

EMNLP 2017

**The Conference on
Empirical Methods in
Natural Language Processing**

Proceedings of the Conference

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Preface by the General Chair

Thank you so much for joining us in Copenhagen! Welcome to a cosmopolitan city of fantastic restaurants, lovely seascapes, rich history, and lots and lots of cyclists!

We have an exciting program lined up for you, with three Invited talks, fifteen workshops, seven tutorials, nine TACL presentations, 322 reviewed papers presented as both oral talks and posters, and twenty-one demos. I am especially grateful to our Program Chairs, Rebecca Hwa and Sebastian Riedel, who did a fantastic job managing a backbreaking 1,500 paper submissions (1466 reviewed papers). This involved 51 Area chairs and 980 reviewers. We tried some new things this year (never conducive to a smooth process) including a more careful handling of the COIs that result from Area Chair submissions, and the addition of a meta-review step to encourage more thoughtful reviewing. We are soliciting feedback on the meta-review process, from both reviewers and authors. Despite the additional time involvement, many of the Area Chairs embraced this new approach, and would like to repeat it. However, there are clearly a few dissenters, since Rebecca and Sebastian ended up writing around 200 meta-reviews themselves at the last minute! We are also trying to raise the visibility and status of the poster sessions by integrating them as parallel sessions alongside oral talks, with poster session chairs. This is in response to the survey results from EMNLP 2015 that indicated a decided preference for smaller, more frequent poster sessions during the day rather than evening mega-sessions. Finally, Rebecca and Sebastian are bringing you three outstanding invited speakers, Dan Jurafsky, Sharon Goldwater, and Nando de Freitas. No program chairs ever worked harder to bring you a superb set of presentations in an attendee friendly setting.

I am also very grateful to Victoria Fossum and Karl Moritz Hermann, our Workshop Chairs, who put together a terrific slate of fifteen workshops, and paid meticulous attention to ensuring that each workshop could hold exactly the poster sessions, invited talks and special events that it required. Our tutorial chairs, Alexandra Birch and Nathan Schneider, also outdid themselves, providing especially tempting tutorial offerings. Matt Post deserves to be singled out, for being an Advisor to our conscientious and successful Handbook Chair, Joachim Bingel, as well as becoming a welcome last minute addition to our excellent team of Demo Chairs, Lucia Specia and Michael Paul. Thanks are due to our Website Chair, Anders Johannsen, who responded promptly and deftly to all of our requests, and to our Student Volunteer and Student Sponsorship Chairs, Zeljko Agic and Yonatan Bisk, who brought you the helpful and energetic volunteers who keep things running smoothly.

Last but not least, many thanks to your hosts, our Local Arrangements Chairs, Dirk Hovy and Anders Søgaard and their team. Their concern has been increasing the enjoyment of your experience, and to that end they proposed a stunning venue, put together an amazing reception and Social Event, chose your conference bags, issued all the invitation letters for visas, helped create all the signs, etc., etc., etc. Dan Hardt, our Sponsorship chair, working with Anders and Dirk, raised an unusual amount of local sponsorships, all to defray the cost of the Social Event.

As always, we are extremely indebted to our generous sponsors. Our platinum sponsors are Google, Amazon, Baidu, Apple, Facebook, Bloomberg and Siteimprove. Gold sponsors include IBM Research, Microsoft, eBay, SAP, Textkernel, Maluuba, Zalando, Recruit Institute of Technology and Deloitte. Silver sponsors are Nuance, Oracle, Sogou, Huawei, Duolingo, CVTE, Unsilo and Wizkids. Snap Inc., Grammarly and Yandex are our Bronze sponsors.

Finally, many, many thanks to our Area Chairs, our reviewers, and our authors, whose outstanding research is being showcased here for your delectation. *Nyd det mens det varer!*

Best Regards,
Martha Palmer
EMNLP 2017 General Chair

Preface by the Program Committee Co-Chairs

Welcome to the 2017 Conference on Empirical Methods in Natural Language Processing! This is an exciting year; we have received a new record-high in the number of submissions: 1,509 papers. After discounting early withdraws, duplicates, and other invalid submissions, we sent out 1,418 submissions (836 long papers, 582 short papers) to be reviewed by the program committee. Ultimately, 216 long papers (25.8% acceptance rate) and 107 short papers (18.4% acceptance rate) have been accepted for presentation, making a total of 323 papers and an overall acceptance rate of 22.8%.

This year's technical program consists of three invited talks and 113 oral presentations and 219 poster presentations for the 323 long and short accepted papers as well as nine papers accepted to the Transactions of the Association for Computational Linguistics. To accommodate all the presentations in a compressed timeframe, we opted to have plenary sessions for the invited talks and the winners of the Best Paper Awards, while allotting three parallel oral sessions and thematically related poster sessions for all other presentations. We chose to have concurrent poster and oral sessions for several reasons. First, this is the preferred model of the majority (51.6%) of participants who filled out the EMNLP 2015 post-conference survey. Second, this allows us to spread out the poster presentations across three days in smaller thematically related clusters. Finally, this maximises the number of acceptances for the high quality submissions we received; by having more poster sessions, we are able to maintain the acceptance rates at the previous year's level despite an increase in submissions by 40%.

It would not have been possible to properly handle such a large number of submissions without the generous voluntary help from all the members of the program committee, which consists of 980 reviewers overseen by 51 area chairs. We continued last year's experiment of defining twelve relatively broad topic areas and assigning multiple area chairs to facilitate consistent ranking of larger sets of papers. Most technical program decisions, from the selection of papers to the modes of presentation to the choice of outstanding papers, are primarily made in a bottom-up fashion: reviewers assessed and scored papers, made recommendations for oral vs poster decisions, and marked papers suitable for best paper awards; area chairs ensured the quality of assessments, encouraged discussions and assembled opinions into their own recommendations; finally, we construct the technical program, considering the recommendations from the area chairs while taking into account venue constraints and balance across areas. A new experimental feature of this year's EMNLP reviewing process is the "meta review," in which the area chairs briefly summarize the major discussions between the reviewers to give authors a more transparent view of the process.

Per EMNLP tradition, awards are given to outstanding papers in three categories: Best Long Paper, Best Short Paper, and Best Resource Paper. The selection process is bottom-up: based on the reviewers and area chairs' recommendations, we nominated four papers for each category; we invited expert members to form a Best Papers committee for each category; each committee reviews the candidates and select the winners. The awarded papers will be presented at a special plenary session on the last day of the conference.

We are extremely grateful that three amazing speakers have agreed to give invited talks at EMNLP. Nando de Freitas (Google Deepmind) will discuss simulated physical environments, and whether language would benefit from the development of such environments, and could contribute toward improving such environments and agents within them. Sharon Goldwater (University of Edinburgh) will describe work on developing unsupervised speech technology for those of the world's 7,000 or so languages not spoken in large rich countries. Dan Jurafsky (Stanford University) will talk about processing the language of policing to automatically measure linguistic aspects of the interaction from discourse factors like conversational structure to social factors like respect.

The conference would not have been possible without the support of various people inside and outside of the committee. In particular, we would like to thank:

- Martha Palmer, whose encouragement and advice as the general chair has been invaluable every step of the way;

- Chris Callison-Burch, who has given us excellent advice and support in his capacity as the SIGDAT Secretary;
- Priscilla Rasmussen, who always has the right answers;
- Xavier Carreras and Kevin Duh, who generously shared their experiences as the chairs of EMNLP 2016;
- Anders Johannsen, who is lightning fast with website updates;
- Our 51 area chairs: David Bamman, Mohit Bansal, Roberto Basili, Chris Biemann, Jordan Boyd-Graber, Marine Carpuat, Joyce Chai, David Chiang, Jinho Choi, Jennifer Chu-Carroll, Trevor Cohn, Cristian Danescu-Niculescu-Mizil, Dipanjan Das, Hal Daume, Mona Diab, Mark Dredze, Jacob Eisenstein, Sanja Fidler, Alona Fyshe, Dan Gildea, Ed Grefenstette, Hannaneh Hajishirzi, Julia Hockenmaier, Kentaro Inui, Jing Jiang, Philipp Koehn, Mamoru Komachi, Anna Korhonen, Tom Kwiatkowski, Gina Levow, Bing Liu, Nitin Madnani, Mausam, Rada Mihalcea, Marie-Francine Moens, Saif M. Mohammad, Mari Ostendorf, Sameer Pradhan, Alexander Rush, Anoop Sarkar, William Schuler, Hinrich Schütze, Sameer Singh, Thamar Solorio, Vivek Srikumar, Amanda Stent, Tomek Strzalkowski, Mihai Surdeanu, Andreas Vlachos, Scott Wen-tau Yih, Zhang Yue;
- The best papers award committee members: Chris Brew, Mike Collins, Kevin Duh, Adam Lopez, Ani Nenkova, Bonnie Webber, Luke Zettlemoyer;
- Preethi Raghavan and Siddharth Patwardhan, the publications co-chairs and Joachim Bingel, the conference handbook chair;
- Dirk Hovy and Anders Søgaard, the local arrangements co-chairs;
- Rich Gerber and Paolo Gai at SoftConf.

Finally, we'd like to thank SIGDAT for the opportunity to serve as Program Co-Chairs of EMNLP 2017. It is an honor and a rewarding learning experience. We hope you will be as inspired by the technical program as we are.

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Invited Speaker: Dan Jurafsky, Stanford University **"Does This Vehicle Belong to You"? Processing the Language of Policing for Improving Police-Community Relations"**

Abstract: Police body-cameras have the potential to play an important role in understanding and improving police-community relations. In this talk I describe a series of studies conducted by our large interdisciplinary team at Stanford that use speech and natural language processing on body-camera recordings to model the interactions between police officers and community members in traffic stops. We use text and speech features to automatically measure linguistic aspects of the interaction, from discourse factors like conversational structure to social factors like respect. I describe the differences we find in the language directed toward black versus white community members, and offer suggestions for how these findings can be used to help improve the fraught relations between police officers and the communities they serve.

Bio: Dan Jurafsky is Professor and Chair of Linguistics and Professor of Computer Science, at Stanford University. His research has focused on the extraction of meaning, intention, and affect from text and speech, on the processing of Chinese, and on applying natural language processing to the cognitive and social sciences. Dan's deep interest in NLP education led him to co-write with Jim Martin the widely-used textbook "Speech and Language Processing" (whose 3rd edition is in (slow) progress) and co-teach with Chris Manning the first massive open online class on natural language processing. Dan was the recipient of the 2002 MacArthur Fellowship and is a 2015 James Beard Award Nominee for his book, "The Language of Food: A Linguist Reads the Menu".

Invited Speaker: Sharon Goldwater, University of Edinburgh **Towards more universal language technology: unsupervised learning from speech**

Abstract: Speech and language processing has advanced enormously in the last decade, with successful applications in machine translation, voice-activated search, and even language-enabled personal assistants. Yet these systems typically still rely on learning from very large quantities of human-annotated data. These resource-intensive methods mean that effective technology is available for only a tiny fraction of the world's 7000 or so languages, mainly those spoken in large rich countries.

This talk describes our recent work on developing unsupervised speech technology, where transcripts and pronunciation dictionaries are not used. The work is inspired by considering both how young infants may begin to acquire the sounds and words of their language, and how we might develop systems to help linguists analyze and document endangered languages. I will first present work on learning from speech audio alone, where the system must learn to segment the speech stream into word tokens and cluster repeated instances of the same word together to learn a lexicon of vocabulary items. The approach combines Bayesian and neural network methods to address learning at the word and sub-word levels.

Bio: Sharon Goldwater is a Reader at the University of Edinburgh's School of Informatics, where she is a member of the Institute for Language, Cognition and Computation. She received her PhD in 2007 from Brown University and spent two years as a postdoctoral researcher at Stanford University before moving to Edinburgh. Her research interests include unsupervised learning for speech and language

processing, computer modelling of language acquisition in children, and computational studies of language use. Dr. Goldwater co-chaired the 2014 Conference of the European Chapter of the Association for Computational Linguistics and is Chair-Elect of EACL. She has served on the editorial boards of the Transactions of the Association for Computational Linguistics, the Computational Linguistics journal, and OPEN MIND: Advances in Cognitive Science (a new open-access journal). In 2016, she received the Roger Needham Award from the British Computer Society, awarded for "distinguished research contribution in computer science by a UK-based researcher who has completed up to 10 years of post-doctoral research."

Invited Speaker: Nando de Freitas, Google Deepmind **Physical simulation, learning and language**

Abstract: Simulated physical environments, with common physical laws, objects and agents with bodies, provide us with consistency to facilitate transfer and continual learning. In such environments, research topics such as learning to experiment, learning to learn and emergent communication can be easily explored. Given the relevance of these topics to language, it is natural to ask ourselves whether research in language would benefit from the development of such environments, and whether language can contribute toward improving such environments and agents within them. This talk will provide an overview of some of these environments, discuss learning to learn and its potential relevance to language, and present some deep reinforcement learning agents that capitalize on formal language instructions to develop disentangled interpretable representations that allow them to generalize to a wide variety of zero-shot semantic tasks. The talk will pose more questions than answers in the hope of stimulating discussion.

Bio: I was born in Zimbabwe, with malaria. I was a refugee from the war in Mocambique and thanks to my parents getting in debt to buy me a passport from a corrupt official, I grew up in Portugal without water and electricity, before the EU got there, and without my parents who were busy making money to pay their debt. At 8, I joined my parents in Venezuela and began school in the hood; see City of God. I moved to South Africa after high-school and sold beer illegally in black-townships for a living until 1991. Apartheid was the worst thing I ever experienced. I did my BSc in electrical engineering and MSc in control at the University of the Witwatersrand, where I strived to be the best student to prove to racists that anyone can do it. I did my PhD on Bayesian methods for neural networks at Trinity College, Cambridge University. I did a postdoc in Artificial Intelligence at UC Berkeley. I became a Full Professor at the University of British Columbia, before joining the University of Oxford in 2013. I quit Oxford in 2017 to join DeepMind full-time, where I lead the Machine Learning team. I aim to solve intelligence so that future generations have a better life. I have been a Senior Fellow of the Canadian Institute for Advanced Research for a long time. Some of my recent awards, mostly thanks to my collaborators, include: Best Paper Award at the International Conference on Machine Learning (2016), Best Paper Award at the International Conference on Learning Representations (2016), Winner of round 5 of the Yelp Dataset Challenge (2015), Distinguished Paper Award at the International Joint Conference on Artificial Intelligence (2013), Charles A. McDowell Award for Excellence in Research (2012), and Mathematics of Information Technology and Complex Systems Young Researcher Award (2010).

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Conference Program

Friday, September 8, 2017

18:30–20:00 Welcome Reception

Saturday, September 9, 2017

07:30–17:30 Registration Day 1

08:00–08:30 *Morning Coffee*

08:30–09:00 Plenary Session. Opening Remarks

08:30–09:00 *Opening Remarks*
General Chair, PC Co-Chairs

09:00–10:00 Plenary Session. Invited Talk by Nando de Freitas

09:00–10:00 *Physical simulation, learning and language*
Nando de Freitas

10:00–10:30 *Coffee Break*

Saturday, September 9, 2017 (continued)

10:30–12:10 Session 1A: Syntax 1

- 10:30–10:55 *Monolingual Phrase Alignment on Parse Forests*
Yuki Arase and Jun'ichi Tsujii
- 10:55–11:20 *Fast(er) Exact Decoding and Global Training for Transition-Based Dependency Parsing via a Minimal Feature Set*
Tianze Shi, Liang Huang and Lillian Lee
- 11:20–11:45 *Parsing with Traces: An $O(n^4)$ Algorithm and a Structural Representation*
Jonathan K. Kummerfeld and Dan Klein
- 11:45–12:10 *Quasi-Second-Order Parsing for 1-Endpoint-Crossing, Pagenumber-2 Graphs*
Junjie Cao, Sheng Huang, Weiwei Sun and Xiaojun Wan

10:30–12:10 Session 1B: Information Extraction 1

- 10:30–10:55 *Position-aware Attention and Supervised Data Improve Slot Filling*
Yuhao Zhang, Victor Zhong, Danqi Chen, Gabor Angeli and Christopher D. Manning
- 10:55–11:20 *Heterogeneous Supervision for Relation Extraction: A Representation Learning Approach*
Liyuan Liu, Xiang Ren, Qi Zhu, Shi Zhi, Huan Gui, Heng Ji and Jiawei Han
- 11:20–11:45 *Integrating Order Information and Event Relation for Script Event Prediction*
Zhongqing Wang, Yue Zhang and Ching-Yun Chang
- 11:45–12:10 *Entity Linking for Queries by Searching Wikipedia Sentences*
Chuanqi Tan, Furu Wei, Pengjie Ren, Weifeng Lv and Ming Zhou

Saturday, September 9, 2017 (continued)

10:30–12:10 Session 1C: Multilingual NLP

10:30–10:55 *Train-O-Matic: Large-Scale Supervised Word Sense Disambiguation in Multiple Languages without Manual Training Data*
Tommaso Pasini and Roberto Navigli

10:55–11:20 *Universal Semantic Parsing*
Siva Reddy, Oscar Täckström, Slav Petrov, Mark Steedman and Mirella Lapata

11:20–11:45 *Mimicking Word Embeddings using Subword RNNs*
Yuval Pinter, Robert Guthrie and Jacob Eisenstein

11:45–12:10 *Past, Present, Future: A Computational Investigation of the Typology of Tense in 1000 Languages*
Ehsaneddin Asgari and Hinrich Schütze

10:30–12:10 Demo

12:10–13:40 Lunch

13:40–15:20 Session 2A: Machine Translation 1

13:40–14:05 *Neural Machine Translation with Source-Side Latent Graph Parsing*
Kazuma Hashimoto and Yoshimasa Tsuruoka

14:05–14:30 *Neural Machine Translation with Word Predictions*
Rongxiang Weng, Shujian Huang, Zaixiang Zheng, XIN-YU DAI and Jiajun CHEN

14:30–14:55 *Towards Decoding as Continuous Optimisation in Neural Machine Translation*
Cong Duy Vu Hoang, Gholamreza Haffari and Trevor Cohn

14:55–15:20 *Google's Multilingual Neural Machine Translation System: Enabling Zero-Shot Translation*
Melvin Johnson, Mike Schuster, Quoc V. Le, Maxim Krikun, Yonghui Wu, Zhifeng Chen, Nikhil Thorat, Fernanda Viégas, Martin Wattenberg, Greg Corrado, Macduff Hughes and Jeffrey Dean

Saturday, September 9, 2017 (continued)

13:40–15:20 Session 2B: Language Grounding

13:40–14:05 *Where is Misty? Interpreting Spatial Descriptors by Modeling Regions in Space*

Nikita Kitaev and Dan Klein

14:05–14:30 *Continuous Representation of Location for Geolocation and Lexical Dialectology using Mixture Density Networks*

Afshin Rahimi, Timothy Baldwin and Trevor Cohn

14:30–14:55 *Colors in Context: A Pragmatic Neural Model for Grounded Language Understanding*

Will Monroe, Robert X. D. Hawkins, Noah D. Goodman and Christopher Potts

14:55–15:20 *Obj2Text: Generating Visually Descriptive Language from Object Layouts*

Xuwang Yin and Vicente Ordonez

13:40–15:20 Session 2C: Discourse and Summarization

13:40–14:05 *End-to-end Neural Coreference Resolution*

Kenton Lee, Luheng He, Mike Lewis and Luke Zettlemoyer

14:05–14:30 *Neural Net Models of Open-domain Discourse Coherence*

Jiwei Li and Dan Jurafsky

14:30–14:55 *Affinity-Preserving Random Walk for Multi-Document Summarization*

Kexiang Wang, Tianyu Liu, Zhifang Sui and Baobao Chang

14:55–15:20 *A Mention-Ranking Model for Abstract Anaphora Resolution*

Ana Marasovic, Leo Born, Juri Opitz and Anette Frank

Saturday, September 9, 2017 (continued)

13:40–15:20 Session 2D: Poster Session. Embeddings

Hierarchical Embeddings for Hypernymy Detection and Directionality

Kim Anh Nguyen, Maximilian Köper, Sabine Schulte im Walde and Ngoc Thang Vu

Ngram2vec: Learning Improved Word Representations from Ngram Co-occurrence Statistics

Zhe Zhao, Tao Liu, Shen Li, Bofang Li and Xiaoyong Du

Dict2vec : Learning Word Embeddings using Lexical Dictionaries

Julien Tissier, Christopher Gravier and Amaury Habrard

Learning Chinese Word Representations From Glyphs Of Characters

Tzu-ray Su and Hung-yi Lee

Learning Paraphrastic Sentence Embeddings from Back-Translated Bitext

John Wieting, Jonathan Mallinson and Kevin Gimpel

Joint Embeddings of Chinese Words, Characters, and Fine-grained Subcharacter Components

Jinxing Yu, Xun Jian, Hao Xin and Yangqiu Song

Exploiting Morphological Regularities in Distributional Word Representations

Arihant Gupta, Syed Sarfaraz Akhtar, Avijit Vajpayee, Arjit Srivastava, Madan Gopal Jhanwar and Manish Shrivastava

Exploiting Word Internal Structures for Generic Chinese Sentence Representation

Shaonan Wang, Jiajun Zhang and Chengqing Zong

High-risk learning: acquiring new word vectors from tiny data

Aurélie Herbelot and Marco Baroni

Word Embeddings based on Fixed-Size Ordinally Forgetting Encoding

Joseph Sanu, Mingbin Xu, Hui Jiang and Quan Liu

VecShare: A Framework for Sharing Word Representation Vectors

Jared Fernandez, Zhaocheng Yu and Doug Downey

Saturday, September 9, 2017 (continued)

Word Re-Embedding via Manifold Dimensionality Retention

Souleiman Hasan and Edward Curry

MUSE: Modularizing Unsupervised Sense Embeddings

Guang-He Lee and Yun-Nung Chen

13:40–15:20 Session 2E: Poster Session. Machine Learning 1

Reporting Score Distributions Makes a Difference: Performance Study of LSTM-networks for Sequence Tagging

Nils Reimers and Iryna Gurevych

Learning What's Easy: Fully Differentiable Neural Easy-First Taggers

André F. T. Martins and Julia Kreutzer

Incremental Skip-gram Model with Negative Sampling

Nobuhiro Kaji and Hayato Kobayashi

Learning to select data for transfer learning with Bayesian Optimization

Sebastian Ruder and Barbara Plank

Unsupervised Pretraining for Sequence to Sequence Learning

Prajit Ramachandran, Peter Liu and Quoc Le

Efficient Attention using a Fixed-Size Memory Representation

Denny Britz, Melody Guan and Minh-Thang Luong

Rotated Word Vector Representations and their Interpretability

Sungjoon Park, JinYeong Bak and Alice Oh

A causal framework for explaining the predictions of black-box sequence-to-sequence models

David Alvarez-Melis and Tommi Jaakkola

Piecewise Latent Variables for Neural Variational Text Processing

Iulian Vlad Serban, Alexander G. Ororbia, Joelle Pineau and Aaron Courville

Saturday, September 9, 2017 (continued)

Learning the Structure of Variable-Order CRFs: a finite-state perspective

Thomas Lavergne and François Yvon

Sparse Communication for Distributed Gradient Descent

Alham Fikri Aji and Kenneth Heafield

A Joint Many-Task Model: Growing a Neural Network for Multiple NLP Tasks

Kazuma Hashimoto, caiming xiong, Yoshimasa Tsuruoka and Richard Socher

Why ADAGRAD Fails for Online Topic Modeling

You Lu, Jeffrey Lund and Jordan Boyd-Graber

13:40–15:20 Session 2F: Poster Session. Sentiment Analysis 1

Recurrent Attention Network on Memory for Aspect Sentiment Analysis

Peng Chen, Zhongqian Sun, Lidong Bing and Wei Yang

A Cognition Based Attention Model for Sentiment Analysis

Yunfei Long, Lu Qin, Rong Xiang, Minglei Li and Chu-Ren Huang

Author-aware Aspect Topic Sentiment Model to Retrieve Supporting Opinions from Reviews

Lahari Poddar, Wynne Hsu and Mong Li Lee

Magnets for Sarcasm: Making Sarcasm Detection Timely, Contextual and Very Personal

Aniruddha Ghosh and Tony Veale

Identifying Humor in Reviews using Background Text Sources

Alex Morales and Chengxiang Zhai

Sentiment Lexicon Construction with Representation Learning Based on Hierarchical Sentiment Supervision

Leyi Wang and Rui Xia

Towards a Universal Sentiment Classifier in Multiple languages

Kui Xu and Xiaojun Wan

Saturday, September 9, 2017 (continued)

Capturing User and Product Information for Document Level Sentiment Analysis with Deep Memory Network

Zi-Yi Dou

Identifying and Tracking Sentiments and Topics from Social Media Texts during Natural Disasters

Min Yang, Jincheng Mei, Heng Ji, Zhao Wei, Zhou Zhao and Xiaojun Chen

Refining Word Embeddings for Sentiment Analysis

Liang-Chih Yu, Jin Wang, K. Robert Lai and Xuejie Zhang

A Multilayer Perceptron based Ensemble Technique for Fine-grained Financial Sentiment Analysis

Md Shad Akhtar, Abhishek Kumar, Deepanway Ghosal, Asif Ekbal and Pushpak Bhattacharyya

Sentiment Intensity Ranking among Adjectives Using Sentiment Bearing Word Embeddings

Raksha Sharma, Arpan Somani, Lakshya Kumar and Pushpak Bhattacharyya

Sentiment Lexicon Expansion Based on Neural PU Learning, Double Dictionary Lookup, and Polarity Association

Yasheng Wang, Yang Zhang and Bing Liu

15:50 *Coffee Break*
15:20

15:50–17:30 Session 3A: Machine Learning 2

15:50–16:15 *DeepPath: A Reinforcement Learning Method for Knowledge Graph Reasoning*
Wenhan Xiong, Thien Hoang and William Yang Wang

16:15–16:40 *Task-Oriented Query Reformulation with Reinforcement Learning*
Rodrigo Nogueira and Kyunghyun Cho

16:40–17:05 *Sentence Simplification with Deep Reinforcement Learning*
Xingxing Zhang and Mirella Lapata

17:05–17:30 *Learning how to Active Learn: A Deep Reinforcement Learning Approach*
Meng Fang, Yuan Li and Trevor Cohn

Saturday, September 9, 2017 (continued)

15:50–17:30 Session 3B: Generation

- 15:50–16:15 *Split and Rephrase*
Shashi Narayan, Claire Gardent, Shay B. Cohen and Anastasia Shimorina
- 16:15–16:40 *Neural Response Generation via GAN with an Approximate Embedding Layer*
Zhen Xu, Bingquan Liu, Baoxun Wang, Chengjie SUN, Xiaolong Wang, Zhuoran Wang and Chao Qi
- 16:40–17:05 *A Hybrid Convolutional Variational Autoencoder for Text Generation*
Stanislau Semeniuta, Aliaksei Severyn and Erhardt Barth
- 17:05–17:30 *Filling the Blanks (hint: plural noun) for Mad Libs Humor*
Nabil Hossain, John Krumm, Lucy Vanderwende, Eric Horvitz and Henry Kautz

15:50–17:30 Session 3C: Semantics 1

- 15:50–16:15 *Measuring Thematic Fit with Distributional Feature Overlap*
Enrico Santus, Emmanuele Chersoni, Alessandro Lenci and Philippe Blache
- 16:15–16:40 *SCDV : Sparse Composite Document Vectors using soft clustering over distributional representations*
Dheeraj Mekala, Vivek Gupta, Bhargavi Paranjape and Harish Karnick
- 16:40–17:05 *Supervised Learning of Universal Sentence Representations from Natural Language Inference Data*
Alexis Conneau, Douwe Kiela, Holger Schwenk, Loïc Barrault and Antoine Bordes
- 17:05–17:30 *Determining Semantic Textual Similarity using Natural Deduction Proofs*
Hitomi Yanaka, Koji Mineshima, Pascual Martínez-Gómez and Daisuke Bekki

Saturday, September 9, 2017 (continued)

15:50–17:30 Session 3D: Poster Session. Syntax 2

Multi-Grained Chinese Word Segmentation

Chen Gong, Zhenghua Li, Min Zhang and Xinzhou Jiang

Don't Throw Those Morphological Analyzers Away Just Yet: Neural Morphological Disambiguation for Arabic

Nasser Zalmout and Nizar Habash

Paradigm Completion for Derivational Morphology

Ryan Cotterell, Ekaterina Vylomova, Huda Khayrallah, Christo Kirov and David Yarowsky

A Sub-Character Architecture for Korean Language Processing

Karl Stratos

Do LSTMs really work so well for PoS tagging? – A replication study

Tobias Horstmann and Torsten Zesch

The Labeled Segmentation of Printed Books

Lara McConnaughey, Jennifer Dai and David Bamman

Cross-lingual Character-Level Neural Morphological Tagging

Ryan Cotterell and Georg Heigold

Word-Context Character Embeddings for Chinese Word Segmentation

Hao Zhou, Zhenting Yu, Yue Zhang, Shujian Huang, XIN-YU DAI and Jiajun Chen

Segmentation-Free Word Embedding for Unsegmented Languages

Takamasa Oshikiri

Saturday, September 9, 2017 (continued)

15:50–17:30 Session 3E: Poster Session. Question Answering and Machine Comprehension

From Textbooks to Knowledge: A Case Study in Harvesting Axiomatic Knowledge from Textbooks to Solve Geometry Problems

Mrinmaya Sachan, Kumar Dubey and Eric Xing

RACE: Large-scale ReAding Comprehension Dataset From Examinations

Guokun Lai, Qizhe Xie, Hanxiao Liu, Yiming Yang and Eduard Hovy

Beyond Sentential Semantic Parsing: Tackling the Math SAT with a Cascade of Tree Transducers

Mark Hopkins, Cristian Petrescu-Prahova, Roie Levin, Ronan Le Bras, Alvaro Her-rasti and Vidur Joshi

Learning Fine-Grained Expressions to Solve Math Word Problems

Danqing Huang, Shuming Shi, Chin-Yew Lin and Jian Yin

Structural Embedding of Syntactic Trees for Machine Comprehension

Rui Liu, Junjie Hu, Wei Wei, Zi Yang and Eric Nyberg

World Knowledge for Reading Comprehension: Rare Entity Prediction with Hierarchical LSTMs Using External Descriptions

Teng Long, Emmanuel Bengio, Ryan Lowe, Jackie Chi Kit Cheung and Doina Precup

Two-Stage Synthesis Networks for Transfer Learning in Machine Comprehension

David Golub, Po-Sen Huang, Xiaodong He and Li Deng

Deep Neural Solver for Math Word Problems

Yan Wang, Xiaojiang Liu and Shuming Shi

Latent Space Embedding for Retrieval in Question-Answer Archives

Deepak P, Dinesh Garg and Shirish Shevade

Question Generation for Question Answering

Nan Duan, Duyu Tang, Peng Chen and Ming Zhou

Learning to Paraphrase for Question Answering

Li Dong, Jonathan Mallinson, Siva Reddy and Mirella Lapata

Saturday, September 9, 2017 (continued)

Temporal Information Extraction for Question Answering Using Syntactic Dependencies in an LSTM-based Architecture

Yuanliang Meng, Anna Rumshisky and Alexey Romanov

Ranking Kernels for Structures and Embeddings: A Hybrid Preference and Classification Model

Kateryna Tymoshenko, Daniele Bonadiman and Alessandro Moschitti

Recovering Question Answering Errors via Query Revision

Semih Yavuz, Izzeddin Gur, Yu Su and Xifeng Yan

15:50–17:30 Session 3F: Poster Session. Multimodal NLP 1

An empirical study on the effectiveness of images in Multimodal Neural Machine Translation

Jean-Benoit Delbrouck and Stéphane Dupont

Sound-Word2Vec: Learning Word Representations Grounded in Sounds

Ashwin Vijayakumar, Ramakrishna Vedantam and Devi Parikh

The Promise of Premise: Harnessing Question Premises in Visual Question Answering

Aroma Mahendru, Viraj Prabhu, Akrit Mohapatra, Dhruv Batra and Stefan Lee

Guided Open Vocabulary Image Captioning with Constrained Beam Search

Peter Anderson, Basura Fernando, Mark Johnson and Stephen Gould

Zero-Shot Activity Recognition with Verb Attribute Induction

Rowan Zellers and Yejin Choi

Deriving continuous grounded meaning representations from referentially structured multimodal contexts

Sina Zarriß and David Schlangen

Hierarchically-Attentive RNN for Album Summarization and Storytelling

Licheng Yu, Mohit Bansal and Tamara Berg

Video Highlight Prediction Using Audience Chat Reactions

Cheng-Yang Fu, Joon Lee, Mohit Bansal and Alexander Berg

Saturday, September 9, 2017 (continued)

Reinforced Video Captioning with Entailment Rewards

Ramakanth Pasunuru and Mohit Bansal

Evaluating Hierarchies of Verb Argument Structure with Hierarchical Clustering

Jesse Mu, Joshua K. Hartshorne and Timothy O'Donnell

Incorporating Global Visual Features into Attention-based Neural Machine Translation.

Iacer Calixto and Qun Liu

Mapping Instructions and Visual Observations to Actions with Reinforcement Learning

Dipendra Misra, John Langford and Yoav Artzi

An analysis of eye-movements during reading for the detection of mild cognitive impairment

Kathleen C. Fraser, Kristina Lundholm Fors, Dimitrios Kokkinakis and Arto Nordlund

Evaluating Low-Level Speech Features Against Human Perceptual Data

Caitlin Richter, Naomi H Feldman, Harini Salgado and Aren Jansen

Sunday, September 10, 2017

07:30–17:30 **Registration Day 2**

08:00–09:00 *Morning Coffee*

Sunday, September 10, 2017 (continued)

09:00–10:00 Plenary Session. Invited Talk by Sharon Goldwater

09:00–10:00 *Towards more universal language technology: unsupervised learning from speech*
Sharon Goldwater

10:00–10:30 Coffee Break

10:30–12:10 Session 4A: Reading and Retrieving

10:30–10:55 *A Structured Learning Approach to Temporal Relation Extraction*
Qiang Ning, Zhili Feng and Dan Roth

10:55–11:20 *Importance sampling for unbiased on-demand evaluation of knowledge base population*
Arun Chaganty, Ashwin Paranjape, Percy Liang and Christopher D. Manning

11:20–11:45 *PACRR: A Position-Aware Neural IR Model for Relevance Matching*
Kai Hui, Andrew Yates, Klaus Berberich and Gerard de Melo

11:45–12:10 *Globally Normalized Reader*
Jonathan Raiman and John Miller

10:30–12:10 Session 4B: Multimodal NLP 2

10:30–10:55 *Speech segmentation with a neural encoder model of working memory*
Micha Elsner and Cory Shain

10:55–11:20 *Speaking, Seeing, Understanding: Correlating semantic models with conceptual representation in the brain*
Luana Bulat, Stephen Clark and Ekaterina Shutova

11:20–11:45 *Multi-modal Summarization for Asynchronous Collection of Text, Image, Audio and Video*
Haoran Li, Junnan Zhu, Cong Ma, Jiajun Zhang and Chengqing Zong

11:45–12:10 *Tensor Fusion Network for Multimodal Sentiment Analysis*
Amir Zadeh, Minghai Chen, Soujanya Poria, Erik Cambria and Louis-Philippe Morency

Sunday, September 10, 2017 (continued)

10:30–12:10 Session 4C: Human Centered NLP and Linguistic Theory

10:30–10:55 *ConStance: Modeling Annotation Contexts to Improve Stance Classification*
Kenneth Joseph, Lisa Friedland, William Hobbs, David Lazer and Oren Tsur

10:55–11:20 *Deeper Attention to Abusive User Content Moderation*
John Pavlopoulos, Prodromos Malakasiotis and Ion Androutsopoulos

11:20–11:45 *Outta Control: Laws of Semantic Change and Inherent Biases in Word Representation Models*
Haim Dubossarsky, Daphna Weinshall and Eitan Grossman

11:45–12:10 *Human Centered NLP with User-Factor Adaptation*
Veronica Lynn, Youngseo Son, Vivek Kulkarni, Niranjan Balasubramanian and H. Andrew Schwartz

10:30–12:10 Session 4D: Poster Session. Semantics 2

Neural Sequence Learning Models for Word Sense Disambiguation
Alessandro Raganato, Claudio Delli Bovi and Roberto Navigli

Learning Word Relatedness over Time
Guy D. Rosin, Eytan Adar and Kira Radinsky

Inter-Weighted Alignment Network for Sentence Pair Modeling
Gehui Shen, Yunlun Yang and Zhi-Hong Deng

A Short Survey on Taxonomy Learning from Text Corpora: Issues, Resources and Recent Advances
Chengyu Wang, Xiaofeng He and Aoying Zhou

Idiom-Aware Compositional Distributed Semantics
Pengfei Liu, Kaiyu Qian, Xipeng Qiu and Xuanjing Huang

Macro Grammars and Holistic Triggering for Efficient Semantic Parsing
Yuchen Zhang, Panupong Pasupat and Percy Liang

Sunday, September 10, 2017 (continued)

A Continuously Growing Dataset of Sentential Paraphrases

Wuwei Lan, Siyu Qiu, Hua He and Wei Xu

Cross-domain Semantic Parsing via Paraphrasing

Yu Su and Xifeng Yan

A Joint Sequential and Relational Model for Frame-Semantic Parsing

Bishan Yang and Tom Mitchell

Getting the Most out of AMR Parsing

Chuan Wang and Nianwen Xue

AMR Parsing using Stack-LSTMs

Miguel Ballesteros and Yaser Al-Onaizan

An End-to-End Deep Framework for Answer Triggering with a Novel Group-Level Objective

Jie Zhao, Yu Su, Ziyu Guan and Huan Sun

Predicting Word Association Strengths

Andrew Cattle and Xiaojuan Ma

10:30–12:10 Session 4E: Poster Session. Discourse

Learning Contextually Informed Representations for Linear-Time Discourse Parsing

Yang Liu and Mirella Lapata

Multi-task Attention-based Neural Networks for Implicit Discourse Relationship Representation and Identification

Man Lan, Jianxiang Wang, Yuanbin Wu, Zheng-Yu Niu and Haifeng Wang

Chinese Zero Pronoun Resolution with Deep Memory Network

Qingyu Yin, Yu Zhang, Weinan Zhang and Ting Liu

How much progress have we made on RST discourse parsing? A replication study of recent results on the RST-DT

Mathieu Morey, Philippe Muller and Nicholas Asher

Sunday, September 10, 2017 (continued)

What is it? Disambiguating the different readings of the pronoun 'it'

Sharid Loáiciga, Liane Guillou and Christian Hardmeier

Revisiting Selectional Preferences for Coreference Resolution

Benjamin Heinzerling, Nafise Sadat Moosavi and Michael Strube

Learning to Rank Semantic Coherence for Topic Segmentation

Liang Wang, Sujian Li, Yajuan Lv and Houfeng WANG

GRASP: Rich Patterns for Argumentation Mining

Eyal Shnarch, Ran Levy, Vikas Raykar and Noam Slonim

Patterns of Argumentation Strategies across Topics

Khalid Al Khatib, Henning Wachsmuth, Matthias Hagen and Benno Stein

Using Argument-based Features to Predict and Analyse Review Helpfulness

Haijing Liu, Yang Gao, Pin Lv, Mengxue Li, Shiqiang Geng, Minglan Li and Hao Wang

Here's My Point: Joint Pointer Architecture for Argument Mining

Peter Potash, Alexey Romanov and Anna Rumshisky

Identifying attack and support argumentative relations using deep learning

Oana Cocarascu and Francesca Toni

Sunday, September 10, 2017 (continued)

10:30–12:10 Session 4F: Poster Session. Machine Translation and Multilingual NLP 1

Neural Lattice-to-Sequence Models for Uncertain Inputs

Matthias Sperber, Graham Neubig, Jan Niehues and Alex Waibel

Memory-augmented Neural Machine Translation

Yang Feng, Shiyue Zhang, Andi Zhang, Dong Wang and Andrew Abel

Dynamic Data Selection for Neural Machine Translation

Marlies van der Wees, Arianna Bisazza and Christof Monz

Neural Machine Translation Leveraging Phrase-based Models in a Hybrid Search

Leonard Dahlmann, Evgeny Matusov, Pavel Petrushkov and Shahram Khadivi

Translating Phrases in Neural Machine Translation

Xing Wang, Zhaopeng Tu, Deyi Xiong and Min Zhang

Towards Bidirectional Hierarchical Representations for Attention-based Neural Machine Translation

Baosong Yang, Derek F. Wong, Tong Xiao, Lidia S. Chao and Jingbo Zhu

Exploring Hyperparameter Sensitivity in Neural Machine Translation Architectures

Denny Britz, Anna Goldie, Minh-Thang Luong and Quoc Le

Learning Translations via Matrix Completion

Derry Tanti Wijaya, Brendan Callahan, John Hewitt, Jie Gao, Xiao Ling, Marianna Apidianaki and Chris Callison-Burch

Reinforcement Learning for Bandit Neural Machine Translation with Simulated Human Feedback

Khanh Nguyen, Hal Daumé III and Jordan Boyd-Graber

Towards Compact and Fast Neural Machine Translation Using a Combined Method

Xiaowei Zhang, Wei Chen, Feng Wang, Shuang Xu and Bo Xu

Instance Weighting for Neural Machine Translation Domain Adaptation

Rui Wang, Masao Utiyama, Lema Liu, Kehai Chen and Eiichiro Sumita

Sunday, September 10, 2017 (continued)

Regularization techniques for fine-tuning in neural machine translation

Antonio Valerio Miceli Barone, Barry Haddow, Ulrich Germann and Rico Sennrich

Source-Side Left-to-Right or Target-Side Left-to-Right? An Empirical Comparison of Two Phrase-Based Decoding Algorithms

Yin-Wen Chang and Michael Collins

Using Target-side Monolingual Data for Neural Machine Translation through Multi-task Learning

Tobias Domhan and Felix Hieber

12:10–13:40 *Lunch*

12:40–13:40 **SIGDAT Business Meeting**

13:40–15:20 **Session 5A: Semantics 3**

13:40–14:05 *Encoding Sentences with Graph Convolutional Networks for Semantic Role Labeling*

Diego Marcheggiani and Ivan Titov

14:05–14:30 *Neural Semantic Parsing with Type Constraints for Semi-Structured Tables*

Jayant Krishnamurthy, Pradeep Dasigi and Matt Gardner

14:30–14:55 *Joint Concept Learning and Semantic Parsing from Natural Language Explanations*

Shashank Srivastava, Igor Labutov and Tom Mitchell

14:55–15:20 *Grasping the Finer Point: A Supervised Similarity Network for Metaphor Detection*

Marek Rei, Luana Bulat, Douwe Kiela and Ekaterina Shutova

Sunday, September 10, 2017 (continued)

13:40–15:20 Session 5B: Computational Social Science 1

13:40–14:05 *Identifying civilians killed by police with distantly supervised entity-event extraction*
Katherine Keith, Abram Handler, Michael Pinkham, Cara Magliozzi, Joshua McDuffie and Brendan O'Connor

14:05–14:30 *Asking too much? The rhetorical role of questions in political discourse*
Justine Zhang, Arthur Spirling and Cristian Danescu-Niculescu-Mizil

14:30–14:55 *Detecting Perspectives in Political Debates*
David Vilares and Yulan He

14:55–15:20 *"i have a feeling trump will win.....": Forecasting Winners and Losers from User Predictions on Twitter*
Sandesh Swamy, Alan Ritter and Marie-Catherine de Marneffe

13:40–15:20 Session 5C: Sentiment Analysis 2

13:40–14:05 *A Question Answering Approach for Emotion Cause Extraction*
Lin Gui, Jiannan Hu, Yulan He, Ruifeng Xu, Lu Qin and Jiachen Du

14:05–14:30 *Story Comprehension for Predicting What Happens Next*
Snigdha Chaturvedi, Haoruo Peng and Dan Roth

14:30–14:55 *Using millions of emoji occurrences to learn any-domain representations for detecting sentiment, emotion and sarcasm*
Bjarke Felbo, Alan Mislove, Anders Søgaard, Iyad Rahwan and Sune Lehmann

14:55–15:20 *Opinion Recommendation Using A Neural Model*
Zhongqing Wang and Yue Zhang

Sunday, September 10, 2017 (continued)

13:40–15:20 Session 5D: Poster Session. Syntax 3

CRF Autoencoder for Unsupervised Dependency Parsing

Jiong Cai, Yong Jiang and Kewei Tu

Efficient Discontinuous Phrase-Structure Parsing via the Generalized Maximum Spanning Arborescence

Caio Corro, Joseph Le Roux and Mathieu Lacroix

Incremental Graph-based Neural Dependency Parsing

Xiaoqing Zheng

Neural Discontinuous Constituency Parsing

Miloš Stanojević and Raquel Garrido Alhama

Stack-based Multi-layer Attention for Transition-based Dependency Parsing

Zhirui Zhang, Shujie Liu, Mu Li, Ming Zhou and Enhong Chen

Dependency Grammar Induction with Neural Lexicalization and Big Training Data

Wenjuan Han, Yong Jiang and Kewei Tu

Combining Generative and Discriminative Approaches to Unsupervised Dependency Parsing via Dual Decomposition

Yong Jiang, Wenjuan Han and Kewei Tu

Effective Inference for Generative Neural Parsing

Mitchell Stern, Daniel Fried and Dan Klein

Semi-supervised Structured Prediction with Neural CRF Autoencoder

Xiao Zhang, Yong Jiang, Hao Peng, Kewei Tu and Dan Goldwasser

TAG Parsing with Neural Networks and Vector Representations of Supertags

Jungo Kasai, Bob Frank, Tom McCoy, Owen Rambow and Alexis Nasr

Sunday, September 10, 2017 (continued)

13:40–15:20 Session 5E: Poster Session. Relations

Global Normalization of Convolutional Neural Networks for Joint Entity and Relation Classification

Heike Adel and Hinrich Schütze

End-to-End Neural Relation Extraction with Global Optimization

Meishan Zhang, Yue Zhang and Guohong Fu

KGEval: Accuracy Estimation of Automatically Constructed Knowledge Graphs

Prakhar Ojha and Partha Talukdar

Sparsity and Noise: Where Knowledge Graph Embeddings Fall Short

Jay Pujara, Eriq Augustine and Lise Getoor

Dual Tensor Model for Detecting Asymmetric Lexico-Semantic Relations

Goran Glavaš and Simone Paolo Ponzetto

Incorporating Relation Paths in Neural Relation Extraction

Wenyuan Zeng, Yankai Lin, Zhiyuan Liu and Maosong Sun

Adversarial Training for Relation Extraction

Yi Wu, David Bamman and Stuart Russell

Context-Aware Representations for Knowledge Base Relation Extraction

Daniil Sorokin and Iryna Gurevych

A Soft-label Method for Noise-tolerant Distantly Supervised Relation Extraction

Tianyu Liu, Kexiang Wang, Baobao Chang and Zhifang Sui

A Sequential Model for Classifying Temporal Relations between Intra-Sentence Events

Prafulla Kumar Choubey and Ruihong Huang

Deep Residual Learning for Weakly-Supervised Relation Extraction

YiYao Huang and William Yang Wang

Sunday, September 10, 2017 (continued)

Noise-Clustered Distant Supervision for Relation Extraction: A Nonparametric Bayesian Perspective

Qing Zhang and Houfeng Wang

Exploring Vector Spaces for Semantic Relations

Kata Gábor, Haifa Zargayouna, Isabelle Tellier, Davide Buscaldi and Thierry Charnois

Temporal dynamics of semantic relations in word embeddings: an application to predicting armed conflict participants

Andrey Kutuzov, Erik Velldal and Lilja Øvrelid

13:40–15:20 Session 5F: Poster Session. Language Models, Text Mining, and Crowd Sourcing

Dynamic Entity Representations in Neural Language Models

Yangfeng Ji, Chenhao Tan, Sebastian Martschat, Yejin Choi and Noah A. Smith

Towards Quantum Language Models

Ivano Basile and Fabio Tamburini

Reference-Aware Language Models

Zichao Yang, Phil Blunsom, Chris Dyer and Wang Ling

A Simple Language Model based on PMI Matrix Approximations

Oren Melamud, Ido Dagan and Jacob Goldberger

Syllable-aware Neural Language Models: A Failure to Beat Character-aware Ones

Zhenisbek Assylbekov, Rustem Takhanov, Bagdat Myrzakhmetov and Jonathan N. Washington

Inducing Semantic Micro-Clusters from Deep Multi-View Representations of Novels

Lea Frermann and György Szarvas

Initializing Convolutional Filters with Semantic Features for Text Classification

Shen Li, Zhe Zhao, Tao Liu, Renfen Hu and Xiaoyong Du

Shortest-Path Graph Kernels for Document Similarity

Giannis Nikolentzos, Polykarpos Meladianos, Francois Rousseau, Yannis Stavrakas and Michalis Vazirgiannis

Sunday, September 10, 2017 (continued)

Adapting Topic Models using Lexical Associations with Tree Priors

Weiwei Yang, Jordan Boyd-Graber and Philip Resnik

Finding Patterns in Noisy Crowds: Regression-based Annotation Aggregation for Crowdsourced Data

Natalie Parde and Rodney Nielsen

CROWD-IN-THE-LOOP: A Hybrid Approach for Annotating Semantic Roles

Chenguang Wang, Alan Akbik, Iuliana Chiticariu, Yunyao Li, Fei Xia and Anbang Xu

15:20–15:50 *Coffee Break*

15:50–17:30 **Session 6A: Machine Translation 2**

15:50–16:15 *Earth Mover's Distance Minimization for Unsupervised Bilingual Lexicon Induction*

Meng Zhang, Yang Liu, Huanbo Luan and Maosong Sun

16:15–16:40 *Unfolding and Shrinking Neural Machine Translation Ensembles*

Felix Stahlberg and Bill Byrne

16:40–17:05 *Graph Convolutional Encoders for Syntax-aware Neural Machine Translation*

Joost Bastings, Ivan Titov, Wilker Aziz, Diego Marcheggiani and Khalil Simaan

17:05–17:30 *Trainable Greedy Decoding for Neural Machine Translation*

Jiatao Gu, Kyunghyun Cho and Victor O.K. Li

Sunday, September 10, 2017 (continued)

15:50–17:30 Session 6B: Text Mining and NLP applications

15:50–16:15 *Satirical News Detection and Analysis using Attention Mechanism and Linguistic Features*
Fan Yang, Arjun Mukherjee and Eduard Dragut

16:15–16:40 *Fine Grained Citation Span for References in Wikipedia*
Besnik Fetahu, Katja Markert and Avishek Anand

16:40–17:05 *Joint Modeling of Topics, Citations, and Topical Authority in Academic Corpora*
Jooyeon Kim, Dongwoo Kim and Alice Oh

17:05–17:30 *Identifying Semantic Edit Intentions from Revisions in Wikipedia*
Diyi Yang, Aaron Halfaker, Robert Kraut and Eduard Hovy

15:50–17:30 Session 6C: Machine Comprehension

15:50–16:15 *Accurate Supervised and Semi-Supervised Machine Reading for Long Documents*
Daniel Hewlett, Llion Jones, Alexandre Lacoste and izzeddin gur

16:15–16:40 *Adversarial Examples for Evaluating Reading Comprehension Systems*
Robin Jia and Percy Liang

16:40–17:05 *Reasoning with Heterogeneous Knowledge for Commonsense Machine Comprehension*
Hongyu Lin, Le Sun and Xianpei Han

17:05–17:30 *Document-Level Multi-Aspect Sentiment Classification as Machine Comprehension*
Yichun Yin, Yangqiu Song and Ming Zhang

Sunday, September 10, 2017 (continued)

15:50–17:30 **Session 6D: Poster Session. Summarization, Generation, Dialog, and Discourse 1**

What is the Essence of a Claim? Cross-Domain Claim Identification

Johannes Daxenberger, Steffen Eger, Ivan Habernal, Christian Stab and Iryna Gurevych

Identifying Where to Focus in Reading Comprehension for Neural Question Generation

Xinya Du and Claire Cardie

Break it Down for Me: A Study in Automated Lyric Annotation

Lucas Sterckx, Jason Naradowsky, Bill Byrne, Thomas Demeester and Chris Davelder

Cascaded Attention based Unsupervised Information Distillation for Compressive Summarization

Piji Li, Wai Lam, Lidong Bing, Weiwei Guo and Hang Li

Deep Recurrent Generative Decoder for Abstractive Text Summarization

Piji Li, Wai Lam, Lidong Bing and Zihao Wang

Extractive Summarization Using Multi-Task Learning with Document Classification

Masaru Isonuma, Toru Fujino, Junichiro Mori, Yutaka Matsuo and Ichiro Sakata

Towards Automatic Construction of News Overview Articles by News Synthesis

Jianmin Zhang and Xiaojun Wan

Joint Syntacto-Discourse Parsing and the Syntacto-Discourse Treebank

Kai Zhao and Liang Huang

Event Coreference Resolution by Iteratively Unfolding Inter-dependencies among Events

Prafulla Kumar Choubey and Ruihong Huang

When to Finish? Optimal Beam Search for Neural Text Generation (modulo beam size)

Liang Huang, Kai Zhao and Mingbo Ma

Steering Output Style and Topic in Neural Response Generation

Di Wang, Nebojsa Jojic, Chris Brockett and Eric Nyberg

Sunday, September 10, 2017 (continued)

15:50–17:30 **Session 6E: Poster Session. Summarization, Generation, Dialog, and Discourse 2**

Preserving Distributional Information in Dialogue Act Classification

Quan Hung Tran, Ingrid Zukerman and Gholamreza Haffari

Adversarial Learning for Neural Dialogue Generation

Jiwei Li, Will Monroe, Tianlin Shi, Sébastien Jean, Alan Ritter and Dan Jurafsky

Using Context Information for Dialog Act Classification in DNN Framework

Yang Liu, Kun Han, Zhao Tan and Yun Lei

Modeling Dialogue Acts with Content Word Filtering and Speaker Preferences

Yohan Jo, Michael Yoder, Hyeju Jang and Carolyn Rose

Towards Implicit Content-Introducing for Generative Short-Text Conversation Systems

Lili Yao, Yaoyuan Zhang, Yansong Feng, Dongyan Zhao and Rui Yan

Affordable On-line Dialogue Policy Learning

Cheng Chang, Runzhe Yang, Lu Chen, Xiang Zhou and Kai Yu

Generating High-Quality and Informative Conversation Responses with Sequence-to-Sequence Models

Yuanlong Shao, Stephan Gouws, Denny Britz, Anna Goldie, Brian Strope and Ray Kurzweil

Bootstrapping incremental dialogue systems from minimal data: the generalisation power of dialogue grammars

Arash Eshghi, Igor Shalyminov and Oliver Lemon

Composite Task-Completion Dialogue Policy Learning via Hierarchical Deep Reinforcement Learning

Baolin Peng, Xiujun Li, Lihong Li, Jianfeng Gao, Asli Celikyilmaz, Sungjin Lee and Kam-Fai Wong

Why We Need New Evaluation Metrics for NLG

Jekaterina Novikova, Ondřej Dušek, Amanda Cercas Curry and Verena Rieser

Challenges in Data-to-Document Generation

Sam Wiseman, Stuart Shieber and Alexander Rush

Sunday, September 10, 2017 (continued)

15:50–17:30 Session 6F: Poster Session. Computational Social Science 2

All that is English may be Hindi: Enhancing language identification through automatic ranking of the likeliness of word borrowing in social media

Jasabanta Patro, Bidisha Samanta, Saurabh Singh, Abhipsa Basu, Prithwish Mukherjee, Monojit Choudhury and Animesh Mukherjee

Multi-View Unsupervised User Feature Embedding for Social Media-based Substance Use Prediction

Tao Ding, Warren K. Bickel and Shimei Pan

Demographic-aware word associations

Aparna Garimella, Carmen Banea and Rada Mihalcea

A Factored Neural Network Model for Characterizing Online Discussions in Vector Space

Hao Cheng, Hao Fang and Mari Ostendorf

Dimensions of Interpersonal Relationships: Corpus and Experiments

Farzana Rashid and Eduardo Blanco

Argument Mining on Twitter: Arguments, Facts and Sources

Mihai Dusmanu, Elena Cabrio and Serena Villata

Distinguishing Japanese Non-standard Usages from Standard Ones

Tatsuya Aoki, Ryohei Sasano, Hiroya Takamura and Manabu Okumura

Connotation Frames of Power and Agency in Modern Films

Maarten Sap, Marcella Cindy Prasettio, Ari Holtzman, Hannah Rashkin and Yejin Choi

Controlling Human Perception of Basic User Traits

Daniel Protiuc-Pietro, Sharath Chandra Guntuku and Lyle Ungar

Topic Signatures in Political Campaign Speeches

Clément Gautrais, Peggy Cellier, René Quiniou and Alexandre Termier

Assessing Objective Recommendation Quality through Political Forecasting

H. Andrew Schwartz, Masoud Rouhizadeh, Michael Bishop, Philip Tetlock, Barbara Mellers and Lyle Ungar

Sunday, September 10, 2017 (continued)

Never Abandon Minorities: Exhaustive Extraction of Bursty Phrases on Microblogs Using Set Cover Problem

Masumi Shirakawa, Takahiro Hara and Takuya Maekawa

18:00–22:00 Social Event

Monday, September 11, 2017

07:30–17:30 Registration Day 3

08:00–09:00 Morning Coffee

09:00–10:00 Plenary Session. Invited Talk by Dan Jurafsky

09:00–10:00 *"Does This Vehicle Belong to You"? Processing the Language of Policing for Improving Police-Community Relations*
Dan Jurafsky

10:00–10:30 Coffee Break

10:30–12:10 Session 7A: Machine Learning 3

10:30–10:55 *Maximum Margin Reward Networks for Learning from Explicit and Implicit Supervision*
Haoruo Peng, Ming-Wei Chang and Wen-tau Yih

10:55–11:20 *The Impact of Modeling Overall Argumentation with Tree Kernels*
Henning Wachsmuth, Giovanni Da San Martino, Dora Kiesel and Benno Stein

11:20–11:45 *Learning Generic Sentence Representations Using Convolutional Neural Networks*
Zhe Gan, Yunchen Pu, Ricardo Henao, Chunyuan Li, Xiaodong He and Lawrence Carin

11:45–12:10 *Repeat before Forgetting: Spaced Repetition for Efficient and Effective Training of Neural Networks*
Hadi Amiri, Timothy Miller and Guergana Savova

Monday, September 11, 2017 (continued)

10:30–12:10 Session 7B: Syntax 4

- 10:30–10:55 *Part-of-Speech Tagging for Twitter with Adversarial Neural Networks*
Tao Gui, Qi Zhang, Haoran Huang, Minlong Peng and Xuanjing Huang
- 10:55–11:20 *Investigating Different Syntactic Context Types and Context Representations for Learning Word Embeddings*
Bofang Li, Tao Liu, Zhe Zhao, Buzhou Tang, Aleksandr Drozd, Anna Rogers and Xiaoyong Du
- 11:20–11:45 *Does syntax help discourse segmentation? Not so much*
Chloé Braud, Ophélie Lacroix and Anders Søgaard
- 11:45–12:10 *Nonparametric Bayesian Semi-supervised Word Segmentation*
Ryo Fujii, Ryo Domoto and Daichi Mochihashi

10:30–12:10 Session 7C: Dialogue

- 10:30–10:55 *Deal or No Deal? End-to-End Learning of Negotiation Dialogues*
Mike Lewis, Denis Yarats, Yann Dauphin, Devi Parikh and Dhruv Batra
- 10:55–11:20 *Agent-Aware Dropout DQN for Safe and Efficient On-line Dialogue Policy Learning*
Lu Chen, Xiang Zhou, Cheng Chang, Runzhe Yang and Kai Yu
- 11:20–11:45 *Towards Debate Automation: a Recurrent Model for Predicting Debate Winners*
Peter Potash and Anna Rumshisky
- 11:45–12:10 *Conversation Modeling on Reddit Using a Graph-Structured LSTM*
Victoria Zayats and Mari Ostendorf

Monday, September 11, 2017 (continued)

10:30–12:10 Session 7D: Poster Session. Machine Translation and Multilingual NLP 2

Joint Prediction of Word Alignment with Alignment Types

Anahita Mansouri Bigvand, Te Bu and Anoop Sarkar

Further Investigation into Reference Bias in Monolingual Evaluation of Machine Translation

Qingsong Ma, Yvette Graham, Timothy Baldwin and Qun Liu

A Challenge Set Approach to Evaluating Machine Translation

Pierre Isabelle, Colin Cherry and George Foster

Knowledge Distillation for Bilingual Dictionary Induction

Ndapandula Nakashole and Raphael Flauger

Machine Translation, it's a question of style, innit? The case of English tag questions

Rachel Bawden

Deciphering Related Languages

Nima Pourdamghani and Kevin Knight

Identifying Cognate Sets Across Dictionaries of Related Languages

Adam St Arnaud, David Beck and Grzegorz Kondrak

Learning Language Representations for Typology Prediction

Chaitanya Malaviya, Graham Neubig and Patrick Littell

Cheap Translation for Cross-Lingual Named Entity Recognition

Stephen Mayhew, Chen-Tse Tsai and Dan Roth

Cross-Lingual Induction and Transfer of Verb Classes Based on Word Vector Space Specialisation

Ivan Vulić, Nikola Mrkšić and Anna Korhonen

Classification of telicity using cross-linguistic annotation projection

Annemarie Friedrich and Damyana Gateva

Monday, September 11, 2017 (continued)

Semantic Specialisation of Distributional Word Vector Spaces using Monolingual and Cross-Lingual Constraints

Nikola Mrkšić, Ivan Vulić, Diarmuid Ó Séaghdha, Ira Leviant, Roi Reichart, Milica Gašić, Anna Korhonen and Steve Young

Counterfactual Learning from Bandit Feedback under Deterministic Logging : A Case Study in Statistical Machine Translation

Carolin Lawrence, Artem Sokolov and Stefan Riezler

10:30–12:10 Session 7E: Poster Session. Information Extraction 2

Learning Fine-grained Relations from Chinese User Generated Categories

Chengyu Wang, Yan Fan, Xiaofeng He and Aoying Zhou

Improving Slot Filling Performance with Attentive Neural Networks on Dependency Structures

Lifu Huang, Avirup Sil, Heng Ji and Radu Florian

Identifying Products in Online Cybercrime Marketplaces: A Dataset for Fine-grained Domain Adaptation

Greg Durrett, Jonathan K. Kummerfeld, Taylor Berg-Kirkpatrick, Rebecca Portnoff, Sadia Afroz, Damon McCoy, Kirill Levchenko and Vern Paxson

Labeling Gaps Between Words: Recognizing Overlapping Mentions with Mention Separators

Aldrian Obaja Muis and Wei Lu

Deep Joint Entity Disambiguation with Local Neural Attention

Octavian-Eugen Ganea and Thomas Hofmann

MinIE: Minimizing Facts in Open Information Extraction

Kiril Gashteovski, Rainer Gemulla and Luciano Del Corro

Scientific Information Extraction with Semi-supervised Neural Tagging

Yi Luan, Mari Ostendorf and Hannaneh Hajishirzi

NITE: A Neural Inductive Teaching Framework for Domain Specific NER

Siliang Tang, Ning Zhang, Jinjiang Zhang, Fei Wu and Yueting Zhuang

Speeding up Reinforcement Learning-based Information Extraction Training using Asynchronous Methods

Aditya Sharma, Zarana Parekh and Partha Talukdar

Monday, September 11, 2017 (continued)

Leveraging Linguistic Structures for Named Entity Recognition with Bidirectional Recursive Neural Networks

Peng-Hsuan Li, Ruo-Ping Dong, Yu-Siang Wang, Ju-Chieh Chou and Wei-Yun Ma

Fast and Accurate Entity Recognition with Iterated Dilated Convolutions

Emma Strubell, Patrick Verga, David Belanger and Andrew McCallum

Entity Linking via Joint Encoding of Types, Descriptions, and Context

Nitish Gupta, Sameer Singh and Dan Roth

An Insight Extraction System on BioMedical Literature with Deep Neural Networks

Hua He, Kris Ganjam, Navendu Jain, Jessica Lundin, Ryen White and Jimmy Lin

10:30–12:10 Session 7F: Poster Session. NLP Applications

Word Etymology as Native Language Interference

Vivi Nastase and Carlo Strapparava

A Simpler and More Generalizable Story Detector using Verb and Character Features

Joshua Eisenberg and Mark Finlayson

Multi-modular domain-tailored OCR post-correction

Sarah Schulz and Jonas Kuhn

Learning to Predict Charges for Criminal Cases with Legal Basis

Bingfeng Luo, Yansong Feng, Jianbo Xu, Xiang Zhang and Dongyan Zhao

Quantifying the Effects of Text Duplication on Semantic Models

Alexandra Schofield, Laure Thompson and David Mimno

Identifying Semantically Deviating Outlier Documents

Honglei Zhuang, Chi Wang, Fangbo Tao, Lance Kaplan and Jiawei Han

Detecting and Explaining Causes From Text For a Time Series Event

Dongyeop Kang, Varun Gangal, Ang Lu, Zheng Chen and Eduard Hovy

Monday, September 11, 2017 (continued)

A Novel Cascade Model for Learning Latent Similarity from Heterogeneous Sequential Data of MOOC

Zhuoxuan Jiang, Shanshan Feng, Gao Cong, Chunyan Miao and Xiaoming Li

Identifying the Provision of Choices in Privacy Policy Text

Kanthashree Mysore Sathyendra, Shomir Wilson, Florian Schaub, Sebastian Zimeck and Norman Sadeh

An Empirical Analysis of Edit Importance between Document Versions

Tanya Goyal, Sachin Kelkar, Manas Agarwal and Jeenu Grover

Transition-Based Disfluency Detection using LSTMs

Shaolei Wang, Wanxiang Che, Yue Zhang, Meishan Zhang and Ting Liu

Neural Sequence-Labelling Models for Grammatical Error Correction

Helen Yannakoudakis, Marek Rei, Øistein E. Andersen and Zheng Yuan

Adapting Sequence Models for Sentence Correction

Allen Schmalz, Yoon Kim, Alexander Rush and Stuart Shieber

12:10–13:40 *Lunch*

13:40–15:25 **Session 8A: Machine Translation and Multilingual/Multimodal NLP (Short)**

13:40–13:55 *A Study of Style in Machine Translation: Controlling the Formality of Machine Translation Output*

Xing Niu, Marianna Martindale and Marine Carpuat

13:55–14:10 *Sharp Models on Dull Hardware: Fast and Accurate Neural Machine Translation Decoding on the CPU*

Jacob Devlin

14:10–14:25 *Exploiting Cross-Sentence Context for Neural Machine Translation*

Longyue Wang, Zhaopeng Tu, Andy Way and Qun Liu

14:25–14:40 *Cross-Lingual Transfer Learning for POS Tagging without Cross-Lingual Resources*

Joo-Kyung Kim, Young-Bum Kim, Ruhi Sarikaya and Eric Fosler-Lussier

Monday, September 11, 2017 (continued)

- 14:40–14:55 *Image Pivoting for Learning Multilingual Multimodal Representations*
Spandana Gella, Rico Sennrich, Frank Keller and Mirella Lapata
- 14:55–15:10 *Neural Machine Translation with Source Dependency Representation*
Kehai Chen, Rui Wang, Masao Utiyama, Lemao Liu, Akihiro Tamura, Eiichiro Sumita and Tiejun Zhao
- 15:10–15:25 *Visual Denotations for Recognizing Textual Entailment*
Dan Han, Pascual Martínez-Gómez and Koji Mineshima
- 13:40–15:25 Session 8B: Machine Learning (Short)**
- 13:40–13:55 *Sequence Effects in Crowdsourced Annotations*
Nitika Mathur, Timothy Baldwin and Trevor Cohn
- 13:55–14:10 *No Need to Pay Attention: Simple Recurrent Neural Networks Work!*
Ferhan Ture and Oliver Jojic
- 14:10–14:25 *The strange geometry of skip-gram with negative sampling*
David Mimno and Laure Thompson
- 14:25–14:40 *Natural Language Processing with Small Feed-Forward Networks*
Jan A. Botha, Emily Pitler, Ji Ma, Anton Bakalov, Alex Salcianu, David Weiss, Ryan McDonald and Slav Petrov
- 14:40–14:55 *Deep Multi-Task Learning for Aspect Term Extraction with Memory Interaction*
Xin Li and Wai Lam
- 14:55–15:10 *Analogs of Linguistic Structure in Deep Representations*
Jacob Andreas and Dan Klein
- 15:10–15:25 *A Simple Regularization-based Algorithm for Learning Cross-Domain Word Embeddings*
Wei Yang, Wei Lu and Vincent Zheng

Monday, September 11, 2017 (continued)

13:40–15:25 Session 8C: NLP Applications (Short)

13:40–13:55 *Learning what to read: Focused machine reading*
Enrique Noriega-Atala, Marco A. Valenzuela-Escárcega, Clayton Morrison and Mi-hai Surdeanu

13:55–14:10 *DOC: Deep Open Classification of Text Documents*
Lei Shu, Hu Xu and Bing Liu

14:10–14:25 *Charmanteau: Character Embedding Models For Portmanteau Creation*
Varun Gangal, Harsh Jhamtani, Graham Neubig, Eduard Hovy and Eric Nyberg

14:25–14:40 *Using Automated Metaphor Identification to Aid in Detection and Prediction of First-Episode Schizophrenia*
E. Dario Gutierrez, Guillermo Cecchi, Cheryl Corcoran and Philip Corlett

14:40–14:55 *Truth of Varying Shades: Analyzing Language in Fake News and Political Fact-Checking*
Hannah Rashkin, Eunsol Choi, Jin Yea Jang, Svitlana Volkova and Yejin Choi

14:55–15:10 *Topic-Based Agreement and Disagreement in US Electoral Manifestos*
Stefano Menini, Federico Nanni, Simone Paolo Ponzetto and Sara Tonelli

15:10–15:25 *Zipporah: a Fast and Scalable Data Cleaning System for Noisy Web-Crawled Parallel Corpora*
Hainan Xu and Philipp Koehn

15:25–15:50 Coffee Break

Monday, September 11, 2017 (continued)

15:50–17:25 Plenary Session. Best Paper

15:55–16:20 *Men Also Like Shopping: Reducing Gender Bias Amplification using Corpus-level Constraints*
Jieyu Zhao, Tianlu Wang, Mark Yatskar, Vicente Ordonez and Kai-Wei Chang

16:20–16:35 *Natural Language Does Not Emerge ‘Naturally’ in Multi-Agent Dialog*
Satwik Kottur, José Moura, Stefan Lee and Dhruv Batra

16:35–17:00 *Depression and Self-Harm Risk Assessment in Online Forums*
Andrew Yates, Arman Cohan and Nazli Goharian

17:00–17:25 *Bringing Structure into Summaries: Crowdsourcing a Benchmark Corpus of Concept Maps*
Tobias Falke and Iryna Gurevych

17:25–17:45 Plenary Session. Closing Remarks

17:25–17:45 *Closing Remarks*
General Chair

