CoNLL-2009: Shared Task

# Proceedings of the Thirteenth Conference on Computational Natural Language Learning (CoNLL): Shared Task

Conference Chairs:
Suzanne Stevenson and Xavier Carreras

Shared Task Organizing Committee Chair:
Jan Hajič

June 4, 2009
Boulder, Colorado

Production and Manufacturing by
*Omnipress Inc.*
*2600 Anderson Street*
*Madison, WI 53707*
*USA*

©2009 The Association for Computational Linguistics

Order copies of this and other ACL proceedings from:

Association for Computational Linguistics (ACL)
209 N. Eighth Street
Stroudsburg, PA 18360
USA
Tel: +1-570-476-8006
Fax: +1-570-476-0860
acl@aclweb.org

ISBN 978-1-932432-29-9

# Introduction

Welcome to the CoNLL-2009 Shared Task!

The Shared Task of the 2009 Conference on Computational Natural Language Learning was prepared under the auspices of the ACL Special Interest Group on Natural Language Learning as part of the conference. The task, Syntactic and Semantic Dependencies in Multiple Languages, extends the 2008 task to six more languages. It has attracted over 60 teams, out of which 20 submitted a valid entry in this friendly competition enterprise. In this volume, 18 papers describe the methodology and results of these systems. The details on the data format design and preparation, their basic statistics, and summary of the results and system approaches can be found in the overview paper that opens this volume. The task maintains its own website, `http://ufal.mff.cuni.cz/conll2009-st`, where all the details (including results) can be found.

We would like to thank the data providers and the members of the organization team for preparing, merging and converting the data. Special thanks go to Jan Štěpánek, who centrally handled all data checking and repackaging for distribution, and to the LDC team who made their data available to the CoNLL-2009 Shared Task participants free of charge and helped with the licensed data distribution. The website has been maintained also by Jan Štěpánek, Pavel Straňák and Jan Hajič. Massimiliano Ciaramita has overseen the paper submission and reviewing process and the preparation of these proceedings. And of course, we would like to thank the authors of the submitted systems (who additionally also served as paper reviewers) - without them, the Shared Task would have been a meaningless exercise!

We hope that you will enjoy the papers describing the systems submitted. Let them inspire you in your own research!

Prague, April 23, 2009

Jan Hajič, for the Shared Task organizers

**Organizers:**

Jan Hajič (chair), Charles University in Prague (Czech Republic)
Massimiliano Ciaramita, Google Inc., Zürich (Switzerland)
Richard Johansson, University of Trento (Italy)
Daisuke Kawahara, National Institute of Information and Communications Technology (Japan)
Maria Antònia Martí, University of Barcelona (Spain)
Lluís Màrquez, Technical University of Catalonia, Barcelona (Spain)
Adam Meyers, New York University (USA)
Joakim Nivre, Uppsala University and Växjö University (Sweden)
Sebastian Padó, Stuttgart University (Germany)
Jan Štěpánek, Charles University, Prague (Czech Republic)
Pavel Straňák, Charles University, Prague (Czech Republic)
Mihai Surdeanu, Stanford University (USA)
Nianwen (Bert) Xue, Brandeis University, Boston (USA)
Yi Zhang, DFKI GmbH, Saarbrücken (Germany)

**Program Committee:**

Massimiliano Ciaramita (chair), Google Inc., Zürich (Switzerland)

**Reviewers:**

Masayuki Asahara, Nara Institute of Science and Technology (Japan)
Bernd Bohnet, International Computer Science Institute, Berkeley (USA)
Wanxiang Che, Harbin Institute of Technology (China)
Wenliang Chen, National Institute of Information and Communications Technology (Japan)
Massimiliano Ciaramita (chair), Google Inc., Zürich (Switzerland)
Qifeng Dai, University of Science and Technology of China (China)
Jan Hajič, Charles University in Prague (Czech Republic)
James Henderson, University of Geneva (Switzerland)
Richard Johansson, University of Trento (Italy)
Daisuke Kawahara, National Institute of Information and Communications Technology (Japan)
Baoli Li, Trinity College Dublin (Ireland)
Lu Li, Harbin Institute of Technology (China)
Xavier Lluís, Technical University of Catalonia, Barcelona (Spain)
Lluís Màrquez, Technical University of Catalonia, Barcelona (Spain)
Maria Antònia Martí, University of Barcelona (Spain)
Adam Meyers, New York University (USA)
Roser Morante, University of Antwerp (Belgium)
Joakim Nivre, Uppsala University and Växjö University (Sweden)
Pierre Nugues, Lund University (Sweden)
Sebastian Padó, Stuttgart University (Germany)
Xipeng Qiu, Fudan University, Shanghai (China)

Han Ren, Wuhan University (China)
Antoine Rozenknop, Swiss Federal Institute of Technology in Lausanne (Switzerland)
Pavel Straňák, Charles University, Prague (Czech Republic)
Mihai Surdeanu, Stanford University (USA)
Oscar Täckström, Swedish Institute of Computer Science (Sweden)
Ivan Meza-Ruiz, University of Edinburgh (United Kingdom)
Yotaro Watanabe, Nara Institute of Science and Technology (Japan)
Nianwen (Bert) Xue, Brandeis University, Boston (USA)
Daniel Zeman, Charles University, Prague (Czech Republic)
Yi Zhang, DFKI GmbH, Saarbrücken (Germany)
Hai Zhao, City University of Hong Kong (China)

# Table of Contents

*The CoNLL-2009 Shared Task: Syntactic and Semantic Dependencies in Multiple Languages*
Jan Hajič, Massimiliano Ciaramita, Richard Johansson, Daisuke Kawahara, Maria Antònia Martí, Lluís Màrquez, Adam Meyers, Joakim Nivre, Sebastian Padó, Jan Štěpánek, Pavel Straňák, Mihai Surdeanu, Nianwen Xue and Yi Zhang . . . . . 1

*An Iterative Approach for Joint Dependency Parsing and Semantic Role Labeling*
Qifeng Dai, Enhong Chen and Liu Shi . . . . . 19

*Joint Memory-Based Learning of Syntactic and Semantic Dependencies in Multiple Languages*
Roser Morante, Vincent Van Asch and Antal van den Bosch . . . . . 25

*Hybrid Multilingual Parsing with HPSG for SRL*
Yi Zhang, Rui Wang and Stephan Oepen . . . . . 31

*A Latent Variable Model of Synchronous Syntactic-Semantic Parsing for Multiple Languages*
Andrea Gesmundo, James Henderson, Paola Merlo and Ivan Titov . . . . . 37

*Multilingual Semantic Role Labeling*
Anders Björkelund, Love Hafdell and Pierre Nugues . . . . . 43

*Multilingual Dependency-based Syntactic and Semantic Parsing*
Wanxiang Che, Zhenghua Li, Yongqiang Li, Yuhang Guo, Bing Qin and Ting Liu . . . . . 49

*Multilingual Dependency Learning: A Huge Feature Engineering Method to Semantic Dependency Parsing*
Hai Zhao, Wenliang Chen, Chunyu Kity and Guodong Zhou . . . . . 55

*Multilingual Dependency Learning: Exploiting Rich Features for Tagging Syntactic and Semantic Dependencies*
Hai Zhao, Wenliang Chen, Jun'ichi Kazama, Kiyotaka Uchimoto and Kentaro Torisawa . . . . . 61

*Efficient Parsing of Syntactic and Semantic Dependency Structures*
Bernd Bohnet . . . . . 67

*Exploring Multilingual Semantic Role Labeling*
Baoli Li, Martin Emms, Saturnino Luz and Carl Vogel . . . . . 73

*A Second-Order Joint Eisner Model for Syntactic and Semantic Dependency Parsing*
Xavier Lluís, Stefan Bott and Lluís Màrquez . . . . . 79

*Multilingual Semantic Role Labelling with Markov Logic*
Ivan Meza-Ruiz and Sebastian Riedel . . . . . 85

*The Crotal SRL System : a Generic Tool Based on Tree-structured CRF*
Erwan Moreau and Isabelle Tellier . . . . . 91

*Parsing Syntactic and Semantic Dependencies for Multiple Languages with A Pipeline Approach*
Han Ren, Donghong Ji, Jing Wan and Mingyao Zhang . . . . . 97

*Multilingual Semantic Parsing with a Pipeline of Linear Classifiers*
Oscar Täckström . . . . . 103

*A Joint Syntactic and Semantic Dependency Parsing System based on Maximum Entropy Models*
Buzhou Tang, Lu Li, Xinxin Li, Xuan Wang and Xiaolong Wang . . . . . 109

*Multilingual Syntactic-Semantic Dependency Parsing with Three-Stage Approximate Max-Margin Linear Models*
Yotaro Watanabe, Masayuki Asahara and Yuji Matsumoto . . . . . 114

*A Simple Generative Pipeline Approach to Dependency Parsing and Semantic Role Labeling*
Daniel Zeman . . . . . 120

# Conference Program

**Thursday, June 4, 2009**

**Shared Task Session 1: Overview and Oral Presentations**

14:00–14:20 *The CoNLL-2009 Shared Task: Syntactic and Semantic Dependencies in Multiple Languages*
Jan Hajič, Massimiliano Ciaramita, Richard Johansson, Daisuke Kawahara, Maria Antònia Martí, Lluís Màrquez, Adam Meyers, Joakim Nivre, Sebastian Padó, Jan Štěpánek, Pavel Straňák, Mihai Surdeanu, Nianwen Xue and Yi Zhang

14:20–14:30 *An Iterative Approach for Joint Dependency Parsing and Semantic Role Labeling*
Qifeng Dai, Enhong Chen and Liu Shi

14:30–14:40 *Joint Memory-Based Learning of Syntactic and Semantic Dependencies in Multiple Languages*
Roser Morante, Vincent Van Asch and Antal van den Bosch

14:40–14:50 *Hybrid Multilingual Parsing with HPSG for SRL*
Yi Zhang, Rui Wang and Stephan Oepen

14:50–15:00 *A Latent Variable Model of Synchronous Syntactic-Semantic Parsing for Multiple Languages*
Andrea Gesmundo, James Henderson, Paola Merlo and Ivan Titov

15:00–15:10 *Multilingual Semantic Role Labeling*
Anders Björkelund, Love Hafdell and Pierre Nugues

15:10–15:20 *Multilingual Dependency-based Syntactic and Semantic Parsing*
Wanxiang Che, Zhenghua Li, Yongqiang Li, Yuhang Guo, Bing Qin and Ting Liu

15:20–15:30 *Multilingual Dependency Learning: A Huge Feature Engineering Method to Semantic Dependency Parsing*
Hai Zhao, Wenliang Chen, Chunyu Kity and Guodong Zhou

15:30–15:40 *Multilingual Dependency Learning: Exploiting Rich Features for Tagging Syntactic and Semantic Dependencies*
Hai Zhao, Wenliang Chen, Jun'ichi Kazama, Kiyotaka Uchimoto and Kentaro Torisawa

15:40–16:10 **Coffee Break**

**Thursday, June 4, 2009 (continued)**

**Shared Task Session 2: Poster Session (16:10–18:00)**

*Multilingual Semantic Role Labeling*
Anders Björkelund, Love Hafdell and Pierre Nugues

*Efficient Parsing of Syntactic and Semantic Dependency Structures*
Bernd Bohnet

*Multilingual Dependency-based Syntactic and Semantic Parsing*
Wanxiang Che, Zhenghua Li, Yongqiang Li, Yuhang Guo, Bing Qin and Ting Liu

*An Iterative Approach for Joint Dependency Parsing and Semantic Role Labeling*
Qifeng Dai, Enhong Chen and Liu Shi

*A Latent Variable Model of Synchronous Syntactic-Semantic Parsing for Multiple Languages*
Andrea Gesmundo, James Henderson, Paola Merlo and Ivan Titov

*Exploring Multilingual Semantic Role Labeling*
Baoli Li, Martin Emms, Saturnino Luz and Carl Vogel

*A Second-Order Joint Eisner Model for Syntactic and Semantic Dependency Parsing*
Xavier Lluís, Stefan Bott and Lluís Màrquez

*Multilingual Semantic Role Labelling with Markov Logic*
Ivan Meza-Ruiz and Sebastian Riedel

*Joint Memory-Based Learning of Syntactic and Semantic Dependencies in Multiple Languages*
Roser Morante, Vincent Van Asch and Antal van den Bosch

*The Crotal SRL System : a Generic Tool Based on Tree-structured CRF*
Erwan Moreau and Isabelle Tellier

*Parsing Syntactic and Semantic Dependencies for Multiple Languages with A Pipeline Approach*
Han Ren, Donghong Ji, Jing Wan and Mingyao Zhang

*Multilingual Semantic Parsing with a Pipeline of Linear Classifiers*
Oscar Täckström

**Thursday, June 4, 2009 (continued)**

*A Joint Syntactic and Semantic Dependency Parsing System based on Maximum Entropy Models*
Buzhou Tang, Lu Li, Xinxin Li, Xuan Wang and Xiaolong Wang

*Multilingual Syntactic-Semantic Dependency Parsing with Three-Stage Approximate Max-Margin Linear Models*
Yotaro Watanabe, Masayuki Asahara and Yuji Matsumoto

*A Simple Generative Pipeline Approach to Dependency Parsing and Semantic Role Labeling*
Daniel Zeman

*Hybrid Multilingual Parsing with HPSG for SRL*
Yi Zhang, Rui Wang and Stephan Oepen

*Multilingual Dependency Learning: Exploiting Rich Features for Tagging Syntactic and Semantic Dependencies*
Hai Zhao, Wenliang Chen, Jun'ichi Kazama, Kiyotaka Uchimoto and Kentaro Torisawa

*Multilingual Dependency Learning: A Huge Feature Engineering Method to Semantic Dependency Parsing*
Hai Zhao, Wenliang Chen, Chunyu Kity and Guodong Zhou