Lecture Notes in Computer Science **10588**

Commenced Publication in 1973
Founding and Former Series Editors:
Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison
Lancaster University, Lancaster, UK
Takeo Kanade
Carnegie Mellon University, Pittsburgh, PA, USA
Josef Kittler
University of Surrey, Guildford, UK
Jon M. Kleinberg
Cornell University, Ithaca, NY, USA
Friedemann Mattern
ETH Zurich, Zurich, Switzerland
John C. Mitchell
Stanford University, Stanford, CA, USA
Moni Naor
Weizmann Institute of Science, Rehovot, Israel
C. Pandu Rangan
Indian Institute of Technology, Madras, India
Bernhard Steffen
TU Dortmund University, Dortmund, Germany
Demetri Terzopoulos
University of California, Los Angeles, CA, USA
Doug Tygar
University of California, Berkeley, CA, USA
Gerhard Weikum
Max Planck Institute for Informatics, Saarbrücken, Germany

More information about this series at http://www.springer.com/series/7409

Claudia d'Amato · Miriam Fernandez
Valentina Tamma · Freddy Lecue
Philippe Cudré-Mauroux · Juan Sequeda
Christoph Lange · Jeff Heflin (Eds.)

The Semantic Web – ISWC 2017

16th International Semantic Web Conference
Vienna, Austria, October 21–25, 2017
Proceedings, Part II

Springer

Editors
Claudia d'Amato
University of Bari
Bari
Italy

Philippe Cudré-Mauroux
University of Fribourg
Fribourg
Switzerland

Miriam Fernandez
KMi, The Open University
Milton Keynes
UK

Juan Sequeda
Capsenta, Inc.
Austin, TX
USA

Valentina Tamma
University of Liverpool
Liverpool
UK

Christoph Lange
Universität Bonn
Bonn
Germany

Freddy Lecue
Accenture Technology Labs
Dublin
Ireland

Jeff Heflin
Lehigh University
Bethlehem, PA
USA

ISSN 0302-9743 ISSN 1611-3349 (electronic)
Lecture Notes in Computer Science
ISBN 978-3-319-68203-7 ISBN 978-3-319-68204-4 (eBook)
DOI 10.1007/978-3-319-68204-4

Library of Congress Control Number: 2017955717

LNCS Sublibrary: SL3 – Information Systems and Applications, incl. Internet/Web, and HCI

© Springer International Publishing AG 2017
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.

Printed on acid-free paper

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

Preface

The International Semantic Web Conference (ISWC) is the premier forum for Semantic Web researchers and practitioners from around the world to gather and share ideas and discoveries. The conference continues to bring together a diverse set of individuals with skills and interests ranging from artificial intelligence to information systems and Web systems. We continue to see steadily increasing adoption of semantic technologies, although more often than not, their use is invisible to consumers.

This volume contains the proceedings of ISWC 2017 with all the papers accepted to the main conference tracks: the Research, Resources, and In-Use Tracks. In addition to the long-standing Research and In-Use Tracks, we have continued the Resources and Journal Tracks that were introduced last year. We also brought back an Industry Track and hope that this will encourage even more cross-fertilization between practitioners and researchers.

The Research Track is home to the most ground-breaking results in the field. This year, we received 197 full submissions, of which 44 were accepted for publication in this volume and presentation at the conference. A large team of reviewers, including 423 Program Committee (PC) members and 23 Senior Program Committee (SPC) members, was carefully selected to ensure a wide coverage of expertise. Each paper was assigned to five reviewers and to an SPC member. The assignment process was based on a bidding phase where PC and SPC members selected papers to review based on their expertise. PC members received a maximum of three papers to review, while SPC members received a maximum of nine papers. A specific form was designed by the Research Track chairs to facilitate the reviewing process and to ensure that all important aspects of the papers were examined. As per the usual process, we included a rebuttal period where authors could respond to the initial reviews. SPC members oversaw the reviews and discussion for each paper in order to resolve disagreements when possible and ensure constructive feedback. Discussions for the papers took place before and after the rebuttal phase to ensure that the authors could answer the key concerns highlighted by the reviewers and that the provided answers were debated, acknowledged, and considered for the final recommendation. Over the course of five days, the SPC members and Research Track chairs held discussions to assess all papers and to make a final decision on which papers to select. During this process, additional reviews were requested for controversial papers. Meta-reviews were written to summarize these discussions and the final recommendation for each paper. While the names of PC members were not visible to the authors, or to each other, during the reviewing period, PC members were given the opportunity to sign their reviews and discussions before the final decision was sent to the authors.

The purpose of the Resources Track is to share resources and best practices for developing them, as we strongly believe that this is crucial in order to consolidate research material, ensure reproducibility of results, and in general gain new scientific insights. The term “resource” can refer to: datasets, ontologies, vocabularies,

workflows, evaluation benchmarks or methods, replication studies, services, APIs, and software frameworks that have contributed to the generation of novel scientific work. One of the requirements of this track is that the resources were published with a permanent URI in order to guarantee future access. This year, our publisher piloted a dedicated infrastructure for publishing snapshots of resources to facilitate this process. The track received 76 submissions and accepted 23 of them; seven of these, as well as three of the Research Track, made use of the dedicated resource publishing facility, as can be seen from the respective references in these papers. Each paper received four reviews, and an SPC member provided a meta-review. Similar to the Research Track, there was a rebuttal phase, which was then followed by further discussion among the reviewers and managed by the SPC member who summarized all views in a recommendation to the Resource Track chairs. The final decisions were determined through discussions between the track chairs and the SPC members and were based on the overall views expressed by the reviewers, the meta-reviews and the lively discussions that occurred before and after the rebuttal phase.

The In-Use Track provides a forum for the community to explore the benefits and challenges of applying semantic technologies in concrete, practical applications, in contexts ranging from industry to government and science. This year, the track required that papers provide evidence that there is use of the proposed application or tool by the target user group, preferably outside the group that conducted the development. We received 29 submissions, and accepted nine. Each submission was assigned four reviewers.

Traditionally, ISWC has a different keynote speaker to kick off each day of the main conference. This year we had three exciting keynote talks delivered by Nada Lavrac (Jozef Stefan Institute), Deborah L. McGuinness (Rensselaer Polytechnic Institute), and Jamie Taylor (Google). The titles and abstracts of these talks are included in this volume.

There were many important activities at ISWC 2017 that are not represented in these proceedings. The two days prior to the main conference involved many smaller sessions: workshops, tutorials, and the doctoral consortium. Aidan Hogan and Valentina Presutti were our workshops and tutorials chairs, and selected seven tutorials and 19 workshops for the program. The doctoral consortium was chaired by Lora Aroyo and Fabien Gandon. In all, 26 PhD students submitted papers, and after review by the PC, 13 were accepted to the event.

The Journal Track provided the authors of papers recently published in Semantic Web journals the opportunity to present their papers to the conference community. The editors of the *Journal of Web Semantics* and the *Semantic Web Journal* selected a total of 12 papers published in the previous year (but never presented at ISWC).

The first day of the main conference included an Industry Track and a Posters and Demonstrations Session. The Industry Track was chaired by Achille Fokoue and Peter Haase with the goal of presenting the state of adoption of semantic technologies in industrial applications, whether it be specific industries or as a horizontal technology. This track received 30 submissions and accepted 18 for presentation. The Posters and Demonstrations Track was chaired by Nadeschda Nikitina and Dezhao Song.

This year saw the return of a reinvigorated Semantic Web Challenge. Led by Dan Bennett, Axel Ngonga, and Heiko Paulheim, this year's challenge involved two measurable tasks, i.e., knowledge graph population and knowledge graph validation.

In recognition of the maturing of the field, we added two new events to the conference. In order to reach out to the general public, we featured an event supported by the Vienna Business Agency for the local community in the form of a combined local business lounge and Semantic Web meet-up, co-located with the Posters and Demonstration Track. In addition, this year ISWC celebrated its first Job Fair, bringing together job candidates with open positions in both industry and academia.

The success of a large conference like ISWC also depends on a number of people whose contribution is not directly reflected in the program. We would like to thank our sponsorship chairs Michel Dumontier, Sabrina Kirrane, and Harald Sack, for their efforts in securing external funding to help offset the fixed costs of the conference. We would like to thank our student coordinators Lalana Kagal and Gianluca Demartini for managing the student travel fellowships and organizing the mentoring lunch. Stefan Dietze and Davide Taibi provided the valuable service of collecting and organizing our metadata; an essential task for a community that places so much value on semantics. Our publicity chair Anna Lisa Gentile did a fantastic job of getting the word out on multiple platforms. And of course, the proceedings you are reading today (whether in "old-school" paper form or electronically) would not have been possible without the diligent efforts of our proceedings chair, Christoph Lange.

Last, but certainly not least, we would like to give a big thank you to our local chairs Axel Polleres and Elmar Kiesling. Few people realize the amount of work that goes into the logistics of a conference of this scale, and often the local chairs are invisible unless something goes horribly wrong. Axel, Elmar, and their team have worked countless hours over the course of two years to ensure that everything runs smoothly.

October 2017

Claudia d'Amato
Miriam Fernandez
Valentina Tamma
Freddy Lecue
Philippe Cudré-Mauroux
Juan Sequeda
Jeff Heflin

Organization

Organizing Committee

General Chair

Jeff Heflin	Lehigh University, USA

Local Chairs

Axel Polleres	WU Wien, Austria
Elmar Kiesling	TU Wien, Austria

Research Track Chairs

Claudia d'Amato	University of Bari, Italy
Miriam Fernandez	KMi, The Open University, UK

Resources Track Chairs

Valentina Tamma	University of Liverpool, UK
Freddy Lecue	Accenture, Dublin, Ireland/Inria, Sophia Antipolis, France

In-Use Track Chairs

Philippe Cudré-Mauroux	University of Fribourg, Switzerland
Juan Sequeda	Capsenta, Austin, USA

Workshop and Tutorial Chairs

Aidan Hogan	Universidad de Chile, Chile
Valentina Presutti	Institute of Cognitive Sciences and Technologies, CNR, Italy

Poster and Demo Track Chairs

Nadeschda Nikitina	University of Oxford, UK
Dezhao Song	Thomson Reuters, Eagan, USA

Journal Track Chairs

Abraham Bernstein	University of Zurich, Switzerland
Pascal Hitzler	Wright State University, USA
Steffen Staab	University of Koblenz, Germany

Industry Track Chairs

Achille Fokoue	IBM Yorktown, USA
Peter Haase	metaphacts, Germany

Doctoral Consortium Chairs

Lora Aroyo	Vrije Universiteit Amsterdam, The Netherlands
Fabien Gandon	Inria Sophia Antipolis, France

Semantic Web Challenge Chairs

Dan Bennett	Thomson Reuters, Eagan, USA
Axel Ngonga	University of Paderborn, Germany
Heiko Paulheim	University of Mannheim, Germany

Proceedings Chair

Christoph Lange	University of Bonn and Fraunhofer IAIS, Germany

Metadata Chairs

Stefan Dietze	L3S, Leibniz University, Germany
Davide Taibi	Institute for Educational Technology, CNR, Italy

Sponsorship Chairs

Michel Dumontier	Maastricht University, The Netherlands
Sabrina Kirrane	WU Wien, Austria
Harald Sack	FIZ Karlsruhe, KIT Karlsruhe, Germany

Student Coordinators

Lalana Kagal	Massachusetts Institute of Technology, USA
Gianluca Demartini	University of Queensland, Australia

Publicity Chair

Anna Lisa Gentile	IBM Research Almaden, USA

Local Committee

Bettina Bauer	SBA Research, Vienna, Austria
Fajar J. Ekaputra	TU Wien, Austria
Javier D. Fernández	WU Wien, Austria
Yvonne Poul	SBA Research, Vienna, Austria
Doris Wyk	WU Wien, Austria

Program Committee

Senior Program Committee – Research Track

Harith Alani	Knowledge Media Institute, Open University, UK
Abraham Bernstein	University of Zurich, Switzerland
Kalina Bontcheva	University of Sheffield, UK
Philipp Cimiano	Bielefeld University, Germany

Oscar Corcho	Universidad Politécnica de Madrid, Spain
Mathieu D'Aquin	Insight Centre, National University of Ireland Galway, Ireland
Fabien Gandon	Inria, France
Jose Manuel Gomez-Perez	Expert System, Spain
Jorge Gracia	Universidad Politécnica de Madrid, Spain
Claudio Gutierrez	Universidad de Chile, Chile
Olaf Hartig	Linköping University, Sweden
Pascal Hitzler	Wright State University, USA
Craig Knoblock	University of Southern California, USA
Vanessa Lopez	IBM Research, USA
Thomas Lukasiewicz	University of Oxford, UK
H. Sofia Pinto	Instituto Superior Tecnico, Portugal
Uli Sattler	University of Manchester, UK
Stefan Schlobach	Vrije Universiteit Amsterdam, The Netherlands
Steffen Staab	Institut WeST, University of Koblenz-Landau, Germany and WAIS, University of Southampton, UK
Vojtěch Svátek	University of Economics, Prague, Czech Republic
Tania Tudorache	Stanford University, USA
Maria Esther Vidal	Universidad Simon Bolivar, Venezuela
Denny Vrandečić	Google, USA

Program Committee – Research Track

Maribel Acosta	Institute AIFB, Karlsruhe Institute of Technology, Germany
Alessandro Adamou	Knowledge Media Institute, The Open University, UK
Nitish Aggarwal	IBM Watson, USA
Guadalupe Aguado-De-Cea	Universidad Politécnica de Madrid, Spain
Panos Alexopoulos	Textkernel B.V., The Netherlands
Jose Julio Alferes	Universidade Nova de Lisboa, Portugal
Muhammad Intizar Ali	Insight Centre for Data Analytics, National University of Ireland, Galway
Marjan Alirezaie	Orebro University, Sweden
Faisal Alkhateeb	Yarmouk University, Jordan
Tahani Alsubait	Umm Al-Qura University, Saudi Arabia
José Luis Ambite	University of Southern California, USA
Pramod Anantharam	Bosch Research and Technology Center, USA
Renzo Angles	Universidad de Talca, Chile
Grigoris Antoniou	University of Huddersfield, UK
Kemafor Anyanwu	North Carolina State University, USA
Manuel Atencia	University of Grenoble Alpes and Inria, France
Ioannis N. Athanasiadis	Wageningen University, The Netherlands
Medha Atre	IIT Kanpur, India

Sören Auer	TIB Leibniz Information Center Science and Technology and University of Hannover, Germany
Nathalie Aussenac-Gilles	IRIT CNRS, France
Franz Baader	TU Dresden, Germany
Payam Barnaghi	University of Surrey, UK
Valerio Basile	Inria, France
Zohra Bellahsene	LIRMM, France
Michael K. Bergman	Cognonto Corporation, USA
Elisa Bertino	Purdue University, USA
Leopoldo Bertossi	Carleton University, Canada
Isabelle Bichindaritz	State University of New York at Oswego, USA
Christian Bizer	University of Mannheim, Germany
Eva Blomqvist	Linköping University, Sweden
Fernando Bobillo	University of Zaragoza, Spain
Uldis Bojars	IMCS – University of Latvia, Latvia
Alex Borgida	Rutgers University, Taiwan
Mihaela Bornea	IBM Research, USA
Paolo Bouquet	University of Trento, Italy
Loris Bozzato	Fondazione Bruno Kessler, Italy
Adrian M.P. Brasoveanu	MODUL Technology GmbH, Austria
Charalampos Bratsas	Open Knowledge Greece and Aristotle University, Greece
John Breslin	NUI Galway, Ireland
Christopher Brewster	TNO, The Netherlands
Carlos Buil Aranda	Universidad Técnica Federico Santa María, Chile
Paul Buitelaar	Insight Centre for Data Analytics, National University of Ireland Galway, Ireland
Gregoire Burel	The Open University, UK
Elena Cabrio	Université Côte d'Azur, CNRS Inria I3S, France
Jean-Paul Calbimonte	University of Applied Sciences and Arts Western Switzerland HES-SO, Switzerland
Diego Calvanese	Free University of Bozen-Bolzano, Italy
Andrea Calì	University of London Birkbeck College, UK
Jose Camacho Collados	Sapienza University of Rome, Italy
Amparo Cano	Cube Global, UK
David Carral	TU Dresden, Germany
Rommel Novaes Carvalho	Universidade de Brasília, Brazil
Gerard Casamayor	University Pompeu Fabra, Spain
Nuria Casellas	Wolters Kluwer GPO, The Netherlands
Irene Celino	CEFRIEL, Italy
Davide Ceolin	VU University Amsterdam, The Netherlands
Ismail Ilkan Ceylan	TU Dresden, Germany
Pierre-Antoine Champin	LIRIS, Université Claude Bernard Lyon 1, France
Thierry Charnois	LIPN CNRS University of PARIS 13, France
Gong Cheng	Nanjing University, China

Christian Chiarcos	Universität Frankfurt am Main, Germany
Michael Cochez	Fraunhofer Institute for Applied Information Technology FIT, Germany
Pieter Colpaert	Ghent University, Belgium
Simona Colucci	Politecnico di Bari, Italy
Sam Coppens	Autodesk, USA
Olivier Corby	Inria, France
Paulo Costa	George Mason University, USA
Luca Costabello	Fujitsu Ireland, Ireland
Fabio Cozman	Universidade de Sao Paulo, Brazil
Isabel Cruz	University of Illinois at Chicago, USA
Philippe Cudré-Mauroux	University of Fribourg, Switzerland
Bernardo Cuenca-Grau	University of Oxford, UK
Edward Curry	Insight Centre for Data Analytics, NUI Galway, Ireland
Olivier Curé	Université Paris-Est LIGM, France
Aba-Sah Dadzie	KMi – The Open University, UK
Enrico Daga	The Open University, UK
Florian Daniel	Politecnico di Milano, Italy
Laura Daniele	TNO/Netherlands Organization for Applied Scientific Research, The Netherlands
Jérôme David	Inria Rhône-Alpes, France
Victor de Boer	VU University Amsterdam, The Netherlands
Gerard de Melo	Rutgers University, USA
Jeremy Debattista	ADAPT Centre, School of Computer Science and Statistics, Trinity College Dublin, Ireland
Thierry Declerck	DFKI GmbH, Germany
Jaime Delgado	Universitat Politecnica de Catalunya, Spain
Daniele Dell'Aglio	University of Zurich, Switzerland
Emanuele Della Valle	DEIB Politecnico di Milano, Italy
Gianluca Demartini	University of Queensland, Australia
Elena Demidova	L3S Research Center, Germany
Ronald Denaux	Expert System, Spain
Tommaso Di Noia	Politecnico di Bari, Italy
Ian Dickinson	Epimorphics Ltd., UK
Dennis Diefenbach	Jean Monnet University, France
Stefan Dietze	L3S Research Center, Germany
Ying Ding	Indiana University, USA
Leigh Dodds	Leigh Dodds, UK
John Domingue	KMi – The Open University, UK
Derek Doran	Wright State University, USA
Mauro Dragoni	Fondazione Bruno Kessler – FBK-IRST, Italy
Michel Dumontier	Maastricht University, The Netherlands
Maud Ehrmann	EPFL DHLAB, Switzerland
Thomas Eiter	Vienna University of Technology, Austria
Henrik Eriksson	Linköping University, Sweden
Vadim Ermolayev	Zaporizhzhya National University, Ukraine

Jérôme Euzenat	Inria and University of Grenoble Alpes, France
James Fan	HelloVera.ai, USA
Nicola Fanizzi	Università di Bari, Italy
Catherine Faron-Zucker	Université Nice Sophia Antipolis, France
Anna Fensel	Semantic Technology Institute (STI) – University of Innsbruck, Austria
Alberto Fernandez	University Rey Juan Carlos, Spain
Javier D. Fernández	Vienna University of Economics and Business WU Wien, Austria
Sebastien Ferre	University of Rennes 1, France
Besnik Fetahu	L3S Research Center, Germany
Tim Finin	University of Maryland Baltimore County, USA
Valeria Fionda	University of Calabria, Italy
Lorenz Fischer	Sentient Machines, UK
Fabian Flöck	GESIS Cologne, Germany
Antske Fokkens	VU University Amsterdam, The Netherlands
Muriel Foulonneau	Luxembourg Institute of Science and Technology, Luxembourg
Enrico Franconi	Free University of Bozen-Bolzano, Italy
Flavius Frasincar	Erasmus University Rotterdam, The Netherlands
Fred Freitas	Universidade Federal de Pernambuco (UFPE), Brazil
Adam Funk	University of Sheffield, UK
Aldo Gangemi	Université Paris 13 and CNR-ISTC, Italy
Shen Gao	University of Zurich, Switzerland
José Maria García	University of Seville, Spain
Raúl García Castro	Universidad Politécnica de Madrid, Spain
Andrés García-Silva	Expert System, Spain
Claire Gardent	CNRS/LORIA Nancy, France
Daniel Garijo	Information Sciences Institute, University of Southern California, USA
Anna Lisa Gentile	IBM Research Almaden, San Jose, CA, USA
Chiara Ghidini	FBK-irst, Italy
Alain Giboin	Inria Sophia Antipolis/Méditerranée, France
Rafael S. Gonçalves	Stanford University, USA
Gregory Grefenstette	Biggerpan, France
Ruediger Grimm	University of Koblenz Landau, Germany
Paul Groth	Elsevier Labs, The Netherlands
Tudor Groza	The Garvan Institute of Medical Research, Australia
Alessio Gugliotta	Innova, Italy
Cathal Gurrin	Dublin City University, Ireland
Christophe Guéret	Accenture, Ireland
Olaf Görlitz	Chefkoch GmbH, Germany
Peter Haase	metaphacts, Germany
Armin Haller	Australian National University, Australia
Harry Halpin	World Wide Web Consortium, UK
Karl Hammar	Jönköping University, Sweden

Siegfried Handschuh	University of Passau, Germany
Andreas Harth	AIFB, Karlsruhe Institute of Technology, Germany
Oktie Hassanzadeh	IBM Research, USA
Tom Heath	Open Data Institute, UK
Johannes Heinecke	Orange Labs, France
Andreas Herzig	IRIT-CNRS, France
Stijn Heymans	Amazon, USA
Aidan Hogan	DCC Universidad de Chile, Chile
Laura Hollink	Centrum Wiskunde & Informatica, The Netherlands
Matthew Horridge	Stanford University, USA
Katja Hose	Aalborg University, Denmark
Andreas Hotho	University of Würzburg, Germany
Geert-Jan Houben	TU Delft, The Netherlands
Wei Hu	Nanjing University, China
Yingjie Hu	University of Tennessee Knoxville, USA
Ioana Hulpus	University of Mannheim, Germany
Eero Hyvönen	University of Helsinki and Aalto University, Finland
Ignacio Iacobacci	Sapienza Università di Roma, Italy
Yazmin Angelica Ibanez-Garcia	Vienna University of Technology, Austria
Luis-Daniel Ibáñez	University of Southampton, UK
Oana Inel	VU University Amsterdam, The Netherlands
Valentina Ivanova	Linköping University, Sweden
Krzysztof Janowicz	University of California Santa Barbara, USA
Mustafa Jarrar	Birzeit University, Palestine
Ernesto Jimenez-Ruiz	University of Oslo, Norway
Clement Jonquet	University of Montpellier LIRMM, France
Martin Kaltenböck	Semantic Web Company, Austria
Mark Kaminski	University of Oxford, UK
Pavan Kapanipathi	IBM T.J. Watson Research Center, USA
Md. Rezaul Karim	Fraunhofer Institute for Applied Information Technology FIT, Germany
Marcel Karnstedt-Hulpus	Springer Nature
Tomi Kauppinen	Aalto University School of Science, Finland
Takahiro Kawamura	Japan Science and Technology Agency, Japan
Maria Keet	University of Cape Town, South Africa
Mayank Kejriwal	Information Sciences Institute, University of Southern California, USA
Kristian Kersting	TU Darmstadt, Germany
Carsten Keßler	Aalborg University, Denmark
Haklae Kim	Samsung, South Korea
Hong-Gee Kim	Seoul National University, South Korea
Sabrina Kirrane	Vienna University of Economics and Business WU Wien, Austria
Matthias Klusch	DFKI, Germany

Matthias Knorr	Universidade Nova de Lisboa, Portugal
Magnus Knuth	Hasso Plattner Institute, University of Potsdam, Germany
Boris Konev	University of Liverpool, UK
Stasinos Konstantopoulos	NCSR Demokritos, Greece
Roman Kontchakov	Birkbeck, University of London, UK
Jacek Kopecky	University of Portsmouth, UK
Manolis Koubarakis	National and Kapodistrian University of Athens, Greece
Adila Krisnadhi	Wright State University, USA and Universitas Indonesia, Indonesia
Udo Kruschwitz	University of Essex, UK
Tobias Kuhn	VU University Amsterdam, The Netherlands
Benedikt Kämpgen	Empolis Information Management GmbH, Germany
Patrick Lambrix	Linköping University, Sweden
Steffen Lamparter	Siemens AG Corporate Technology, Germany
Christoph Lange	University of Bonn and Fraunhofer IAIS, Germany
David Laniado	Eurecat - Technology Centre of Catalonia, Spain
Ken Laskey	The MITRE Corporation, USA
Agnieszka Lawrynowicz	Poznan University of Technology, Poland
Danh Le Phuoc	Technische Universität Berlin, Germany
Maxime Lefrançois	MINES Saint-Etienne, France
Maurizio Lenzerini	University of Rome La Sapienza, Italy
Chengkai Li	University of Texas at Arlington, USA
Juanzi Li	Tsinghua University, China
Wenwen Li	Arizona State University, USA
Giorgia Lodi	DigitPA, Italy
Nuno Lopes	TopQuadrant Inc., Ireland
Chun Lu	Université Paris-Sorbonne and Sépage, France
Markus Luczak-Roesch	Victoria University of Wellington, New Zealand
Carsten Lutz	Universität Bremen, Germany
Ioanna Lytra	Enterprise Information Systems, Institute of Applied Computer Science, University of Bonn and Fraunhofer IAIS, Germany
Alexander Löser	Beuth Hochschule für Technik Berlin, Germany
Frederick Maier	Institute for Artificial Intelligence, USA
Maria Maleshkova	AIFB, Karlsruhe Institute of Technology, Germany
Claudia Marinica	ETIS/ENSEA UCP CNRS, France
David Martin	Nuance Communications, USA
Trevor Martin	University of Bristol, UK
Mercedes Martinez-Gonzalez	University of Valladolid, Spain
Miguel Martinez-Prieto	University of Valladolid, Spain
Wolfgang May	Universität Göttingen Germany, Germany
Diana Maynard	University of Sheffield, UK
John McCrae	National University of Ireland Galway, Ireland
Fiona McNeill	Heriot Watt University, UK

Lionel Médini	LIRIS/University of Lyon, France
Eduardo Mena	University of Zaragoza, Spain
Robert Meusel	SAP SE, Germany
Franck Michel	Université Côte d'Azur, CNRS, I3S, France
Nandana Mihindukulasooriya	Universidad Politécnica de Madrid, Spain
Peter Mika	Schibsted, Norway
Alessandra Mileo	INSIGHT Centre for Data Analytics, Dublin City University, Ireland
Daniel Miranker	Institute for Cell and Molecular Biology, The University of Texas at Austin, USA
Riichiro Mizoguchi	Japan Advanced Institute of Science and Technology, Japan
Dunja Mladenic	Jozef Stefan Institute, Slovenia
Marie-Francine Moens	KU Leuven, Belgium
Pascal Molli	University of Nantes/LS2N, France
Gabriela Montoya	Aalborg University, Denmark
Federico Morando	Nexa Center for Internet and Society, Politecnico di Torino, Italy
Luc Moreau	King's College London, UK
Yassine Mrabet	National Library of Medicine, USA
Paul Mulholland	The Open University, UK
Raghava Mutharaju	GE Global Research, USA
Ralf Möller	University of Lübeck, Germany
Claudia Müller-Birn	Freie Universität Berlin, Germany
Hubert Naacke	UPMC, France
Amedeo Napoli	LORIA Nancy (CNRS - Inria - Université de Lorraine), France
Axel-Cyrille Ngonga-Ngomo	University of Paderborn, Germany
Matthias Nickles	Digital Enterprise Research Institute, National University of Ireland Galway, Ireland
Nadeschda Nikitina	Oxford University, UK
Andriy Nikolov	metaphacts GmbH, Germany
Malvina Nissim	University of Groningen, The Netherlands
Lyndon Nixon	MODUL Technology GmbH, Austria
Andrea Giovanni Nuzzolese	STLab ISTC-CNR, Italy
Leo Obrst	MITRE, USA
Francesco Osborne	KMi, The Open University, UK
Raul Palma	Poznan Supercomputing and Networking Center, Poland
Matteo Palmonari	University of Milano-Bicocca, Italy
Jeff Pan	University of Aberdeen, UK
Rahul Parundekar	Toyota Info-Technology Center, USA
Bibek Paudel	University of Zurich, Switzerland
Heiko Paulheim	University of Mannheim, Germany

Terry Payne	University of Liverpool, UK
Tassilo Pellegrini	University of Applied Sciences St. Pölten, Austria
Laura Perez-Beltrachini	University of Edinburgh, UK
Silvio Peroni	University of Bologna, Italy
Catia Pesquita	LaSIGE, Universidade de Lisboa, Portugal
Rafael Peñaloza	Free University of Bozen-Bolzano, Italy
Reinhard Pichler	Vienna University of Technology, Austria
Emmanuel Pietriga	Inria, France
Giuseppe Pirrò	Institute for High Performance Computing and Networking (ICAR-CNR), Italy
Vassilis Plachouras	Thomson Reuters, UK
Dimitris Plexousakis	Institute of Computer Science FORTH, University of Crete, Greece
Simone Paolo Ponzetto	University of Mannheim, Germany
Mike Pool	Goldman Sachs Group, USA
Livia Predoiu	University of Oxford, UK
Laurette Pretorius	University of South Africa, South Africa
Cédric Pruski	Luxembourg Institute of Science and Technology, Luxembourg
Guilin Qi	Southeast University, China
Yuzhong Qu	Nanjing University, China
Jorge-Arnulfo Quiané-Ruiz	QCRI, Qatar
Filip Radulovic	Sépage Paris, France
Dnyanesh Rajpathak	General Motors, Operations Research R&D, USA
Ganesh Ramakrishnan	IIT Bombay, India
Maya Ramanath	IIT Delhi, India
David Ratcliffe	CSIRO Data61 and Australian National University, Australia
Dietrich Rebholz-Schuhmann	Insight Centre for Data Analytics, National University of Ireland Galway, Ireland
José Luis Redondo-García	Amazon Research, UK
Georg Rehm	DFKI, Germany
Achim Rettinger	Karlsruhe Institute of Technology, Germany
Juan Reutter	Pontificia Universidad Catòlica, Chile
Martin Rezk	Rakuten Inc., Japan
German Rigau	IXA Group – UPV/EHU, Spain
Carlos Rivero	Rochester Institute of Technology, USA
Giuseppe Rizzo	ISMB, Italy
Mariano Rodríguez Muro	IBM Research, USA
Marco Rospocher	Fondazione Bruno Kessler, Italy
Camille Roth	CNRS, Germany
Marie-Christine Rousset	University of Grenoble Alpes, France
Ana Roxin	University of Burgundy UMR CNRS, France

Sebastian Rudolph	Technische Universität Dresden, Germany
Owen Sacco	Institute of Digital Games, University of Malta, Malta
Harald Sack	FIZ Karlsruhe Leibniz Institute for Information Infrastructure and KIT Karlsruhe, Germany
Hassan Saif	KMi, The Open University, UK
Angelo Antonio Salatino	KMi, The Open University, UK
Muhammad Saleem	AKSW, University of Leizpig, Germany
Cristina Sarasua	Institute for Web Science and Technologies (WeST), Universität Koblenz-Landau, Germany
Felix Sasaki	Lambdawerk, Germany
Bahar Sateli	Concordia University, Canada
Kai-Uwe Sattler	TU Ilmenau, Germany
Vadim Savenkov	Vienna University of Economics and Business (WU), Austria
Marco Luca Sbodio	IBM Research, Ireland
Johann Schaible	GESIS, Leibniz Institute for the Social Sciences, Germany
Bernhard Schandl	mySugr GmbH, Austria
Ansgar Scherp	Kiel University and ZBW, Leibniz Information Center for Economics Kiel, Germany
Marvin Schiller	University of Ulm, Germany
Claudia Schon	Universität Koblenz-Landau, Germany
Marco Schorlemmer	Artificial Intelligence Research Institute IIIA-CSIC, Spain
Lutz Schröder	Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany
Daniel Schwabe	PUC-Rio, Brazil
Erich Schweighofer	University of Vienna, Austria
Frederique Segond	Viseo Innovation, France
Giovanni Semeraro	University of Bari, Italy
Juan Sequeda	Capsenta, USA
Luciano Serafini	Fondazione Bruno Kessler, Italy
Estefania Serral	KU Leuven, Belgium
Saeedeh Shekarpour	Kno.e.sis Center, USA
Sakr Sherif	The University of New South Wales, Australia
Gerardo Simari	Universidad Nacional del Sur and CONICET, Argentina
Kiril Simov	Linguistic Modelling Department, IICT-BAS, Bulgaria
Elena Simperl	University of Southampton, UK
Hala Skaf-Molli	Nantes University, France
Sebastian Skritek	TU Wien, Austria
Monika Solanki	University of Oxford, UK
Dezhao Song	Thomson Reuters, USA
Biplav Srivastava	IBM Research, USA
Yannis Stavrakas	Institute for the Management of Information Systems, Research and Innovation Center Athena, Greece
Sławek Staworko	University of Lille 3, France
Armando Stellato	University of Rome Tor Vergata, Italy

Audun Stolpe	Norwegian Defence Research Establishment (FFI), Norway
Umberto Straccia	ISTI-CNR, Italy
Markus Strohmaier	RWTH Aachen and GESIS, Germany
Heiner Stuckenschmidt	University of Mannheim, Germany
Gerd Stumme	University of Kassel, Germany
Fabian Suchanek	Télécom ParisTech University, France
Jing Sun	The University of Auckland, New Zealand
York Sure-Vetter	Karlsruhe Institute of Technology (KIT), Germany
Marcin Sydow	PJIIT and ICS PAS Warsaw, Poland
Pedro Szekely	USC/Information Sciences Institute, USA
Mohsen Taheriyan	Google, USA
Hideaki Takeda	National Institute of Informatics, Japan
Kerry Taylor	Australian National University, Australia
Annette Ten Teije	VU University Amsterdam, The Netherlands
Andrea Tettamanzi	University of Nice Sophia Antipolis, France
Kia Teymourian	Rice University, USA
Dhavalkumar Thakker	University of Bradford, UK
Matthias Thimm	Universität Koblenz-Landau, Germany
Allan Third	The Open University, UK
Krishnaprasad Thirunarayan	Wright State University, USA
Ilaria Tiddi	KMi, The Open University, UK
Ramine Tinati	University of Southampton, UK
Thanassis Tiropanis	University of Southampton, UK
Konstantin Todorov	LIRMM/University of Montpellier, France
David Toman	University of Waterloo, Canada
Nicolas Torzec	Yahoo, USA
Farouk Toumani	Limos Blaise Pascal University Clermont-Ferrand, France
Yannick Toussaint	LORIA, France
Sebastian Tramp	eccenca GmbH, Germany
Cassia Trojahn	UT2J and IRIT, France
Raphaël Troncy	EURECOM, France
Dmitry Tsarkov	Google, Switzerland
Anni-Yasmin Turhan	Technische Universität Dresden, Germany
Jürgen Umbrich	Vienna University of Economy and Business (WU), Austria
Jörg Unbehauen	University of Leipzig, Germany
Jacopo Urbani	Vrije Universiteit Amsterdam, The Netherlands
Alejandro Vaisman	Instituto Tecnològico de Buenos Aires, Argentina
Herbert Van De Sompel	Los Alamos National Laboratory Research Library, USA
Marieke van Erp	KNAW Humanities Cluster, The Netherlands
Willem Robert van Hage	Netherlands eScience Center, The Netherlands
Jacco van Ossenbruggen	CWI and VU University Amsterdam, The Netherlands

Ruben Verborgh	Ghent University – imec, Belgium
Daniel Vila-Suero	Ontology Engineering Group UPM, Spain
Serena Villata	CNRS, Laboratoire d'Informatique Signaux et Systèmes de Sophia Antipolis, France
Marta Villegas	Barcelona Supercomputing Center, Spain
Piek Vossen	VU University Amsterdam, The Netherlands
Domagoj Vrgoc	Pontificia Universidad Catòlica de Chile, Chile
Holger Wache	University of Applied Science and Arts Northwestern Switzerland, Switzerland
Claudia Wagner	GESIS-Leibniz Institute for the Social Sciences, Germany
Simon Walk	Graz University of Technology, Austria
Haofen Wang	Shenzhen Gowild Robotics Co. Ltd., China
Kewen Wang	Griffith University, Australia
Shenghui Wang	OCLC Research, The Netherlands
Zhichun Wang	Beijing Normal University, China
Paul Warren	KMi, The Open University, UK
Grant Weddell	University of Waterloo, Canada
Rigo Wenning	W3C, France
Erik Wilde	CA Technologies, Switzerland
Cord Wiljes	CITEC, Bielefeld University, Germany
Gregory Todd Williams	Rensselaer Polytechnic Institute, USA
Jiewen Wu	Accenture Tech Labs, Ireland
Marcin Wylot	TU Berlin, Germany
Josiane Xavier Parreira	Siemens AG Österreich, Austria
Yong Yu	Shanghai Jiao Tong University, China
Fouad Zablith	American University of Beirut, Lebanon
Ondřej Zamazal	University of Economics Prague, Czech Republic
Benjamin Zapilko	GESIS, Leibniz Institute for the Social Sciences, Germany
Amrapali Zaveri	Maastricht University, The Netherlands
Sergej Zerr	L3S Research Center, Germany
Qingpeng Zhang	City University of Hong Kong, China
Ziqi Zhang	Nottingham Trent University, UK
Jun Zhao	University of Oxford, UK
Antoine Zimmermann	École des Mines de Saint-Étienne, France

Additional Reviewers – Research Track

Ahn, Jinhyun	Binns, Reuben
Anelli, Vito Walter	Blume, Till
Ara, Safina Showkat	Bosque-Gil, Julia
Atencia, Manuel	Bourgaux, Camille
Bader, Sebastian	Brank, Janez
Bakhshandegan Moghaddam, Farshad	Calleja, Pablo
Basile, Valerio	Čerāns, Kārlis
Batsakis, Sotiris	Charalambidis, Angelos

Charron, Bruno
Chen, Jiaoyan
Chernushenko, Iurii
Ciortea, Andrei
Collarana, Diego
Comerio, Marco
Dehghanzadeh, Soheila
Di Francescomarino, Chiara
Dimitrov, Dimitar
Donadello, Ivan
Feier, Cristina
Frank, Matthias
Freitas, Andre
Galkin, Mikhail
Gao, Shen
Gao, Yimei
Giboin, Alain
Giménez-García, José M.
Gottschalk, Simon
Hanika, Tom
Hildebrandt, Marcel
Janke, Daniel
Jiaoyan, Chen
Kaefer, Tobias
Kamdar, Maulik R.
Kasper, Patrick
Keppmann, Felix Leif
Keskisärkkä, Robin
Kilias, Torsten
Kling, Christoph
Kondylakis, Haridimos
Koopmann, Patrick
Laforest, Frederique
Lee Sungin
Lima, Rinaldo
Liu, Qian
Mehdi, Gulnar
Mihindukulasooriya, Nandana
Mireles, Victor
Molinari, Andrea
Moodley, Kody
Mossakowski, Till
Musto, Cataldo
Nanni, Federico
Narducci, Fedelucio
Niebler, Thomas
Nishioka, Chifumi
Novalija, Inna
Osmani, Aomar
Padia, Ankur
Patkos, Theodore
Pham, Le Thi Anh Thu
Piao, Guangyuan
Plu, Julien
Qiu, Lin
Rettig, Laura
Revenko, Artem
Ringsquandl, Martin
Rokicki, Markus
Saeef, Mohammed Samiul
Sarker, Md Kamruzzaman
Schneider, Patrik
Setty, Vinay
Shivaprabhu, Vivek
Simkus, Mantas
Smirnova, Alisa
Soru, Tommaso
Steinmetz, Nadine
Suchanek, Fabian M.
Tachmazidis, Ilias
Thoma, Steffen
Thost, Veronika
Tommasini, Riccardo
Usbeck, Ricardo
Van Harmelen, Frank
Wang, Xin
Wang, Zhe
Xiao, Guohui
Xu, Kang
Yimei, Gao
Zaraket, Fadi
Zhang, Gensheng

Senior Program Committee – Resources Track

Mauro Dragoni	Fondazione Bruno Kessler – FBK-IRST, Italy
Daniel Garijo	Information Sciences Institute, University of Southern California, USA
Alasdair Gray	Heriot-Watt University, UK
Matthew Horridge	Stanford University, USA
Ernesto Jimenez-Ruiz	University of Oslo, Norway
Bijan Parsia	University of Manchester, UK
Stefan Schulte	Vienna University of Technology, Austria

Program Committee – Resources Track

Muhammad Intizar Ali	Insight Centre for Data Analytics, National University of Ireland, Galway, Ireland
Elena Cabrio	Université Côte d'Azur, CNRS Inria I3S, France, France
Mari Carmen Suárez-Figueroa	Universidad Politécnica de Madrid, Spain
David Carral	TU Dresden, Germany
Tim Clark	Massachusetts General Hospital/Harvard Medical School, USA
Francesco Corcoglioniti	Fondazione Bruno Kessler, Italy
Daniele Dell'Aglio	University of Zurich, Switzerland
Ying Ding	Indiana University, USA
Mohnish Dubey	Computer Science Institute, University of Bonn, Germany
Fajar J. Ekaputra	Vienna University of Technology, Austria
Diego Esteves	University of Bonn, Germany
Stefano Faralli	University of Mannheim, Germany
Mariano Fernández López	Universidad San Pablo CEU, Spain
Aldo Gangemi	Université Paris 13 and CNR-ISTC, Italy
Alejandra Gonzalez-Beltran	University of Oxford, UK
Rafael S. Gonçalves	Stanford University, USA
Christophe Guéret	Accenture, Ireland
Amelie Gyrard	Ecole des Mines de Saint Etienne, France
Pascal Hitzler	Wright State University, USA
Robert Hoehndorf	King Abdullah University of Science and Technology, Saudi Arabia
Aidan Hogan	DCC, Universidad de Chile, Chile
Antoine Isaac	Europeana and VU University Amsterdam, The Netherlands
Chen Jiaoyan	GIScience, Heidelberg University, Germany
Simon Jupp	European Bioinformatics Institute, UK
Maria Keet	University of Cape Town, South Africa, South Africa
Elmar Kiesling	Vienna University of Technology, Austria

Christoph Lange	University of Bonn and Fraunhofer IAIS, Germany, Germany
Steffen Lohmann	Fraunhofer IAIS, Germany
Phillip Lord	Newcastle University, UK
Maria Maleshkova	AIFB, Karlsruhe Institute of Technology, Germany
Nicolas Matentzoglu	University of Manchester, UK
Fiona McNeill	Heriot Watt University, UK
Nandana Mihindukulasooriya	Universidad Politécnica de Madrid, Spain
Raghava Mutharaju	GE Global Research, USA
Giulio Napolitano	Fraunhofer IAIS and University of Bonn, Germany
Vinh Nguyen	Kno.e.sis Center, Wright State University, USA
Alessandro Oltramari	Bosch Research and Technology Center, USA
Tommaso Pasini	Sapienza University of Rome, Italy
Heiko Paulheim	University of Mannheim, Germany
Silvio Peroni	University of Bologna, Italy
María Poveda-Villalón	Universidad Politécnica de Madrid, Spain
Mariano Rico	Universidad Politécnica de Madrid (UPM), Spain
German Rigau	IXA Group, UPV/EHU, Spain
Giuseppe Rizzo	ISMB, Italy
Mariano Rodríguez Muro	IBM Research, USA
Marco Rospocher	Fondazione Bruno Kessler, Italy
Edna Ruckhaus	Universidad Politécnica de Madrid
Anisa Rula	University of Milano-Bicocca, Italy
Michele Ruta	Politecnico di Bari, Italy
Satya Sahoo	Case Western Reserve University, USA
Cristina Sarasua	Institute for Web Science and Technologies (WeST), Universität Koblenz-Landau, Germany
Marco Luca Sbodio	IBM Research, Ireland
Jodi Schneider	University of Illinois Urbana Champaign, USA
Hamed Shariat Yazdi	University of Siegen, Germany
Stian Soiland-Reyes	The University of Manchester, UK
Krishnaprasad Thirunarayan	Wright State University, USA
Cassia Trojahn	UT2J and IRIT, France
Raphaël Troncy	EURECOM, France
Federico Ulliana	University of Montpellier II, France
Natalia Villanueva-Rosales	University of Texas at El Paso, USA
Serena Villata	CNRS, Laboratoire d'Informatique, Signaux et Systèmes de Sophia Antipolis, France
Simon Walk	Graz University of Technology, Austria
Peter Wetz	TIPCO, Austria
Amrapali Zaveri	Maastricht University, The Netherlands
Jun Zhao	University of Oxford, UK

Additional Reviewers – Resources Track

Amini, Reihaneh
Atemezing, Ghislain Auguste
Bianchi, Federico
Bosque-Gil, Julia
Byamugisha, Joan
Chakraborty, Nilesh
Daquino, Marilena
Francis, Jonathan
Gracia, Jorge
Halilaj, Lavdim
Hu, Wei
Kastler, Leon
Lehrig, Sebastian
Mader, Christian
Mulligan, Natasha
Navas-Loro, María
Nayyeri, Mojtaba
Poggi, Francesco
Priyatna, Freddy
Radulovic, Filip
Sarker, Md Kamruzzaman
Sarntivijai, Sirarat
Sazonau, Viachaslau
Shimizu, Cogan
Spahiu, Blerina
Tommasi, Pierpaolo
Wadkar, Sudarshan
Warrender, Jennifer
Weller, Tobias
Wiens, Vitalis
Zhou, Lu

Program Committee – In-Use Track

Jean-Paul Calbimonte	University of Applied Sciences and Arts Western Switzerland HES-SO, Switzerland
Christophe Guéret	Accenture, Ireland
Mauro Dragoni	Fondazione Bruno Kessler, FBK-IRST, Italy
Oshani Seneviratne	Massachusetts Institute of Technology, USA
Tudor Groza	The Garvan Institute of Medical Research, Australia
Stefan Dietze	L3S Research Center, Germany
Héctor Pérez-Urbina	Google, USA
Tim Clark	Massachusetts General Hospital/Harvard Medical School, USA
Anna Lisa Gentile	IBM Research Almaden, USA
Dezhao Song	Thomson Reuters, USA
Prateek Jain	BlackRock, USA
Brian Davis	Insight Centre for Data Analytics, Galway, Ireland
Andriy Nikolov	metaphacts GmbH, Germany
Raphaël Troncy	EURECOM, France
Pedro Szekely	USC/Information Sciences Institute, USA
Harald Sack	FIZ Karlsruhe, Leibniz Institute for Information Infrastructure and KIT Karlsruhe, Germany
Daniel Garijo	Information Sciences Institute, University of Southern California, USA
Achille Fokoue	IBM Research, USA
Matthew Horridge	Stanford University, USA
Irene Celino	CEFRIEL, Italy
Jérôme Euzenat	Inria and University of Grenoble Alpes, France
Boris Motik	University of Oxford, UK

Maria Sokhn	University of Applied Sciences of Western Switzerland, Switzerland
Raghava Mutharaju	GE Global Research, USA
Peter Mika	Schibsted, Norway
Ruslan Mavlyutov	University of Fribourg, Switzerland
Varish Mulwad	GE Global Research, USA
Jose Manuel Gomez-Perez	Expert System, Spain
Jerven Bolleman	Swiss Institute of Bioinformatics, Switzerland
Giuseppe Rizzo	ISMB, Italy
Thomas Steiner	Google, Germany
Paul Groth	Elsevier Labs, The Netherlands
Vanessa Lopez	IBM Research, Ireland
Craig Knoblock	University of Southern California, USA
Oscar Corcho	Universidad Politécnica de Madrid, Spain
Peter Haase	metaphacts GmbH, Germany
Steffen Lamparter	Siemens AG, Corporate Technology, Germany

Additional Reviewers – In-Use Track

Alrifai, Ahmad
Biswas, Russa
Garijo, Daniel
Gentile, Anna Lisa
Palumbo, Enrico
Tudorache, Tania
Türker, Rima

Sponsors

Platinum Sponsors



http://www.ibm.com/



http://www.elsevier.com/

Gold Sponsors



https://www.semantic-web.at/



http://www.metaphacts.com/



https://www.big-data-europe.eu/



http://www.oracle.com/



http://siemens.at/



https://data.world/



http://www.thomsonreuters.com/



http://www.ontoforce.com/



http://ontotext.com/



http://www.videolectures.net/

Bronze Sponsors



https://www.inria.fr/centre/sophia/



http://www.google.com/

Student Travel Award Sponsors



https://www.nsf.gov/



http://swsa.semanticweb.org/

WiFi Sponsor



https://www.kapsch.net/

Supporters

Supported by



http://swsa.semanticweb.org/



https://viennabusinessagency.at/



https://www.w3.org/



https://www.eurai.org/



http://www.iospress.nl/



http://www.springer.com/

Organizers



https://www.wu.ac.at/en/



https://www.tuwien.ac.at/en/



https://www.sba-research.org/

Abstracts of Invited Talks

From Relational to Semantic Data Mining

Nada Lavrač[1,2,3]

[1] Jožef Stefan Institute, Ljubljana, Slovenia
nada.lavrac@ijs.si
[2] Jožef Stefan International Postgraduate School, Ljubljana, Slovenia
[3] University of Nova Gorica, Nova Gorica, Slovenia

Abstract. Relational Data Mining (RDM) addresses the task of inducing models or patterns from multi-relational data. One of the established approaches to RDM is propositionalization, characterized by transforming a relational database into a single-table representation. The talk provides an overview of propositionalization algorithms, and a particular approach named wordification, all of which have been made publicly available through the web-based ClowdFlows data mining platform. The focus of this talk is on recent advances in Semantic Data Mining (SDM), characterized by exploiting relational background knowledge in the form of domain ontologies in the process of model and pattern construction. The open source SDM approaches, available through the ClowdFlows platform, enable software reuse and experiment replication. The talk concludes by presenting the recent developments, which allow to speed up SDM by data mining and network analysis approaches.

Ontologies for the Modern Age

Deborah L. McGuinness

Rensselaer Institute for Data Exploration and Applications, USA
dlm@cs.rpi.edu

Abstract. Ontologies are seeing a resurgence of interest and usage as big data proliferates, machine learning advances, and integration of data becomes more paramount. The previous models of sometimes labor-intensive, centralized ontology construction and maintenance do not mesh well in today's interdisciplinary world that is in the midst of a big data, information extraction, and machine learning explosion. In this talk, we will provide some historical perspective on ontologies and their usage, and discuss a model of building and maintaining large collaborative, interdisciplinary ontologies along with the data repositories and data services that they empower. We will give a few examples of heterogeneous semantic data resources made more interconnected and more powerful by ontology-supported infrastructures, discuss a vision for ontology-enabled future research and provide some examples in a large health empowerment joint effort between RPI and IBM Watson Health.

Applied Semantics: Beyond the Catalog

Jamie Taylor

Google, USA
jamietaylor@google.com

Abstract. A decade ago a number of semantic catalogs started appearing. These catalogs gave identifiers to things, assigned them categories and asserted facts about them. Dubbed knowledge graphs, the intent is to describe the world in a machine readable way.

These catalogs have proved incredibly useful, allowing publishers to organize their content management systems, powering machines that can win game shows and allowing search engines to guide users by interpreting their queries as being about "things not strings."

While useful, these catalogs are semantically limited. The connections entities participate in are sparse, requiring human understanding when decoding relationships and categorical membership. Entities are frequently identified by lucky linguistic matches rather than constraints against semantic intent.

If machines are to understand our world and react intelligently to requests about it, knowledge graphs need to grow beyond catalogs, encoding things which stretch the notion of "fact" and act as semantic APIs for the real world.

Contents – Part II

Resource Track

Diefficiency Metrics: Measuring the Continuous Efficiency of Query Processing Approaches 3
Maribel Acosta, Maria-Esther Vidal, and York Sure-Vetter

CodeOntology: RDF-ization of Source Code 20
Mattia Atzeni and Maurizio Atzori

Linked Data Publication of Live Music Archives and Analyses. 29
Sean Bechhofer, Kevin Page, David M. Weigl, György Fazekas, and Thomas Wilmering

The MedRed Ontology for Representing Clinical Data Acquisition Metadata. 38
Jean-Paul Calbimonte, Fabien Dubosson, Roger Hilfiker, Alexandre Cotting, and Michael Schumacher

IGUANA: A Generic Framework for Benchmarking the Read-Write Performance of Triple Stores 48
Felix Conrads, Jens Lehmann, Muhammad Saleem, Mohamed Morsey, and Axel-Cyrille Ngonga Ngomo

Ireland's Authoritative Geospatial Linked Data 66
Christophe Debruyne, Alan Meehan, Éamonn Clinton, Lorraine McNerney, Atul Nautiyal, Peter Lavin, and Declan O'Sullivan

LOD-a-lot: A Queryable Dump of the LOD Cloud 75
Javier D. Fernández, Wouter Beek, Miguel A. Martínez-Prieto, and Mario Arias

IMGpedia: A Linked Dataset with Content-Based Analysis of Wikimedia Images. 84
Sebastián Ferrada, Benjamin Bustos, and Aidan Hogan

WIDOCO: A Wizard for Documenting Ontologies 94
Daniel Garijo

The CEDAR Workbench: An Ontology-Assisted Environment for Authoring Metadata that Describe Scientific Experiments 103
Rafael S. Gonçalves, Martin J. O'Connor, Marcos Martínez-Romero, Attila L. Egyedi, Debra Willrett, John Graybeal, and Mark A. Musen

WebIsALOD: Providing Hypernymy Relations Extracted from the Web as Linked Open Data 111
Sven Hertling and Heiko Paulheim

Ontology-Based Data Access to Slegge 120
Dag Hovland, Roman Kontchakov, Martin G. Skjæveland, Arild Waaler, and M. Zakharyaschev

BiOnIC: A Catalog of User Interactions with Biomedical Ontologies. 130
Maulik R. Kamdar, Simon Walk, Tania Tudorache, and Mark A. Musen

Neural Embeddings for Populated Geonames Locations 139
Mayank Kejriwal and Pedro Szekely

Distributed Semantic Analytics Using the SANSA Stack 147
Jens Lehmann, Gezim Sejdiu, Lorenz Bühmann, Patrick Westphal, Claus Stadler, Ivan Ermilov, Simon Bin, Nilesh Chakraborty, Muhammad Saleem, Axel-Cyrille Ngonga Ngomo, and Hajira Jabeen

The MIDI Linked Data Cloud 156
Albert Meroño-Peñuela, Rinke Hoekstra, Aldo Gangemi, Peter Bloem, Reinier de Valk, Bas Stringer, Berit Janssen, Victor de Boer, Alo Allik, Stefan Schlobach, and Kevin Page

SocialLink: Linking DBpedia Entities to Corresponding Twitter Accounts . . . 165
Yaroslav Nechaev, Francesco Corcoglioniti, and Claudio Giuliano

UNDO: The United Nations System Document Ontology. 175
Silvio Peroni, Monica Palmirani, and Fabio Vitali

One Year of the OpenCitations Corpus: Releasing RDF-Based Scholarly Citation Data into the Public Domain 184
Silvio Peroni, David Shotton, and Fabio Vitali

An Entity Relatedness Test Dataset 193
José Eduardo Talavera Herrera, Marco Antonio Casanova, Bernardo Pereira Nunes, Luiz André P. Paes Leme, and Giseli Rabello Lopes

RSPLab: RDF Stream Processing Benchmarking Made Easy 202
Riccardo Tommasini, Emanuele Della Valle, Andrea Mauri, and Marco Brambilla

LC-QuAD: A Corpus for Complex Question Answering over Knowledge Graphs. 210
Priyansh Trivedi, Gaurav Maheshwari, Mohnish Dubey, and Jens Lehmann

PDD Graph: Bridging Electronic Medical Records and Biomedical Knowledge Graphs via Entity Linking 219
Meng Wang, Jiaheng Zhang, Jun Liu, Wei Hu, Sen Wang, Xue Li, and Wenqiang Liu

In-Use Track

A Controlled Crowdsourcing Approach for Practical Ontology Extensions and Metadata Annotations 231
Yolanda Gil, Daniel Garijo, Varun Ratnakar, Deborah Khider, Julien Emile-Geay, and Nicholas McKay

An Investigative Search Engine for the Human Trafficking Domain 247
Mayank Kejriwal and Pedro Szekely

Lessons Learned in Building Linked Data for the American Art Collaborative 263
Craig A. Knoblock, Pedro Szekely, Eleanor Fink, Duane Degler, David Newbury, Robert Sanderson, Kate Blanch, Sara Snyder, Nilay Chheda, Nimesh Jain, Ravi Raju Krishna, Nikhila Begur Sreekanth, and Yixiang Yao

Modeling and Using an Actor Ontology of Second World War Military Units and Personnel. 280
Petri Leskinen, Mikko Koho, Erkki Heino, Minna Tamper, Esko Ikkala, Jouni Tuominen, Eetu Mäkelä, and Eero Hyvönen

Sustainable Linked Data Generation: The Case of DBpedia 297
Wouter Maroy, Anastasia Dimou, Dimitris Kontokostas, Ben De Meester, Ruben Verborgh, Jens Lehmann, Erik Mannens, and Sebastian Hellmann

Semantic Rule-Based Equipment Diagnostics 314
Gulnar Mehdi, E. Kharlamov, Ognjen Savković, G. Xiao, E. Güzel Kalaycı, S. Brandt, I. Horrocks, Mikhail Roshchin, and Thomas Runkler

Automatic Query-Centric API for Routine Access to Linked Data. 334
Albert Meroño-Peñuela and Rinke Hoekstra

Realizing an RDF-Based Information Model for a Manufacturing Company – A Case Study 350
Niklas Petersen, Lavdim Halilaj, Irlán Grangel-González, Steffen Lohmann, Christoph Lange, and Sören Auer

Personalizing Actions in Context for Risk Management Using Semantic Web Technologies 367
Jiewen Wu, Freddy Lécué, Christophe Gueret, Jer Hayes, Sara van de Moosdijk, Gemma Gallagher, Peter McCanney, and Eugene Eichelberger

Author Index 385

Contents – Part I

Research Track

Multi-label Based Learning for Better Multi-criteria Ranking of Ontology Reasoners. 3
Nourhène Alaya, Myriam Lamolle, and Sadok Ben Yahia

The Efficacy of OWL and DL on User Understanding of Axioms and Their Entailments 20
Eisa Alharbi, John Howse, Gem Stapleton, Ali Hamie, and Anestis Touloumis

A Decidable Very Expressive Description Logic for Databases 37
Alessandro Artale, Enrico Franconi, Rafael Peñaloza, and Francesco Sportelli

Improving Visual Relationship Detection Using Semantic Modeling of Scene Descriptions 53
Stephan Baier, Yunpu Ma, and Volker Tresp

An Empirical Study on How the Distribution of Ontologies Affects Reasoning on the Web 69
Hamid R. Bazoobandi, Jacopo Urbani, Frank van Harmelen, and Henri Bal

Expressive Stream Reasoning with Laser 87
Hamid R. Bazoobandi, Harald Beck, and Jacopo Urbani

Semantics and Validation of Shapes Schemas for RDF 104
Iovka Boneva, Jose E. Labra Gayo, and Eric G. Prud'hommeaux

Temporal Query Answering in DL-Lite over Inconsistent Data 121
Camille Bourgaux and Anni-Yasmin Turhan

Semantic Wide and Deep Learning for Detecting Crisis-Information Categories on Social Media 138
Grégoire Burel, Hassan Saif, and Harith Alani

Tractable Query Answering for Expressive Ontologies and Existential Rules 156
David Carral, Irina Dragoste, and Markus Krötzsch

Zooming in on Ontologies: Minimal Modules and Best Excerpts 173
Jieying Chen, Michel Ludwig, Yue Ma, and Dirk Walther

Global RDF Vector Space Embeddings 190
Michael Cochez, Petar Ristoski, Simone Paolo Ponzetto, and Heiko Paulheim

LDScript: A Linked Data Script Language 208
Olivier Corby, Catherine Faron-Zucker, and Fabien Gandon

Practical Update Management in Ontology-Based Data Access 225
Giuseppe De Giacomo, Domenico Lembo, Xavier Oriol, Domenico Fabio Savo, and Ernest Teniente

Computing Authoring Tests from Competency Questions: Experimental Validation 243
Matt Dennis, Kees van Deemter, Daniele Dell'Aglio, and Jeff Z. Pan

Matching Web Tables with Knowledge Base Entities: From Entity Lookups to Entity Embeddings 260
Vasilis Efthymiou, Oktie Hassanzadeh, Mariano Rodriguez-Muro, and Vassilis Christophides

Learning Commonalities in SPARQL 278
Sara El Hassad, François Goasdoué, and Hélène Jaudoin

Meta Structures in Knowledge Graphs 296
Valeria Fionda and Giuseppe Pirrò

Challenges of Source Selection in the WoD 313
Tobias Grubenmann, Abraham Bernstein, Dmitry Moor, and Sven Seuken

AMUSE: Multilingual Semantic Parsing for Question Answering over Linked Data 329
Sherzod Hakimov, Soufian Jebbara, and Philipp Cimiano

Computing FO-Rewritings in $\mathcal{EL}$ in Practice: From Atomic to Conjunctive Queries 347
Peter Hansen and Carsten Lutz

A Formal Framework for Comparing Linked Data Fragments 364
Olaf Hartig, Ian Letter, and Jorge Pérez

Language-Agnostic Relation Extraction from Wikipedia Abstracts 383
Nicolas Heist and Heiko Paulheim

Alignment Cubes: Towards Interactive Visual Exploration and Evaluation of Multiple Ontology Alignments 400
Valentina Ivanova, Benjamin Bach, Emmanuel Pietriga, and Patrick Lambrix

Attributed Description Logics: Ontologies for Knowledge Graphs 418
Markus Krötzsch, Maximilian Marx, Ana Ozaki, and Veronika Thost

Reliable Granular References to Changing Linked Data 436
Tobias Kuhn, Egon Willighagen, Chris Evelo, Núria Queralt-Rosinach, Emilio Centeno, and Laura I. Furlong

Cost-Driven Ontology-Based Data Access 452
Davide Lanti, Guohui Xiao, and Diego Calvanese

The *Odyssey* Approach for Optimizing Federated SPARQL Queries 471
Gabriela Montoya, Hala Skaf-Molli, and Katja Hose

Automated Fine-Grained Trust Assessment in Federated Knowledge Bases. . . . 490
Andreas Nolle, Melisachew Wudage Chekol, Christian Meilicke, German Nemirovski, and Heiner Stuckenschmidt

Completeness-Aware Rule Learning from Knowledge Graphs. 507
Thomas Pellissier Tanon, Daria Stepanova, Simon Razniewski, Paramita Mirza, and Gerhard Weikum

Entity Comparison in RDF Graphs 526
Alina Petrova, Evgeny Sherkhonov, Bernardo Cuenca Grau, and Ian Horrocks

Provenance Information in a Collaborative Knowledge Graph: An Evaluation of Wikidata External References 542
Alessandro Piscopo, Lucie-Aimée Kaffee, Chris Phethean, and Elena Simperl

Strider: A Hybrid Adaptive Distributed RDF Stream Processing Engine. 559
Xiangnan Ren and Olivier Curé

Mining Hypotheses from Data in OWL: Advanced Evaluation and Complete Construction 577
Viachaslau Sazonau and Uli Sattler

Semantic Faceted Search with Aggregation and Recursion 594
Evgeny Sherkhonov, Bernardo Cuenca Grau, Evgeny Kharlamov, and Egor V. Kostylev

Investigating Learnability, User Performance, and Preferences of the Path Query Language SemwidgQL Compared to SPARQL 611
Timo Stegemann and Jürgen Ziegler

Cross-Lingual Entity Alignment via Joint Attribute-Preserving Embedding . . . 628
Zequn Sun, Wei Hu, and Chengkai Li

Blockchain Enabled Privacy Audit Logs 645
Andrew Sutton and Reza Samavi

VICKEY: Mining Conditional Keys on Knowledge Bases 661
Danai Symeonidou, Luis Galárraga, Nathalie Pernelle, Fatiha Saïs, and Fabian Suchanek

Ontolex JeuxDeMots and Its Alignment to the Linguistic Linked Open Data Cloud 678
Andon Tchechmedjiev, Théophile Mandon, Mathieu Lafourcade, Anne Laurent, and Konstantin Todorov

Towards Holistic Concept Representations: Embedding Relational Knowledge, Visual Attributes, and Distributional Word Semantics 694
Steffen Thoma, Achim Rettinger, and Fabian Both

An Extension of SPARQL for Expressing Qualitative Preferences 711
Antonis Troumpoukis, Stasinos Konstantopoulos, and Angelos Charalambidis

Encoding Category Correlations into Bilingual Topic Modeling for Cross-Lingual Taxonomy Alignment 728
Tianxing Wu, Lei Zhang, Guilin Qi, Xuan Cui, and Kang Xu

Cross-Lingual Infobox Alignment in Wikipedia Using Entity-Attribute Factor Graph 745
Yan Zhang, Thomas Paradis, Lei Hou, Juanzi Li, Jing Zhang, and Haitao Zheng

Author Index 761