



Multi3Generation 2023

**Proceedings of the 1st International Workshop on Multilingual,
Multimodal and Multitask Language Generation
(Multi3Generation)**

15 June, 2023
Tampere University
Tampere, Finland

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Introduction

Welcome to the 1st edition of the International International Workshop on Multilingual, Multimodal and Multitask Language Generation (Multi3Generation) in Tampere, Finland. The aim of Multi3Generation is to bring together researchers interested in any aspects of language generation and its derived applications, such as machine translation, text summarisation, text simplification, description generation, etc., especially focusing on multilingual, multimodal and multitask aspects.

The Action embraces both symbolic and machine learning approaches to Natural Language Generation (NLG), and everything in between. This is reflected in the talks of the session. The programme includes research works which relate to: i) language resources and representation, including multilingual paraphrasing and interlingual representations; ii) machine translation, taking into account Polish and Ukrainian languages; and iii) language generation, addressing specific challenges or domains.

The talk of our keynote speaker, Prof. André Martins, also reflect these themes. His work focuses on NLP explainability and multilinguality.

We include the abstract of each talk in this volume. In total, we accepted 7 long papers following the recommendations of our peer reviewers. We are extremely grateful to the Programme Committee members for their detailed and helpful reviews. The papers will be presented as talks.

The workshop session was organised in a way to allow time for discussion after each talk to allow participants to initiate debate over the presented papers, and thus, over the language generation topic.

Multi3Generation 2023 has received financial support (covering over a half of the costs) from the COST Action “Multi3Generation: Multi-task, Multilingual, Multi-modal Language Generation” (CA18231).

We very much hope that you will have an enjoyable and inspiring time!

Anabela Barreiro, Elena Lloret & Max Silberztein

Lisbon, Alicante & Besançon

June 2023

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Invited Speaker:

André Martins, Instituto Superior Técnico, University of Lisbon.

Invited Talk

André Martins: Towards Explainable and Reliable Multilingual NLP

Natural language processing systems are becoming increasingly accurate and powerful. However, in order to take full advantage of these advances, new capabilities are necessary for humans to understand model predictions and when to question or to bypass them. In this talk, I will present recent work from our group in two directions.

In the first part, I will describe a new approach for selective rationalization based on sparse and structured transformations (sparsemax, alpha-entmax, and LP-SparseMAP), all drop-in replacements for softmax that permit handling constraints through differentiable layers. This leads to SPECTRA, a deterministic and structured rationalizer with favorable properties in terms of predictive power, quality of the explanations, and model variability. Then, I will present CREST (Contrastive Edits with Sparse rationalization), which combines the above idea with a counterfactual text generator, leading to improvements in counterfactual quality, model robustness, and interpretability. We introduce a new loss function that leverages CREST counterfactuals to regularize selective rationales using SPECTRA and show that this regularization improves both model robustness and rationale quality, compared to methods that do not leverage CREST counterfactuals.

In the second part, I will present several methods for detecting and correcting hallucinations in neural machine translation (NMT). We annotate a dataset of over 3.4k sentences indicating different kinds of critical errors and hallucinations. We compare several detection methods, both glass-box uncertainty-based detectors and model-based detectors. As hallucinations are detached from the source content, they exhibit encoder-decoder attention patterns that are statistically different from those of good quality translations. We frame this problem with an optimal transport formulation and propose a fully unsupervised, plug-in detector that can be used with any attention-based NMT model. Finally, we study hallucinations in massively multilingual models by conducting a comprehensive analysis on both the M2M family of conventional neural machine translation models and ChatGPT / GPT-4. Our investigation covers a broad spectrum of conditions, spanning over 100 translation directions across various resource levels and going beyond English-centric language pairs. We provide key insights regarding the prevalence, properties, and mitigation of hallucinations, paving the way towards more responsible and reliable machine translation systems.

This is joint work with Marcos Treviso, Nuno Guerreiro, Duarte Alves, Vlad Niculae, Ben Peters, Pierre Colombo, Alexis Ross, Elena Voita, Jonas Waldendorf, Barry Haddow, Alexandra Birch, Pablo Piantanida in the scope of the DeepSPIN, MAIA, and UTTER projects.

Table of Contents

| | |
|--|-----------|
| Controllability for English-Ukrainian Machine Translation Based on Specialized Corpora | 1 |
| <i>Daniil Maksymenko, Olena Turuta, Nataliia Saichyshyna, Maksym Yerokhin and Oleksii Turuta</i> | |
| RooAd: A Computationally Creative Online Advertisement Generator | 10 |
| <i>Mika Hamalainen and Khalid Alnajjar</i> | |
| Variable-length Neural Interlingua Representations for Zero-shot Neural Machine Translation . . . | 16 |
| <i>Zhuoyuan Mao, Haiyue Song, Raj Dabre, Chenhui Chu, Sadao Kurohashi</i> | |
| Towards an Efficient Approach for Controllable Text Generation | 26 |
| <i>Iván Martínez-Murillo, Paloma Moreda, Elena Lloret</i> | |
| Natural Language Generation in the Logos Model | 32 |
| <i>Sara Amato, Kutz Arrieta</i> | |
| Improving Polish to English Neural Machine Translation with Transfer Learning: Effects of Data Volume and Language Similarity | 40 |
| <i>Juuso Eronen, Michal Ptaszynski, Karol Nowakowski, Zheng Lin Chia</i> | |
| A Multilingual Paraphrasary of Multiwords | 47 |
| <i>Anabela Barreiro, Cristina Mota</i> | |