texts	23
<i>Yulia Badryzlova and Polina Panicheva</i>	
Lemmatization for Ancient Languages: Rules or Neural Networks?	35
<i>Oksana Dereza</i>	
Named Entity Recognition in Russian with Word Representation Learned by a Bidirectional Language Model	48
<i>Georgy Konoplich, Evgeniy Putin, Andrey Filchenkov, and Roman Rybka</i>	

Sentence and Discourse Representations

Supervised Mover's Distance: A Simple Model for Sentence Comparison . . .	61
<i>Muktabh Mayank Srivastava</i>	
Direct-Bridge Combination Scenario for Persian-Spanish Low-Resource Statistical Machine Translation	67
<i>Benyamin Ahmadnia, Javier Serrano, Gholamreza Haffari, and Nik-Mohammad Balouchzahi</i>	
Automatic Mining of Discourse Connectives for Russian	79
<i>Svetlana Toldova, Maria Kobozeva, and Dina Pisarevskaya</i>	

Corpus Linguistics

Avoiding Echo-Responses in a Retrieval-Based Conversation System	91
<i>Denis Fedorenko, Nikita Smetanin, and Artem Rodichev</i>	
A Model-Free Comorbidities-Based Events Prediction in ICU Unit	98
<i>Tatiana Malygina and Ivan Drokin</i>	

Explicit Semantic Analysis as a Means for Topic Labelling	110
<i>Anna Kriukova, Aliia Erofeeva, Olga Mitrofanova, and Kirill Sukharev</i>	
Four Keys to Topic Interpretability in Topic Modeling	117
<i>Andrey Mavrin, Andrey Filchenkov, and Sergei Koltcov</i>	
Language Resources	
Cleaning Up After a Party: Post-processing Thesaurus Crowdsourced Data. . . .	133
<i>Oksana Antropova, Elena Arslanova, Maxim Shaposhnikov, Pavel Braslavski, and Mikhail Mukhin</i>	
A Comparative Study of Publicly Available Russian Sentiment Lexicons	139
<i>Evgeny Kotelnikov, Tatiana Peskischeva, Anastasia Kotelnikova, and Elena Razova</i>	
Acoustic Features of Speech of Typically Developing Children Aged 5–16 Years	152
<i>Alexey Grigorev, Olga Frolova, and Elena Lyakso</i>	
Social Interaction Analysis	
Profiling the Age of Russian Bloggers.	167
<i>Tatiana Litvinova, Alexandr Sboev, and Polina Panicheva</i>	
Stierlitz Meets SVM: Humor Detection in Russian	178
<i>Anton Ermilov, Natasha Murashkina, Valeria Goryacheva, and Pavel Braslavski</i>	
Interactive Attention Network for Adverse Drug Reaction Classification	185
<i>Ilseyar Alimova and Valery Solovyev</i>	
Modeling Propaganda Battle: Decision-Making, Homophily, and Echo Chambers	197
<i>Alexander Petrov and Olga Proncheva</i>	
Author Index	211