

COLING 2020

**Graph-based Methods for Natural Language Processing**

**Proceedings of the Fourteenth Workshop (TextGraphs-14)**

December 13, 2020  
Barcelona, Spain (Online)

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## Introduction

Welcome to TextGraphs, the Workshop on Graph-Based Methods for Natural Language Processing. The fourteenth edition of our workshop is being organized online on December 13, 2020, in conjunction with the 28th International Conference on Computational Linguistics (COLING).

The workshops in the TextGraphs series have published and promoted the synergy between the field of Graph Theory (GT) and Natural Language Processing (NLP) for over a decade. The target audience of our workshop comprises of researchers working on problems related to either Graph Theory or graph-based algorithms applied to Natural Language Processing, Social Media, and the Semantic Web.

TextGraphs addresses a broad spectrum of research areas within NLP. This is because, besides traditional NLP applications like parsing, word sense disambiguation, semantic role labeling, and information extraction, graph-based solutions also target web-scale applications like information propagation in social networks, rumor proliferation, e-reputation, language dynamics learning, and future events prediction.

The selection process was competitive: we received 17 submissions and accepted 10 of them for oral presentation (6 long papers, 3 short papers, and 1 non-archival paper). This resulted in the overall acceptance rate of 59%.

Similarly to the last year, we organized a shared task on Multi-Hop Inference for Explanation Regeneration. The goal of the task was to provide detailed gold explanations for standardized elementary science exam questions by selecting facts from a knowledge base. This year's shared task on multi-hop explanation regeneration attracted ten teams around the world, substantially advancing the state-of-the-art in this challenging problem. Four participants' reports and one non-archival report along with the shared task overview by its organizers are also presented at the workshop.

We thank Danai Koutra, Sujith Ravi, and Yizhou Sun for their invited talks.

Finally, we are thankful to the members of the program committee for their valuable and high quality reviews. All submissions have benefited from their expert feedback. Their timely contribution was the basis for accepting an excellent list of papers and making the fourteenth edition of TextGraphs a success.

Dmitry Ustalov, Swapna Somasundaran, Alexander Panchenko, Fragkiskos D. Malliaros,  
Ioana Hulpuş, Peter Jansen, and Abhik Jana  
TextGraphs-14 Organizers  
December 2020



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Serena Villata, Université Côte d'Azur, CNRS, Inria, I3S, France  
Xiang Zhao, National University of Defense Technology, China

**Invited Speakers:**

Danai Koutra, University of Michigan, Ann Arbor, USA  
Sujith Ravi, Amazon, USA  
Yizhou Sun, UCLA, USA

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# Workshop Program

**Sunday, December 13, 2020**

**14:00–14:10**    **Opening Session**

**14:10–15:00**    **Invited Talk by Sujith Ravi (Amazon Alexa AI, USA)**

**15:00–15:10**    *Break*

**15:10–16:00**    **Invited Talk by Danai Koutra (University of Michigan, Ann Arbor, USA)**

**16:00–16:30**    **Oral Presentations Session 1**

16:00–16:30    *A survey of embedding models of entities and relationships for knowledge graph completion*  
Dat Quoc Nguyen

16:00–16:30    *Graph-based Aspect Representation Learning for Entity Resolution*  
Zhenqi Zhao, Yuchen Guo, Dingxian Wang, Yufan Huang, Xiangnan He and Bin Gu

16:00–16:30    *Merge and Recognize: A Geometry and 2D Context Aware Graph Model for Named Entity Recognition from Visual Documents*  
Chuwei Luo, Yongpan Wang, Qi Zheng, Liangchen Li, Feiyu Gao and Shiyu Zhang

16:00–16:30    *Joint Learning of the Graph and the Data Representation for Graph-Based Semi-Supervised Learning*  
Mariana Vargas-Vieyra, Aurélien Bellet and Pascal Denis

16:00–16:30    *Contextual BERT: Conditioning the Language Model Using a Global State*  
Timo I. Denk and Ana Peleteiro Ramallo

16:00–16:30    *Graph-to-Graph Transformer for Transition-based Dependency Parsing*  
Alireza Mohammadshahi and James Henderson

**16:30–16:40**    *Break*

**Sunday, December 13, 2020 (continued)**

**16:40–17:30** Invited Talk by Yizhou Sun (University of California, Los Angeles, USA)

**17:30–18:00** Oral Presentations Session 2

17:30–18:00 *Semi-supervised Word Sense Disambiguation Using Example Similarity Graph*  
Rie Yatabe and Minoru Sasaki

17:30–18:00 *Incorporating Temporal Information in Entailment Graph Mining*  
Liane Guillou, Sander Bijl de Vroe, Mohammad Javad Hosseini, Mark Johnson and Mark Steedman

17:30–18:00 *Graph-based Syntactic Word Embeddings*  
Ragheb Al-Ghezi and Mikko Kurimo

17:30–18:00 *Relation Specific Transformations for Open World Knowledge Graph Completion*  
Haseeb Shah, Johannes Villmow and Adrian Ulges

17:30–18:00 *TextGraphs 2020 Shared Task on Multi-Hop Inference for Explanation Regeneration*  
Peter Jansen and Dmitry Ustalov

**18:00–18:10** *Break*

**18:10–18:50** Poster Session

18:10–18:50 *PGL at TextGraphs 2020 Shared Task: Explanation Regeneration using Language and Graph Learning Methods*  
Weibin Li, Yuxiang Lu, Zhengjie Huang, Weiyue Su, Jiaxiang Liu, Shikun Feng and Yu Sun

18:10–18:50 *ChiSquareX at TextGraphs 2020 Shared Task: Leveraging Pretrained Language Models for Explanation Regeneration*  
Aditya Girish Pawate, Varun Madhavan and Devansh Chandak

18:10–18:50 *Explanation Regeneration via Multi-Hop ILP Inference over Knowledge Base*  
Aayushee Gupta and Gopalakrishnan Srinivasaraghavan

**Sunday, December 13, 2020 (continued)**

18:10–18:50 *Red Dragon AI at TextGraphs 2020 Shared Task : LIT : LSTM-Interleaved Transformer for Multi-Hop Explanation Ranking*

Yew Ken Chia, Sam Witteveen and Martin Andrews

18:10–18:50 *Autoregressive Reasoning over Chains of Facts with Transformers*

Ruben Cartuyvels, Graham Spinks and Marie-Francine Moens

**18:50–19:00 Closing Remarks**

