

# **Workshop on Induction of Linguistic Structure 2012**

**Held at the 2012 Conference of the North American Chapter of  
the Association for Computational Linguistics: Human Language  
Technologies (NAACL-HLT 2012)**

**Montreal, Quebec, Canada  
3-8 June 2012**

**ISBN: 978-1-62276-547-8**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2012) by the Association for Computational Linguistics  
All rights reserved.

Printed by Curran Associates, Inc. (2013)

For permission requests, please contact the Association for Computational Linguistics  
at the address below.

Association for Computational Linguistics  
209 N. Eighth Street  
Stroudsburg, Pennsylvania 18360

Phone: 1-570-476-8006  
Fax: 1-570-476-0860

[acl@aclweb.org](mailto:acl@aclweb.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## Table of Contents

<i>Transferring Frames: Utilization of Linked Lexical Resources</i> Lars Borin, Markus Forsberg, Richard Johansson, Kristiina Muhonen, Tanja Purtonen and Kaarlo Voionmaa .....	1
<i>Unsupervised Induction of Frame-Semantic Representations</i> Ashutosh Modi, Ivan Titov and Alexandre Klementiev .....	9
<i>Capitalization Cues Improve Dependency Grammar Induction</i> Valentin I. Spitzkovsky, Hiyan Alshawi and Daniel Jurafsky .....	16
<i>Toward Tree Substitution Grammars with Latent Annotations</i> Francis Ferraro, Benjamin Van Durme and Matt Post .....	23
<i>Exploiting Partial Annotations with EM Training</i> Dirk Hovy and Eduard Hovy .....	31
<i>Using Senses in HMM Word Alignment</i> Douwe Gelling and Trevor Cohn .....	39
<i>Unsupervised Part of Speech Inference with Particle Filters</i> Gregory Dubbin and Phil Blunsom .....	47
<i>Nudging the Envelope of Direct Transfer Methods for Multilingual Named Entity Recognition</i> Oscar Täckström .....	55
<i>The PASCAL Challenge on Grammar Induction</i> Douwe Gelling, Trevor Cohn, Phil Blunsom and Joao Graca .....	64
<i>Two baselines for unsupervised dependency parsing</i> Anders Søgaard .....	81
<i>Unsupervised Dependency Parsing using Reducibility and Fertility features</i> David Mareček and Zdeněk Žabokrtský .....	84
<i>Induction of Linguistic Structure with Combinatory Categorical Grammars</i> Yonatan Bisk and Julia Hockenmaier .....	90
<i>Turning the pipeline into a loop: Iterated unsupervised dependency parsing and PoS induction</i> Christos Christodoulopoulos, Sharon Goldwater and Mark Steedman .....	96
<i>Hierarchical clustering of word class distributions</i> Grzegorz Chrupała .....	100
<i>Combining the Sparsity and Unambiguity Biases for Grammar Induction</i> Kewei Tu .....	105