

Communications in Computer and Information Science

769

Commenced Publication in 2007

Founding and Former Series Editors:

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*

Phoebe Chen

La Trobe University, Melbourne, Australia

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

Nanyang Technological University, Singapore, Singapore

Lizhu Zhou

Tsinghua University, Beijing, China

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

Mauro Dragoni · Monika Solanki
Eva Blomqvist (Eds.)

Semantic Web Challenges

4th SemWebEval Challenge at ESWC 2017
Portoroz, Slovenia, May 28 – June 1, 2017
Revised Selected Papers

Editors

Mauro Dragoni
Fondazione Bruno Kessler
Povo, Trento
Italy

Eva Blomqvist
Linköping University
Linköping
Sweden

Monika Solanki
University of Oxford
Oxford
UK

ISSN 1865-0929 ISSN 1865-0937 (electronic)
Communications in Computer and Information Science
ISBN 978-3-319-69145-9 ISBN 978-3-319-69146-6 (eBook)
<https://doi.org/10.1007/978-3-319-69146-6>

Library of Congress Control Number: 2017956784

© 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

Common benchmarks, established evaluation procedures, comparable tasks, and public datasets are vital to ensure reproducible, evaluable, and comparable scientific results. To assess the current state of the art and foster the systematic comparison of contributions to the Semantic Web community, open challenges are now a key scientific element of the Semantic Web conferences. Following the success of the previous years, reflected by the high number of high-quality submissions, we organized the fourth edition of the “Semantic Web Challenges” as an official track of the ESWC 2017 conference (held in Portoroz, Slovenia, from May 28 to June 1, 2017), one of the most important international scientific events for the Semantic Web research community. The purpose of challenges is to validate the maturity of the state of the art in tasks common to the Semantic Web community and adjacent academic communities in a controlled setting of rigorous evaluation, thereby providing sound benchmarks, datasets, and evaluation approaches, which contribute to the advancement of the state of the art. This fourth edition included four challenges: Open Knowledge Extraction (OKE 2017), Semantic Sentiment Analysis (SSA 2017), Question Answering over Linked Data (QALD 7), and The Mighty Storage Challenge (MOCHA 2017). A total of 11 teams competed in the different challenges. The event attracted attendees from across the conference, with a high attendance for all challenge-related activities during ESWC 2017. This included the dedicated conference track and participation of challenge candidates during the ESWC poster and demo session. The very positive feedback and resonance suggests that the ESWC challenges provided a central contribution to the ESWC 2017 program.

This book includes the descriptions of all methods and tools that competed at Semantic Web Challenges 2017, together with a detailed description of the tasks, evaluation procedures, and datasets, offering to the community a snapshot of the advancement in those areas at that moment in time and material for replication of the results. The editors have divided the book content into four chapters, each dedicated to one area or challenge. Each chapter includes an introductory section by the challenge chairs providing a detailed description of the challenge tasks, the evaluation procedure, and associated datasets, and peer-reviewed descriptions of the participants’ methods, tools, and results.

We would like to thank all challenge chairs, whose hard work during the organization of the 2017 edition of the Semantic Web Challenges helped in making it a fruitful event. Thanks to their work, we experienced a successful and inspiring scientific event, and we are now able to deliver this book to the community.

June 2017

Eva Blomqvist
Mauro Dragoni
Monika Solanki

Organization

Organizing Committee (ESWC)

General Chair

Eva Blomqvist Linköping University, Sweden

Program Chairs

Diana Maynard University of Sheffield, UK
Aldo Gangemi Paris Nord University, France and ISTC-CNR, Italy

Workshops Chairs

Agnieszka Ławrynowicz Poznan University of Technology, Poland
Fabio Ciravegna University of Sheffield, UK

Tutorials Chairs

Anna Lisa Gentile IBM Research Almaden, San Jose, CA, USA
Sebastian Rudolph TU Dresden, Germany

Poster and Demo Chairs

Katja Hose Aalborg University, Denmark
Heiko Paulheim University of Mannheim, Germany

PhD Symposium Chairs

Rinke Hoekstra Vrije Universiteit Amsterdam, The Netherlands
Pascal Hitzler Wright State University, USA

Challenge Chairs

Monika Solanki University of Oxford, UK
Mauro Dragoni Fondazione Bruno Kessler, Italy

Semantic Technologies Coordinators

Lionel Medini University of Lyon, France
Luigi Asprino University of Bologna, Italy

EU Project Networking

Lyndon Nixon Modul Universität Vienna, Austria
Maria Maleshkova Karlsruhe Institute of Technology (KIT), Germany

Proceedings Chair

Olaf Hartig Linköping University, Sweden

Process Improvement Chair

Derek Doran Wright State University, USA

Publicity Chair

Ruben Verborgh Ghent University, Belgium

Web Presence

Venislav Georgiev STI, Austria

Treasurer

Alexander Wahler STI, Austria

Local Organization

Marko Grobelnik Jožef Stefan Institute, Slovenia

Challenges Organization

Challenge Chairs

Monika Solanki University of Oxford, UK
Mauro Dragoni Fondazione Bruno Kessler, Italy

Open Knowledge Extraction

René Speck University of Leipzig, Germany
Michael Röder University of Leipzig, Germany
Ricardo Usbeck University of Leipzig, Germany
Axel-Cyrille Ngonga Institute for Applied Informatics, Germany
Ngomo
Horacio Saggion Universitat Pompeu Fabra, Spain
Luis Espinosa-Anke Universitat Pompeu Fabra, Spain
Sergio Oramas Universitat Pompeu Fabra, Spain

Semantic Sentiment Analysis

Diego Reforgiato University of Cagliari, Italy
Recupero
Erik Cambria Nanyang Technological University, Singapore
Emanuele Di Rosa FINSA s.p.a, Italy

Question Answering over Linked Data

Ricardo Usbeck	University of Leipzig, Germany
Axel-Cyrille Ngonga Ngomo	Institute for Applied Informatics, Germany
Bastian Haarmann	Fraunhofer-Institute IAIS, Germany
Anastasia Krithara	National Center for Scientific Research Demokritos, Greece

Mighty Storage

Axel-Cyrille Ngonga Ngomo	Institute for Applied Informatics, Germany
Irini Fundulaki	Foundation for Research and Technology Hellas (FORTH), Greece
Mirko Spasic	OpenLink, UK
Henning Petzkam	Fraunhofer IAIS, Germany
Vassiliki Rentoumi	National Center for Scientific Research Demokritos, Greece

Contents

The Mighty Storage Challenge

MOCHA2017: The Mighty Storage Challenge at ESWC 2017	3
<i>Kleanthi Georgala, Mirko Spasić, Milos Jovanovik, Henning Petzka, Michael Röder, and Axel-Cyrille Ngonga Ngomo</i>	
Challenge Accepted: QUAD Meets MOCHA2017.	16
<i>Alexander Potocki, Daniel Hladky, and Martin Voigt</i>	
MOCHA 2017 as a Challenge for Virtuoso	21
<i>Mirko Spasić and Milos Jovanovik</i>	

Open Knowledge Extraction Challenge

Open Knowledge Extraction Challenge 2017	35
<i>René Speck, Michael Röder, Sergio Oramas, Luis Espinosa-Anke, and Axel-Cyrille Ngonga Ngomo</i>	
ADEL@OKE 2017: A Generic Method for Indexing Knowledge Bases for Entity Linking	49
<i>Julien Plu, Raphaël Troncy, and Giuseppe Rizzo</i>	

Question Answering over Linked Data Challenge

7th Open Challenge on Question Answering over Linked Data (QALD-7) . . .	59
<i>Ricardo Usbeck, Axel-Cyrille Ngonga Ngomo, Bastian Haarmann, Anastasia Krithara, Michael Röder, and Giulio Napolitano</i>	
End-to-End Representation Learning for Question Answering with Weak Supervision	70
<i>Daniil Sorokin and Iryna Gurevych</i>	
WDAqua-core0: A Question Answering Component for the Research Community	84
<i>Dennis Diefenbach, Kamal Singh, and Pierre Maret</i>	
AMAL: Answering French Natural Language Questions Using DBpedia	90
<i>Nikolay Radoev, Mathieu Tremblay, Michel Gagnon, and Amal Zouaq</i>	

Semantic Sentiment Analysis

Semantic Sentiment Analysis Challenge at ESWC2017 109
Diego Reforgiato Recupero, Erik Cambria, and Emanuele Di Rosa

Fine-Grained Sentiment Analysis on Financial Microblogs
and News Headlines 124
Mattia Atzeni, Amna Dridi, and Diego Reforgiato Recupero

Language Independent Sentiment Analysis of the Shukran Social Network
Using Apache Spark 129
Walid Iguider and Diego Reforgiato Recupero

Aspect-Based Opinion Mining Using Knowledge Bases. 133
Marco Federici and Mauro Dragoni

The IRMUDOSA System at ESWC-2017 Challenge on Semantic
Sentiment Analysis 148
Giulio Petrucci and Mauro Dragoni

Opinion Mining with a Clause-Based Approach 166
Andi Rexha, Mark Kröll, Mauro Dragoni, and Roman Kern

Author Index 177