IJCNLP 2017

# The Eighth International Joint Conference on Natural Language Processing

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Taipei, Taiwan

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# Preface

Welcome to the 8th International Joint Conference on Natural Language Processing (IJCNLP). IJCNLP was initiated in 2004 by the Asian Federation of Natural Language Processing (AFNLP) with the major goal to provide a platform for researchers and professionals around the world to share their experiences related to natural language processing and computational linguistics. In the past years, IJCNLPs were held in 7 different places: Hainan Island (2004), Jeju Island (2005), Hyderabad (2008), Singapore (2009), Chiang Mai (2011), Nagoya (2013) and Beijing (2015). This year the 8th IJCNLP is held in Taipei Nangang Exhibition Hall on November 27-December 1, 2017.

We are confident that you will find IJCNLP 2017 to be technically stimulating. The conference covers a broad spectrum of technical areas related to natural language processing and computation. Besides main conference, the program includes 3 keynote speeches, 6 tutorials, 17 demonstrations, 5 workshops, and 5 shared tasks (new event).

Before closing this brief welcome, we would like to thank the entire organizing committee for their long efforts to create and event that we hope will be memorable for you. Program chairs Greg Kondrak and Taro Watanabe coordinate the review process allowing for top quality papers to be presented at the conference. Workshop chairs Min Zhang and Yue Zhang organize 5 nice pre-conference and post-conference workshops. Tutorial chairs Sadao Kurohashi and Michael Strube select 6 very good tutorials. Demo chairs Seong-Bae Park and Thepchai Supnithi recommend 17 demonstrations. Shared Task chairs Chao-Hong Liu, Preslav Nakov and Nianwen Xue choose 5 interesting shared tasks. Sponsorship chairs Youngkil Kim, Tong Xiao, Kazuhide Yamamoto and Jui-Feng Yeh design sponsor packages and find financial supports. We thank all the sponsors. Publicity chairs Pushpak Bhattacharya, Xuanjing Huang, Gina-Anne Levow, Chi Mai Loung and Sebastian Stüker help circulate the conference information and promote the conference. We would like to express our special thanks to publication chairs Lung-Hao Lee and Derek F. Wong. After the hard work, they deliver an excellent proceeding to the participants.

Finally, we would like to thank all authors for submitting high quality research this year. We hope all of you enjoy the conference program, and your stay at this beautiful city of Taipei.

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# Message from the Program Co-Chairs

Welcome to the 8th International Joint Conference on Natural Language Processing (IJCNLP 2017) organized by National Taiwan Normal University and the Association for Computational Linguistics and Chinese Language Processing (ACLCLP) and hosted by The Asian Federation of Natural Language Processing (AFNLP).

Since the first meeting in 2004, IJCNLP has established itself as a major NLP conference. This year, we received 580 submissions (337 long and 243 short), which is by far the largest number ever for a stand-alone IJCNLP conference. From these, 179 papers (103 long and 76 short) were accepted to appear at the conference, which represents an acceptance rate of 31%. In particular, approximately 46% of the accepted papers are from Asia Pacific, 30% from North America, and 20% from Europe.

Our objective is to keep the conference to three parallel sessions at any one time. 86 long papers and 21 short papers are scheduled as oral presentations, while 17 long papers and 55 short papers will be presented as posters.

We are also very pleased to announce three exciting keynote talks by the renowned NLP researchers: Rada Mihalcea (University of Michigan), Trevor Cohn (University of Melbourne) and Jason Eisner (Johns Hopkins University).

The conference will conclude with the award presentation ceremony. The Best Paper Award goes to Nikolaos Pappas and Andrei Popescu-Belis for their paper "Multilingual Hierarchical Attention Networks for Document Classification." The Best Student Paper award goes to "Roles and Success in Wikipedia Talk Pages: Identifying Latent Patterns of Behavior" by Keith Maki, Michael Yoder, Yohan Jo and Carolyn Rosé.

We would like to thank everyone who has helped make IJCNLP 2017 a success. In particular, the area chairs (who are listed in the Program Committee section) worked hard on recruiting reviewers, managing reviews, leading discussions, and making recommendations. The quality of the technical program reflects the expertise of our 536 reviewers. All submissions were reviewed by at least three reviewers. The review process for the conference was double-blind, and included an author response period, as well as subsequent discussions.

We would like to acknowledge the help and advice from the General Chair Chengqing Zong, and the Local Arrangements Committee headed by Liang-Chih Yu. We thank the Publication Chairs Lung-Hao Lee and Derek F. Wong for putting together the conference proceedings and handbook, and all the other committee chairs for their great work.

We hope you will enjoy IJCNLP 2017!

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Greg Kondrak, University of Alberta
Taro Watanabe, Google

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# Invited Talk: Words and People

**Rada Mihalcea**

University of Michigan

## Abstract

What do the words we use say about us and about how we view the world surrounding us? And what do we - as speakers of those words with our own defining attributes, imply about the words we utter? In this talk, I will explore the relation between words and people and show how we can develop cross-cultural word models to identify words with cultural bias – i.e., words that are used in significantly different ways by speakers from different cultures. Further, I will also show how we can effectively use information about the speakers of a word (i.e., their gender, culture) to build better word models.

## Biography

Rada Mihalcea is a Professor in the Computer Science and Engineering department at the University of Michigan. Her research interests are in computational linguistics, with a focus on lexical semantics, multilingual natural language processing, and computational social sciences. She serves or has served on the editorial boards of the Journals of Computational Linguistics, Language Resources and Evaluations, Natural Language Engineering, Research in Language in Computation, IEEE Transactions on Affective Computing, and Transactions of the Association for Computational Linguistics. She was a program co-chair for the Conference of the Association for Computational Linguistics (2011) and the Conference on Empirical Methods in Natural Language Processing (2009), and a general chair for the Conference of the North American Chapter of the Association for Computational Linguistics (2015). She is the recipient of a National Science Foundation CAREER award (2008) and a Presidential Early Career Award for Scientists and Engineers awarded by President Obama (2009). In 2013, she was made an honorary citizen of her hometown of Cluj-Napoca, Romania.

# Invited Talk: Learning Large and Small: How to Transfer NLP Successes to Low-resource Languages

**Trevor Cohn**

University of Melbourne

## Abstract

Recent advances in NLP have predominantly been based upon supervised learning over large corpora, where rich expressive models, such as deep learning methods, can perform exceptionally well. However, these state of the art approaches tend to be very data hungry, and consequently do not elegantly scale down to smaller corpora, which are more typical in many NLP applications.

In this talk, I will describe the importance of small data in our field, drawing particular attention to so-called "low-" or "under-resourced" languages, for which corpora are scarce, and linguistic annotations scarcer yet. One of the key problems for our field is how to translate successes on the few high-resource languages to practical technologies for the remaining majority of the world's languages. I will cover several research problems in this space, including transfer learning between high- and low-resource languages, active learning for selecting text for annotation, and speech processing in a low-resource setting, namely learning to translate audio inputs without transcriptions. I will finish by discussing open problems in natural language processing that will be critical in porting highly successful NLP work to the myriad of less-well-studied languages.

## Biography

Trevor Cohn is an Associate Professor and ARC Future Fellow at the University of Melbourne, in the School of Computing and Information Systems. He received Bachelor degrees in Software Engineering and Commerce, and a PhD degree in Engineering from the University of Melbourne. He was previously based at the University of Sheffield, and before this worked as a Research Fellow at the University of Edinburgh. His research interests focus on probabilistic and statistical machine learning for natural language processing, with applications in several areas including machine translation, parsing and grammar induction. Current projects include translating diverse and noisy text sources, deep learning of semantics in translation, rumour diffusion over social media, and algorithmic approaches for scaling to massive corpora. Dr. Cohn's research has been recognised by several best paper awards, including best short paper at EMNLP in 2016. He will be jointly organising ACL 2018 in Melbourne.

# Invited Talk: Strategies for Discovering Underlying Linguistic Structure

**Jason Eisner**

Johns Hopkins University

## Abstract

A goal of computational linguistics is to automate the kind of reasoning that linguists do. Given text in a new language, can we determine the underlying morphemes and the grammar rules that arrange and modify them?

The Bayesian strategy is to devise a joint probabilistic model that is capable of generating the descriptions of new languages. Given data from a particular new language, we can then seek explanatory descriptions that have high prior probability. This strategy leads to fascinating and successful algorithms in the case of morphology.

Yet the Bayesian approach has been less successful for syntax. It is limited in practice by our ability to (1) design accurate models and (2) solve the computational problem of posterior inference. I will demonstrate some remedies: build only a partial (conditional) model, and use synthetic data to train a neural network that simulates correct posterior inference.

## Biography

Jason Eisner is Professor of Computer Science at Johns Hopkins University, where he is also affiliated with the Center for Language and Speech Processing, the Machine Learning Group, the Cognitive Science Department, and the national Center of Excellence in Human Language Technology. His goal is to develop the probabilistic modeling, inference, and learning techniques needed for a unified model of all kinds of linguistic structure. His 100+ papers have presented various algorithms for parsing, machine translation, and weighted finite-state machines; formalizations, algorithms, theorems, and empirical results in computational phonology; and unsupervised or semi-supervised learning methods for syntax, morphology, and word-sense disambiguation. He is also the lead designer of Dyna, a new declarative programming language that provides an infrastructure for AI research. He has received two school-wide awards for excellence in teaching.

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11:10–11:30 *Improving Sequence to Sequence Neural Machine Translation by Utilizing Syntactic Dependency Information*
An Nguyen Le, Ander Martinez, Akifumi Yoshimoto and Yuji Matsumoto

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Desmond Elliott and Ákos Kádár

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Ye Zhang and Byron Wallace

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Luis Nieto Piña and Richard Johansson

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Aaron Steven White, Pushpendre Rastogi, Kevin Duh and Benjamin Van Durme

14:10–14:30 *Generating a Training Corpus for OCR Post-Correction Using Encoder-Decoder Model*
Eva D'hondt, Cyril Grouin and Brigitte Grau

**Thursday, November 30, 2017**

**15:30–16:20 Best Paper Session**

15:30–15:55 *Multilingual Hierarchical Attention Networks for Document Classification*
Nikolaos Pappas and Andrei Popescu-Belis

15:55–16:20 *Roles and Success in Wikipedia Talk Pages: Identifying Latent Patterns of Behavior*
Keith Maki, Michael Yoder, Yohan Jo and Carolyn Rosé