WMT 2017

Second Conference on Machine Translation

Proceedings

September 7-8, 2017
Copenhagen, Denmark

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Introduction

The Second Conference on Machine Translation (WMT 2017) took place on Thursday and Friday, September 7–8, 2017 in Copenhagen, Denmark, immediately preceding the Conference on Empirical Methods in Natural Language Processing (EMNLP 2017).

This is the second time WMT has been held as a conference. The first time WMT was held as a conference was at ACL 2016 in Berlin, Germany. Prior to being a conference, WMT was held 10 times as a workshop. WMT was held for the first time at HLT-NAACL 2006 in New York City, USA. In the following years the Workshop on Statistical Machine Translation was held at ACL 2007 in Prague, Czech Republic, ACL 2008, Columbus, Ohio, USA, EACL 2009 in Athens, Greece, ACL 2010 in Uppsala, Sweden, EMNLP 2011 in Edinburgh, Scotland, NAACL 2012 in Montreal, Canada, ACL 2013 in Sofia, Bulgaria, ACL 2014 in Baltimore, USA, and EMNLP 2015 in Lisbon, Portugal.

The focus of our conference was to use parallel corpora for machine translation. Recent experimentation has shown that the performance of MT systems varies greatly with the source language. In this conference we encouraged researchers to investigate ways to improve the performance of MT systems for diverse languages, including morphologically more complex languages, languages with partial free word order, and low-resource languages.

Prior to the conference, in addition to soliciting relevant papers for review and possible presentation, we conducted 8 shared tasks. This consisted of three translation tasks: Machine Translation of News, Biomedical Translation, and Multimodal Machine Translation, two evaluation tasks: Metrics and Quality Estimation, as well as the Automatic Post-Editing, Neural MT Training, and the Bandit Learning tasks. Two of these tasks were run at WMT for the first time. The Neural MT Training task provide comparable conditions and encouraging researchers to explore training methods that lead to improved and more robust translation quality and help speed up the training. The Bandit Learning Task encourages participants to train and improve MT systems by learning from weak or partial feedback instead of the commonly used gold-standard human-generated translations.

The results of all shared tasks were announced at the conference, and these proceedings also include overview papers for the shared tasks, summarizing the results, as well as providing information about the data used and any procedures that were followed in conducting or scoring the tasks. In addition, there are short papers from each participating team that describe their underlying system in greater detail.

Like in previous years, we have received a far larger number of submissions than we could accept for presentation. This year we have received 40 full research paper submissions. In total, WMT 2017 featured 16 full paper oral presentations and 59 shared task poster presentations.

Holger Schwenk gave the invited on “Multilingual Represention and Applications in NLP”.

We would like to thank the members of the Program Committee for their timely reviews. We also would like to thank the participants of the shared task and all volunteers who helped with the evaluations.

Ondřej Bojar, Christian Buck, Rajen Chatterjee, Christian Federmann, Yvette Graham Barry Haddow, Matthias Huck, Antonio Jimeno Yepes, Philipp Koehn, Julia Kreutzer, Varvara Logacheva Christof Monz, Matteo Negri, Aurélie Névéol, Mariana Neves, Matt Post, Stefan Riezler, Raphael Rubino, Artem Sokolov, Lucia Specia, Marco Turchi, and Karin Verspoor

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Joern Wuebker (Lilt, Inc.)
François Yvon (LIMSI/CNRS)

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Thursday, September 7, 2016

8:45–9:00 ***Opening Remarks***

9:00–10:30 **Session 1: Shared Tasks Overview Presentations I**

9:00–9:40 *Shared Task: News Translation*

Findings of the 2017 Conference on Machine Translation (WMT17)
Ondřej Bojar, Rajen Chatterjee, Christian Federmann, Yvette Graham, Barry Haddow, Shujian Huang, Matthias Huck, Philipp Koehn, Qun Liu, Varvara Logacheva, Christof Monz, Matteo Negri, Matt Post, Raphael Rubino, Lucia Specia and Marco Turchi

9:40–10:10 *Shared Task: Multimodal Translation*

Findings of the Second Shared Task on Multimodal Machine Translation and Multilingual Image Description
Desmond Elliott, Stella Frank, Loïc Barrault, Fethi Bougares and Lucia Specia

10:10–10:30 *Shared Task: Biomedical Translation*

Findings of the WMT 2017 Biomedical Translation Shared Task
Antonio Jimeno Yepes, Aurelie Neveol, Mariana Neves, Karin Verspoor, Ondrej Bojar, Arthur Boyer, Cristian Grozea, Barry Haddow, Madeleine Kittner, Yvonne Lichtblau, Pavel Pecina, Roland Roller, Rudolf Rosa, Amy Siu, Philippe Thomas and Saskia Trescher

10:30-11:00 ***Coffee Break***

Thursday, September 7, 2016 (continued)

11:00–12:30 Session 2: Shared Tasks Poster Session I

11:00–12:30 *Shared Task: News Translation*

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11:00–12:30 *Shared Task: Multi-Modal Translation*

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OSU Multimodal Machine Translation System Report
Mingbo Ma, Dapeng Li, Kai Zhao and Liang Huang

Sheffield MultiMT: Using Object Posterior Predictions for Multimodal Machine Translation
Pranava Swaroop Madhyastha, Josiah Wang and Lucia Specia

Thursday, September 7, 2016 (continued)

NICT-NAIST System for WMT17 Multimodal Translation Task
Jingyi Zhang, Masao Utiyama, Eiichro Sumita, Graham Neubig and Satoshi Nakamura

11:00–12:30 *Shared Task: Biomedical Translation*

Automatic Threshold Detection for Data Selection in Machine Translation
Mirela-Stefania Duma and Wolfgang Menzel

12:30–14:00 ***Lunch***

14:00–15:30 Session 3: Invited Talk

14:00–15:30 *Holger Schwenk (Facebook): Multilingual Represention and Applications in NLP*

15:30–16:00 ***Coffee Break***

16:00–17:30 Session 4: Research Papers on Lexicon and Morphology

16:00–16:15 *Sense-Aware Statistical Machine Translation using Adaptive Context-Dependent Clustering*
Xiao Pu, Nikolaos Pappas and Andrei Popescu-Belis

16:15–16:30 *Improving Word Sense Disambiguation in Neural Machine Translation with Sense Embeddings*
Annette Rios Gonzales, Laura Mascarell and Rico Sennrich

16:30–16:45 *Word Representations in Factored Neural Machine Translation*
Franck Burlot, Mercedes García-Martínez, Loïc Barrault, Fethi Bougares and François Yvon

16:45–17:00 *Modeling Target-Side Inflection in Neural Machine Translation*
Aleš Tamchyna, Marion Weller-Di Marco and Alexander Fraser

17:00–17:15 *Evaluating the morphological competence of Machine Translation Systems*
Franck Burlot and François Yvon

Thursday, September 7, 2016 (continued)

17:15–17:30 *Target-side Word Segmentation Strategies for Neural Machine Translation*
Matthias Huck, Simon Riess and Alexander Fraser

Friday, September 8, 2017

9:00–10:30 Session 5: Shared Tasks Overview Presentations II

9:00–9:20 *Shared Task: Quality Estimation*

9:20–9:40 *Shared Task: Metrics*

Results of the WMT17 Metrics Shared Task
Ondřej Bojar, Yvette Graham and Amir Kamran

9:40–10:00 *Shared Task: Automatic Post-Editing*

10:00–10:15 *Shared Task: Bandit Learning*

A Shared Task on Bandit Learning for Machine Translation
Artem Sokolov, Julia Kreutzer, Kellen Sunderland, Pavel Danchenko, Witold Szymaniak, Hagen Fürstenau and Stefan Riezler

10:15–10:30 *Shared Task: Neural Training*

Results of the WMT17 Neural MT Training Task
Ondřej Bojar, Jindřich Helcl, Tom Kocmi, Jindřich Libovický and Tomáš Musil

10:30-11:00 ***Coffee Break***

Friday, September 8, 2017 (continued)

11:00–12:30 Session 6: Shared Tasks Poster Session II

11:00–12:30 *Shared Task: Quality Estimation*

Sentence-level quality estimation by predicting HTER as a multi-component metric
Eleftherios Avramidis

Predicting Translation Performance with Referential Translation Machines
Ergun Biçici

Bilexical Embeddings for Quality Estimation
Frédéric Blain, Carolina Scarton and Lucia Specia

Improving Machine Translation Quality Estimation with Neural Network Features
Zhiming Chen, Yiming Tan, Chenlin Zhang, Qingyu Xiang, Lilin Zhang, Maoxi Li and Mingwen WANG

UHH Submission to the WMT17 Quality Estimation Shared Task
Melania Duma and Wolfgang Menzel

Predictor-Estimator using Multilevel Task Learning with Stack Propagation for Neural Quality Estimation
Hyun Kim, Jong-Hyeok Lee and Seung-Hoon Na

Unbabel's Participation in the WMT17 Translation Quality Estimation Shared Task
André F. T. Martins, Fabio Kepler and Jose Monteiro

Feature-Enriched Character-Level Convolutions for Text Regression
Gustavo Paetzold and Lucia Specia

11:00–12:30 *Shared Task: Metrics*

UHH Submission to the WMT17 Metrics Shared Task
Melania Duma and Wolfgang Menzel

Friday, September 8, 2017 (continued)

MEANT 2.0: Accurate semantic MT evaluation for any output language
Chi-kiu Lo

Blend: a Novel Combined MT Metric Based on Direct Assessment — CASICT-DCU submission to WMT17 Metrics Task
Qingsong Ma, Yvette Graham, Shugen Wang and Qun Liu

CUNI Experiments for WMT17 Metrics Task
David Mareček, Ondřej Bojar, Ondřej Hübsch, Rudolf Rosa and Dusan Varis

chrF++: words helping character n-grams
Maja Popović

bleu2vec: the Painfully Familiar Metric on Continuous Vector Space Steroids
Andre Tättar and Mark Fishel

11:00–12:30 *Shared Task: Automatic Post-Editing*

LIG-CRIStAL Submission for the WMT 2017 Automatic Post-Editing Task
Alexandre Berard, Laurent Besacier and Olivier Pietquin

Multi-source Neural Automatic Post-Editing: FBK's participation in the WMT 2017 APE shared task
Rajen Chatterjee, M. Amin Farajian, Matteo Negri, Marco Turchi, Ankit Srivastava and Santanu Pal

The AMU-UEdin Submission to the WMT 2017 Shared Task on Automatic Post-Editing
Marcin Junczys-Dowmunt and Marcin Junczys-Dowmunt

Ensembling Factored Neural Machine Translation Models for Automatic Post-Editing and Quality Estimation
Chris Hokamp

Neural Post-Editing Based on Quality Estimation
Yiming Tan, Zhiming Chen, Liu Huang, Lilin Zhang, Maoxi Li and Mingwen Wang

CUNI System for WMT17 Automatic Post-Editing Task
Dusan Varis and Ondřej Bojar

Friday, September 8, 2017 (continued)

11:00–12:30 *Shared Task: Bandit Learning*

The UMD Neural Machine Translation Systems at WMT17 Bandit Learning Task
Amr Sharaf, Shi Feng, Khanh Nguyen, Kiante Brantley and Hal Daumé III

LIMSI Submission for WMT'17 Shared Task on Bandit Learning
Guillaume Wisniewski

11:00–12:30 *Shared Task: Neural Training*

Variable Mini-Batch Sizing and Pre-Trained Embeddings
Mostafa Abdou, Vladan Gloncak and Ondřej Bojar

The AFRL WMT17 Neural Machine Translation Training Task Submission
Jeremy Gwinnup, Grant Erdmann and Katherine Young

12:30–14:00 ***Lunch***

14:00–15:15 Session 7: Research Papers on Syntax and Deep Models

14:00–14:15 *Predicting Target Language CCG Supertags Improves Neural Machine Translation*
Maria Nadejde, Siva Reddy, Rico Sennrich, Tomasz Dwojak, Marcin Junczys-Dowmunt, Philipp Koehn and Alexandra Birch

14:15–14:30 *Exploiting Linguistic Resources for Neural Machine Translation Using Multi-task Learning*
Jan Niehues and Eunah Cho

14:30–14:45 *Tree as a Pivot: Syntactic Matching Methods in Pivot Translation*
Akiva Miura, Graham Neubig, Katsuhito Sudoh and Satoshi Nakamura

14:45–15:00 *Deep architectures for Neural Machine Translation*
Antonio Valerio Miceli Barone, Jindřich Helcl, Rico Sennrich, Barry Haddow and Alexandra Birch

15:00–15:15 *Biasing Attention-Based Recurrent Neural Networks Using External Alignment Information*
Tamer Alkhouli and Hermann Ney

Friday, September 8, 2017 (continued)

15:15–16:00 ***Coffee Break***

16:00–17:15 **Session 8: Research Papers on Domain Adaptation and External Data**

16:00–16:15 *Effective Domain Mixing for Neural Machine Translation*
Denny Britz, Quoc Le and Reid Pryzant

16:15–16:30 *Multi-Domain Neural Machine Translation through Unsupervised Adaptation*
M. Amin Farajian, Marco Turchi, Matteo Negri and Marcello Federico

16:30–16:45 *Adapting Neural Machine Translation with Parallel Synthetic Data*
Mara Chinea-Rios, Álvaro Peris and Francisco Casacuberta

16:45–17:00 *Copied Monolingual Data Improves Low-Resource Neural Machine Translation*
Anna Currey, Antonio Valerio Miceli Barone and Kenneth Heafield

17:00–17:15 *Guiding Neural Machine Translation Decoding with External Knowledge*
Rajen Chatterjee, Matteo Negri, Marco Turchi, Marcello Federico, Lucia Specia and Frédéric Blain