Research Networking Programmes

Science Meeting – Scientific Report

The scientific report (WORD or PDF file - maximum of seven A4 pages) should be submitted online within two months of the event. It will be published on the ESF website.

***Proposal Title**: 9th Russian Summer School in Information Retrieval*

***Application Reference N°:** 5934*

1) Summary (up to one page)

The 9th Russian Summer School in Information Retrieval (RuSSIR 2015) was held on August 24-28, 2015 in St. Petersburg, Russia (http://romip.ru/russir2015/). The school was co-organized by the National Research University Higher School of Economics2 and the Russian Information Retrieval Evaluation Seminar (ROMIP). The RuSSIR school series started in 2007 and has developed into a renowned academic event with extensive international participation. Previously, RuSSIR took place in Yekaterinburg, Taganrog, Petrozavodsk, Voronezh, St. Petersburg, Yaroslavl, Kazan, and Nizhny Novgorod. RuSSIR courses were taught by many prominent international researchers in Information Retrieval and related areas.

The RuSSIR 2015 program featured courses focusing on social network analysis and graph mining along with traditional topics from Information Retrieval. The program consisted of two invited lectures, eight courses running in two parallel sessions, two sponsor talks, and the RuSSIR 2015 Young Scientist Conference.

The school welcomed 96 participants selected based on their applications. The majority of students came from Russia, but there were also 19 students from the European Union and six from the rest of the world. The RuSSIR audience comprised of undergraduate, graduate, and doctoral students, as well as young academics and industrial developers. The total number of participants including students, sponsor representatives, lecturers and organizers was 159.

The participation was free of charge thanks to the sponsors. In addition, 20 accommodation grants were awarded to Russian participants by the Higher

School of Economics and 14 European-based students received travel support from the European Science Foundation (ESF) through the ELIAS network.

For more details, please refer to the SIGIR Forum report:
P. Braslavski, I. Markov, P. M. Pardalos, Y. Volkovich, S. Koltsov, O. Koltsova, D. I. Ignatov: 9th Russian Summer School in Information Retrieval (RuSSIR 2015), SIGIR Forum, Dec 2015 (in press).

2) Description of the scientific content of and discussions at the event (up to four pages)

The RuSSIR program was compiled based on submitted course proposals, reviewed by the RuSSIR Program Committee. Each course proposal was reviewed by at least four PC members. In total, 15 course proposals were submitted, five of which were selected for the school program. Additionally, there were five invited courses on the main topic of RuSSIR 2015, i.e., social network analysis and graph mining. Overall, the school program consisted of two plenary courses and eight regular courses run in two parallel tracks. Below, a brief overview of each course is given.

Data Science for Massive (Dynamic) Networks, Panos M. Pardalos (University of Florida, USA)
Data science tools, such as data mining and optimization heuristics, have been used to analyze many large (and massive) datasets that can be represented as a network. In these networks, certain attributes are associated with vertices and edges. This analysis often provides useful information about the internal structure of the datasets they represent. The course presented the author's work on several networks from telecommunications (call graph), financial networks (market graph), social networks, and neuroscience.

Community Detection in Networks, Santo Fortunato (Aalto University, Finland)
The course was focused on one of the most popular topics in the network science: detection of communities in networks. Communities are usually conceived as subgraphs of a network, with a high density of links within the subgraphs and a comparatively lower density between them. The existence of community structure indicates that the nodes of the network are not homogeneous but divided into classes, with a higher probability of connections between nodes of the same class than between nodes of different classes. This can be due to various reasons. In a social network, for instance, communities could be groups of people with common interests, or acquaintanceships; in protein interaction networks they might indicate functional modules where proteins with the same function frequently interact in the cell, hence they share more links; in the web graph, they might be web pages dealing with similar topics, which therefore referring to each other.

Text Quantification, Fabrizio Sebastiani (Qatar Computing Research Institute, Qatar)
In a number of applications involving text classification in recent years it has been pointed out that the final goal is not determining which class (or classes) individual unlabeled documents belong to, but determining the prevalence (or "relative frequency") of each class in the unlabeled data. The latter task is known as text quantification (or prevalence estimation, or class prior estimation). The

goal of this course was to introduce the audience to the problem of quantification, techniques that have been proposed for solving it, metrics used to evaluate them, applications in fields such as information retrieval, machine learning, and data mining, and to the open problems in the area.

Leveraging Knowledge Graphs for Web Search, Gianluca Demartini (University of Sheffield, UK)
Knowledge Graphs (KGs) contain structured information about entities such as persons, locations, and organizations. Modern Web Search engines leverage such KGs to empower entity-oriented search by displaying in search engine result pages so called entity cards that summarize the main facts about the queried entity. In this course, the author introduced the main concepts around KGs and the 'Web of data' and discussed techniques for mining the Web for entities and using KGs to create an entity-centric user experience on the Web. The author covered the Linked Open Data initiative including popular KGs such as Freebase, DBPedia, and Wikidata, introduced the Named Entity Recognition and Linking techniques, and discussed their usage for identifying entity mentions in textual content, disambiguating these mentions, and connecting them to entities in a background KG. Furthermore, the author presented techniques for entity search and micro-task crowdsourcing.

Online/Offline Evaluation of Search Engines, Evangelos Kanoulas (University of Amsterdam, The Netherlands)
Evaluation has played a critical role in the success of IR. There is an arsenal of methods in hand that researcher and practitioners use to evaluate an experimental search system and compare it to the production system. This course focused on the two predominant paradigms: collection-based evaluation and in-situ evaluation. Collection-based evaluation is performed offline, in a laboratory setting, while in-situ evaluation is run online, by deploying an experimental system and running user queries both against the experimental and the production system. The course covered the latest advances in both paradigms.
The course topics included click-models and model-based measures, measures for complex retrieval scenarios, statistical inference frameworks that allow hypothesis testing in complex experimental designs, and the state-of-the-art A/B testing and interleaving methods. Special focus was given to recent work that attempts to bridge the gap between these two evaluation paradigms, e.g., methods to predict the results of an A/B and interleaving test from offline historical data, collection-based evaluation frameworks with a human in the loop, etc.

Models of Random Graphs and their Applications to the Web-graph Analysis, Andrey Raigorodsky (Moscow Institute of Physics and Technology, Moscow State University, and Yandex, Russia)
This course provided an overview of various models for random graphs and their applications to the Web graph. The author started with the classical Erdos-Renyi model and its application to network reliability, then proceeded with the most recent models describing the topology and growth of the Internet, social networks, economic network, and biological networks, and finally presented several applications of these models to the problems of search and crawling.

Visual object recognition and localization, Ivan Laptev (INRIA Paris-Rocquencourt, France)
The goal of this course was to introduce state-of-the-art methods for large-scale image recognition and retrieval. The course contained lectures and practical sessions. The lectures covered recent image representations for object recognition (HOG, SIFT, DPM, BOF, CNN) as well as modern machine learning techniques (SVM, CNN/Deep Learning). Besides lectures, the course included guided practical sessions where students were able to implement basic techniques for object recognition. As a result of the course, the participants learned about techniques enabling efficient search of particular object instances among billions of images. The participants also learned about most recent advances in Deep Learning enabling close-to-human performance for such tasks as face recognition and object category recognition.

Contextual Search and Exploration, Charles L. A. Clarke (University of Waterloo, Canada), Jaap Kamps (University of Amsterdam, The Netherlands), Julia Kiseleva (Eindhoven University of Technology, The Netherlands)
The ubiquitous availability of information on the web and personalized (mobile) devices has a revolutionary impact on modern information access, challenging both research and industrial practice. Searchers with a complex information need typically slice-and-dice their problem into several queries and subqueries, and laboriously combine the answers post hoc to solve their tasks. Rich context allows far more powerful, personalized search, without the need for users to write long complex queries.
This course discussed the challenges of contextual search and recommendation, with concrete focus on the venue recommendation task as run at TREC 2012-2015. It featured both lectures and hands-on sessions with data derived from the TREC task. The course enabled students to understand the challenges and opportunities of contextualized search over entities, to learn effective approaches to venue recommendation, and to get the hands-on experience with developing and evaluating personalized search and recommendation approaches.

Big Data driven Logistics, Athanasios Migdalas (Lulea University of Technology, Sweden)
The purpose of this course was to give an overview of a recent and very active field of Big Data Analytics (also referred to as Data Mining) with the focus on its application to Logistics and Supply Chain Management. The course covered basic and advanced Data Analytics methods, techniques related to Supply Chains, corresponding metrics, technologies and tools, and a number of research examples.

Big Data Analytics with R, Athanasia Karakitsiou (Lulea University of Technology, Sweden)
This course was a follow up of and a complement to the course “Big Data Driven Logistics.” It offered an introductory guide to algorithms for Big Data Analytics using the R language. The course discussed time series decomposition and correlation, forecasting strategies, linear and non- linear regression and classification, clustering, etc. In particular, a number of methods related to Data Mining were considered, e.g., ARMA, ARIMA, Support Vector Machines (SVM), Naive Bayes, Neural Networks, Discriminant Analysis, k-Center, etc.

Sponsoring organizations made three scientific presentations in addition to the main school program. Yandex presented a novel methodology that allows less

exhaustive online experimentation for search engines; Mail.ru focused on user behavior analysis; Ok.ru discussed the connection between the size of data and its usefulness.

Young Scientist Conference

For the 9th time the RuSSIR Young Scientist Conference was organized within the school program. The conference allowed to create a dialog between young researchers from different areas such as mathematics, computer science and linguistics as well as social and media sciences. The conference ran over two consecutive evenings and consisted of two parts: oral presentations and poster sessions.

There were two types of submissions: full papers that underwent a thorough reviewing process and short poster notes. Out of 17 submitted full papers, 6 were accepted for oral presentation at the conference and will be published in the school proceedings:

- Ekaterina Pronoza, Elena Yagunova and Anton Pronoza. Construction of a Russian Paraphrase Corpus: Unsupervised Paraphrase Extraction;
- Julia Efremova, Alejandro Montes Garcia, Alfredo Bolt Iriondo and Toon Calders. Who are My Ancestors? Retrieving Family Relationships from Historical Texts;
- Alexey Raskin. Using Levenshtein Distance for Typical Users Actions Detection and Search Engine Switching Detection;
- Arshad Khan, Thanassis Tiropanis and David Martin. Exploiting Semantic Annotation of Content with Linked Open Data (LoD) to Improve Searching Performance in Web Repositories of Multi-disciplinary Research Data;
- Lyudmila Zaydelman, Irina Krylova, Boris Orekhov and Ekaterina Stepanova. Languages of Russia: Using Social Networks to Collect Texts;
- Igor Zakhlebin, Aleksandr Semenov, Alexander Tolmach and Sergey Nikolenko. Detecting Opinion Polarisation on Twitter by Constructing Pseudo-bimodal Networks of Mentions and Retweets.

During the poster sessions all participants had an opportunity to discuss and exchange their research results and ideas. As in the previous years, the Young Scientist Conference was one of the main highlights of the school.

Hackathon

Charles Clarke, Jaap Kamps and Julia Kiseleva organized a hackathon as an additional part of their tutorial. The hackathon was designed in a way similar to the TREC 2015 Contextual SuggestionTrack. The participants were asked to recommend to the lecturers a number of places to visit in St. Petersburg, based on the lecturers' profiles and external sources about the city. The hackathon attracted 30 students who formed 10 teams. The winning teams were selected based on the originality, relevance, and efficiency of the proposed solutions.

3) Assessment of the results and impact of the event on the future directions of the field (up to two pages)

The RuSSIR 2015 meeting in St. Petersburg has attempted to span a bridge between a rich tradition of excellence in information processing in Russia and information retrieval research in the Western World. The school has managed to blur the boundaries between these two geographic areas and has benefitted the exchange between these two communities. This was achieved through a high-quality program featuring top-level international speakers and, owing to ELIAS funding, through participation of students from Europe.

The audience of the school consisted of advanced graduate and PhD students, post-doctoral researchers, academic and industrial researchers. The mission of the RuSSIR school series was to enable students to learn about modern problems and methods in information retrieval and related disciplines, to stimulate scientific research and collaboration in the field; and to create an environment for informal contacts between scientists, students and industry professionals. The school has hosted 159 attendees.

It is evident that RuSSIR continues to attract international, particularly European, attendance benefitting both Russian and European researchers.

4) Annexes 4a) and 4b): Programme of the meeting and full list of speakers and participants

Annex 4a: Programme of the meeting

RuSSIR 2015 Scientific Program, the details are available online at http://romip.ru/russir2015/section.php?id=198.

	Mon, August 24	Tue, August 25	Wed, August 26	Thu, August 27	Fri, August 28
9:10–9:30	Opening 435				
9:30-11:00	Pardalos 435	Pardalos 435	Karakitsiou 435 / Sebastiani	Fortunato 435	
11:30-13:00	Migdalas 435 / Sebastiani 436	Karakitsiou 435 / Sebastiani 436	Demartini 435 / Kanoulas 436	Yandex 435	Fortunato 435
14:00-15:30	Migdalas 435 / Sebastiani 436	Demartini 435 / Kanoulas 436	Demartini 435 / Kanoulas 436	Raigorodsky 435 / Laptev 436	Mail.ru 435
16:00-17:30	Kamps, Clarke, Kiseleva, Yang 435	Demartini 435 / Kanoulas 435	Kamps, Clarke, Kiseleva, Yang 435	Raigorodsky 435 / Laptev 436	Raigorodsky 435 / Laptev 436
18:00-19:30	Kamps, Clarke, Kiseleva, Yang 435	YSC 18.00-18.10 18.10-18.20 18.20-18.30 Poster session hall	YSC 18.00-18.10 18.10-18.20 18.20-18.30 Poster session hall	Kamps, Clarke, Kiseleva, Yang 435	Raigorodsky 435 / Laptev 436
	Welcome party 20:00 Hall	Kamps, Clarke, Kiseleva, Yang (Hackathon) / Poster session hall		RuSSIR party - Boat trip 20:30 Makarova embankment 20	Closing 19:30–19:50 435

Annex 4b: Full list of speakers and participants

Speakers

- Charles L. A. Clarke, University of Waterloo, Canada
- Gianluca Demartini, University of Sheffield, UK
- Santo Fortunato, Aalto University, Finland
- Jaap Kamps, University of Amsterdam, The Netherlands
- Evangelos Kanoulas, University of Amsterdam, The Netherlands
- Athanasia Karakitsiou, Lulea University of Technology, Sweden
- Julia Kiseleva, Eindhoven University of Technology, The Netherlands
- Ivan Laptev, INRIA Paris-Rocquencourt, France
- Athanasios Migdalas, Lulea University of Technology, Sweden
- Panos M. Pardalos, University of Florida, USA
- Andrey Raigorodsky, Moscow Institute of Physics and Technology, Russia
- Fabrizio Sebastiani, Qatar Computing Research Institute, Qatar

Participants

- Larisa Adamyan, Russia, Moscow, Russian Academy of Sciences
- Mikhail Afanasev, Russia, St. Petersburg, JetBrains
- Liliya Akhtyamova, Russia, Moscow, Moscow Institute of Physics and Technology
- Daniil Alexeyevsky, Russia, Moscow, National Research University Higher School of Economics
- Elena Andreeva, Russia, Moscow, Mail.ru
- Arseniy Ashuha, Russia, Moscow, Rambler
- Hosein Azarbonyad, The Netherlands, Amsterdam, University of Amsterdam
- Oleg Bakhteev, Russia, Moscow, Moscow Institute of Physics and Technology
- Andrey Balandin, Russia, St. Petersburg, JetBrains
- Alexandra Barysheva, Russia, Moscow, National Research University Higher School of Economics
- Bazanova Lyubov, Russia, Nizhny Novgorod, National Research University Higher School of Economics
- Alexander Beloborodov, Russia, Yekaterinburg, Ural Federal University
- Stepan Belousov, Russia, Moscow, Mail.ru
- Dmitry Bobrovnikov, Russia, Moscow, Yandex
- Anna Boldyreva, Russia, Moscow, Moscow Institute of Physics and Technology
- Alexander Bragin, Russia, Moscow, Mail.ru
- Grigoriy Bukia, Russia, St. Petersburg, St. Petersburg State University
- Denis Bulygin, Russia, St. Petersburg, National Research University Higher School of Economics
- Philipp Burtyka, Russia, Rostov-on-Don, Southern Federal University
- Alexander Cheparukhin, Russia, Moscow, Mail.ru
- Anastasia Chumak, Russia, St. Petersburg, JetBrains
- Artem Churkin, Russia, Moscow, Mail.ru
- Vera Danilova, Spain, Barcelona, Autonomous University of Barcelona
- Alina Dubatovka, Russia, St. Petersburg, St. Petersburg State University
- Julia Efremova, The Netherlands, Eindhoven, Eindhoven University of Technology

- Dmitry Frolov, Russia, Moscow, National Research University Higher School of Economics
- Anastasia Giachanou, Switzerland, Lugano, UniversitaÕ della Svizzera Italiana (USI)
- Anna Golubtsova, Russia, Moscow, National Research University Higher School of Economics
- Ivan Grechikhin, Russia, Nizhny Novgorod, National Research University Higher School of Economics
- Cristina Kadar, Switzerland, Zurich, ETH
- Nikolay Karpov, Russia, Nyzniy Novgorod, National Research University Higher School of Economics
- Ivan Karpukhin, Russia, Moscow, Lomonosov Moscow State University
- Maria Karyaeva, Russia, Yaroslavl, Yaroslavl State University
- Tomasz Kaszuba, Poland, Warsaw, Polish-Japanese Academy of Information Technology
- Arshad Khan, UK, Southampton, University of Southampton
- Daria Kharkina, Russia, St. Petersburg, National Research University Higher School of Economics
- Dmitriy Khodakov, Russia, Moscow, Orion
- Pavel Klemenkov, Russia, Moscow, Rambler
- Denis Klyukin, Russia, Moscow, Mail.ru
- Viktor Kokachev, Russia, St. Petersburg, St. Petersburg State University
- Aleksandra Kononova, Russia, Dolgoprudny, Moscow Institute of Physics and Technology
- Irina Krylova, Russia, Moscow, National Research University Higher School of Economics
- Vladimir Kukushkin, Russia, St. Petersburg, Yandex
- Elena Kulakova, Russia, Moscow, National Research University Higher School of Economics
- Matve Kurzukov, Russia, Moscow, Lomonosov Moscow State University
- Andrey Kutuzov, Russia, Moscow, Mail.ru
- Elizaveta Kuzmenko, Russia, Moscow, National Research University Higher School of Economics
- Maria Kuznetsova, Russia, St. Petersburg, National Research University Higher School of Economics
- Xinyi Li, The Netherlands, Amsterdam, University of Amsterdam
- Aldo Lipani, Austria, Vienna, Vienna University of Technology
- Tatiana Litvinenko, Russia, Rostov-on-Don, Yandex
- Gleb Logunov, Russia, Moscow, Mail.ru
- Darya Loshkareva, Russia, Moscow, National Research University Higher School of Economics
- Alexander Lukyanov, Russia, Moscow, Mail.ru
- Pierangelo Massa, Italy, Cagliari, University of Cagliari
- Aleksandra Mikhailova, Russia, St. Petersburg, St. Petersburg State University
- Maria Mikhailova, Russia, Moscow, National Research University Higher School of Economics
- Ioanna Miliou, Italy, Pisa, University of Pisa
- Alejandro Montes Garcia, The Netherlands, Eindhoven, Eindhoven University of Technology
- Andrey Murashev, Russia, Moscow, Mail.ru
- Marina Mytrova, Russia, Serpukhov, Russian Academy of Sciences

- Alina Nasibullina, Russia, Moscow, Moscow Institute of Physics and Technology
- Sergey Nikolenko, Russia, St. Petersburg, National Research University Higher School of Economics
- Tatiana Nikulina, Russia, St. Petersburg, St. Petersburg State University
- Evgeny Nizhibitsky, Russia, Moscow, Rambler
- Michael Nokel, Russia, Moscow, Lomonosov Moscow State University
- Yaser Norouzzadeh, The Netherlands, Amsterdam, University of Amsterdam
- Harrie Oosterhuis, The Netherlands, Amsterdam, University of Amsterdam
- Boris Orekhov, Russia, Moscow, National Research University Higher School of Economics
- Sagun Pai, India, Mumbai, Indian Institute of Technology Bombay
- Casper Petersen, Denmark, Copenhagen, University of Copenhagen
- Andrey Poletaev, Russia, Omsk, Crystalnix
- Gleb Polevoy, The Netherlands, Delft, Delft University of Technology
- Artem Popov, Russia, St. Petersburg, ITMO University
- Svetlana Popova, Russia, St. Petersburg, St. Petersburg State University
- Vladislava Prasolova, Russia, St. Petersburg, JetBrains
- Anton Pronoza, Russia, St. Petersburg, St. Petersburg State University
- Ekaterina Pronoza, Russia, St. Petersburg, St. Petersburg State University
- Ekaterina Protopopova, Russia, St. Petersburg, St. Petersburg State University
- Irina Radchenko, Russia, St. Petersburg, ITMO University
- Alexey Raskin, Russia, Moscow, National Research Nuclear University MEPhI
- Navid Rekabsaz, Austria, Vienna, Vienna University of Technology
- Alexey Romanov, Russia, Moscow, Moscow Institute of Physics and Technology
- Anastasia Rozhkova, Russia, Tomsk, National Research Tomsk State University
- Sheikh Muhammad Sarwar, Bangladesh, Dhaka, University of Dhaka
- Aleksandr Semenov, Russia, Moscow, National Research University Higher School of Economics
- Yaroslav Sergienko, Russia, Krasnodar, National Research University Higher School of Economics
- Pavel Shavrov, Russia, Moscow, National Research University Higher School of Economics
- Andrey Shestakov, Russia, Moscow, National Research University Higher School of Economics
- Gabriella Skitalinskaya, Russia, Moscow, Moscow Institiute of Physics and Technology
- Kirill Sorudeykin, Ukraine, Kharkov, Kharkov National University of Radio Electronics
- Andrew Ternikov, Russia, St. Petersburg, National Research University Higher School of Economics
- Thanassis Tiropanis, UK, Southampton, University of Southampton
- Svetlana Toldova, Russia, Moscow, National Research University Higher School of Economics
- Cagri Toraman, Turkey, Ankara, Bilkent University
- Alina Trepacheva, Russia, Rostov-on-Don, Southern Federal University
- Yulia Valeeva, Russia, Moscow, Moscow Institute of Physics and Technology
- David van Dijk, The Netherlands, uithoorn, University of Amsterdam
- Christophe Van Gysel, The Netherlands, Amsterdam, University of Amsterdam
- Andrey Vaynberger, Russia, Moscow, Mail.ru
- Evgenia Vlasova, Russia, Moscow, National Research University Higher School of Economics

- Olesya Volchenko, Russia, St. Petersburg, National Research University Higher School of Economics
- Vitaly Volk, Russia, Moscow, Helsinki University
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