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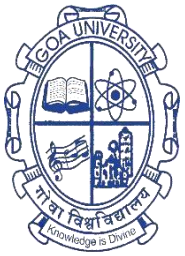

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Preface

Natural Language Processing(NLP) has seen yet another milestone with the advent of generative AI and various other newer methods, techniques and approaches, such as Pre-trained Language Models, Transformer-Based designs, Multilingual NLP, Zero-Shot and Few-Shot Learning, Explainability and Interpretability, NLP for Low-Resource Languages and Applications of NLP in Biomedicine and Clinical Settings. These advancements have led to impressive improvements in various NLP tasks, such as Machine Translation, Speech Technology, Language Modeling, Sentiment/Emotion Analysis, Conversational Analysis and Question Answering (QA) to mention a few.

Another important trend is the exploration of representation learning methodologies and attention mechanisms, which have greatly enhanced natural language understanding in NLP. This has made it possible for the developments of systems which are able to read and analyze natural language with astounding precision, revolutionizing the field of Speech and Text understanding.

Rapid advancements in Artificial Intelligence (AI) and the explosion of generative AI - which can create text, photos and videos in response to open-ended prompts – has spurred sudden surge of application. This has resulted in industry- academia partnership to nurture the research ecosystem through funding, transfer of technology, development of products and promoting business through Start-ups.

In this 20th ICON held at Goa University, Goa, India during December 14-17, 2023 we received high quality paper submissions in all fields of NLP. The submissions were from across the globe. The conference proceedings embody papers selected for presentation in technical sessions of ICON 2023.

Our sincere thanks to all the reviewers for critically assessing the quality of the papers . Out of 174 submissions, a total of 93 papers were accepted. Amongst these, 30 were long papers and 63 were short papers, representing diverse research findings and covering a broad spectrum of topics within NLP and linguistics. In addition, the conference featured other events: 9 Tutorials, 1 Workshop, 1 Demo and 2 Shared Tasks. We had submission from 8 countries covering 4 language families. The papers were from the scheduled languages of India as well as from the non-scheduled languages of India such as Tulu and Khasi and from the tribal language Malasar.

We are grateful to Prof. Ruslan Mitkov, Lancaster University (UK), Prof. Josef Van Genabith, German Research Centre for Artificial Intelligence and Prof. Rajeev Sangal IIIT Hyderabad for accepting to be the keynote speakers and for their keynote lectures at ICON-2023.

We thank all the area chairs of ICON-2023, for the areas: Syntax and Semantics, Computational Psycholinguistics, QA, Information Extraction, Information Retrieval and Text Mining, Sentiment Analysis and Emotion Recognition, Language Resources and Evaluation, Speech, Multimodality, Machine Translation, NLP Applications, Machine Learning in NLP, Natural Language Text Generation, Doctoral Consortium Chairs, Shared Task/Tool Contest Chairs and the Workshop/Tutorial Chairs for their contribution in making this edition of ICON 2023 a success.

We sincerely express our gratitude to the team members Ramrao S. Wagh, Harip Khanapuri, Ramdas N. Karmali, McNeil Rodrigues, Hanumant Redkar, and many others from Goa University, Soumitra Ghosh, Ratnesh Joshi from IIT Patna and Pattabhi R K Rao, Vijay Sundar Ram from Information Science Division of AU-KBC and Praveen from LTRC IIIT Hyderabad for their timely assistance in making ICON 2023 at Goa University a memorable success after COVID-19.

We also thank all the volunteers who assisted us in various activities of the conference. We are grateful to all the researchers, academicians, industry liaisons, and all the participants of ICON-2023 who responded to our call for papers, industry connect outreach, collocated shared tasks and workshop proposals, without whom the conference would not have been a success. We thank the reviewers who agreed to review the papers and enabled the quality review ecosystem. We also thank the session chairs for dedicating their valuable time to ICON-2023.

We extend our appreciation to our sponsors, Gold Sponsor: Augnito India Pvt. Ltd., Silver Sponsor: iHub-Data, IIIT Hyderabad, Bronze Sponsor: Adobe Research, TCS Research, Rikaian Technology Pvt. Ltd. for helping us in organizing the conference. We thank Government of Goa and NLPAI, our organizers, for their financial support.

We thank all the participants of ICON-2023 who contributed to the success of the conference.

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Keynote Talk: Are rule-based approaches a thing of the past? The case of anaphora resolution

Ruslan Mitkov
Lancaster University

Abstract

In this talk I shall present the results of a study which evaluates and compares new variants of a popular rule-based anaphora resolution algorithm (Mitkov 1998, 2002) with the original version. We seek to establish whether configurations that benefit from Deep Learning, LLMs and eye-tracking data (always) outperform the original rule-based algorithm. The results of this study suggest that while algorithms based in Deep Learning and LLMs usually perform better than rule-based ones, this is not always the case, and we argue that rule-based approaches still have a place in today's research.

Keynote Talk: Who is Afraid of Spurious Correlation in Classification?

Josef Van Genabith,
German Research Center for Artificial Intelligence

Abstract

Often in NLP we are interested in training classifiers and classification where the signal we are trying to focus on is very subtle and weak, competing with many other signals in the data. Cases in point include stylometry, authorship and gender prediction, bias detection etc. Even though especially neural classifiers often exhibit surprisingly strong classification results in such applications, it is often an open research question (and a worry) whether and if so to which extent spurious correlations in the training data are responsible for some of the high classification accuracies. In this talk I focus on ways of quantifying the possible impact of spurious correlations in the training data on translationese classification. Translationese is a cover term for the subtle but systematic linguistic differences between texts resulting from (high-quality professional) translations and texts in the same genre and style but originally authored in the target language of the translations.

Keynote Talk: Challenges in Speech to Speech Language Translation: Prosody and Discourse

Rajeev Sangal
IIIT Hyderabad

Abstract

Many scientific problems await work for successfully building speech to speech language translation (SSLT) systems. First, one has to analyze prosody as a part of automatic speech recognition (ASR), and pass it on as 'rich text' encoding, along with the output text transcript. The current ASR systems are legacy systems originally designed for producing dictations, and must be changed/upgraded to produce rich text.

Second, text to text machine translation (MT) systems have to learn to handle 'discourse', and must not be limited to handling single sentence at a time. In addition, the prosody information has to be passed on to the target language sentence or discourse segment.

Third, text to speech (TTS) systems, have to produce prosody present in the source language, conveying the same effect in the target language.

All this requires, the development of new metrics for ASR, MT and TTS, which take into account prosody as well as discourse.

The national mission on language translation of India has to be futuristic as well as practical in delivering working systems. Combining research questions with practical systems is a challenge that can be met by three virtuous cycles, combining research on the one hand, and startups and delivery on the other hand.

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Program

Friday, December 15, 2023

8:30 AM - 09:45 AM	*Registration*
10:00 AM - 10:30 AM	*Inaugural Ceremony*
10:30 AM - 11:30 AM	*Keynote 1: Are rule-based approaches a thing of the past? The case of anaphora resolution, Ruslan Mitkov, Lancaster University (UK)*
11:30 AM - 12:00 PM	*Tea Break*
12:00 PM - 01:00 PM	*Industry Session I - Augnito India Private Limited*
01:00 PM - 02:00 PM	*Lunch*
02:00 PM - 03:30 PM	*Oral Presentation Session 1 – 4*
03:30 PM - 05:30 PM	*Poster Booster Session followed by Poster Display 1 – 4*
05:30 PM - 06:00 PM	*Tea Break*
06:00 PM - 07:00 PM	*Keynote 2: Who is Afraid of Spurious Correlation in Classification? (Online), Josef Van Genabith, German Research Center for Artificial Intelligence*
07:00 PM - 10:00 PM	*Banquet*

Saturday, December 16, 2023

10:00 AM - 11:00 AM	*Keynote 3: Challenges in Speech to Speech Language Translation: Prosody and Discourse, Rajeev Sangal, IIIT Hyderabad, India*
11:00 AM - 11:15 AM	*Industry Session II - Rikaian Technology Pvt. Ltd*
11:30 AM - 01:00 PM	*Oral Presentation Session 5 - 8*
01:00 PM - 02:00 PM	*Lunch*
02:00 PM - 04:45 PM	*Poster Booster Session followed by Poster Display 5 - 8*
04:45 PM - 05:00 PM	*Tea Break*
05:00 PM - 06:00 PM	*Industry Session III - Adobe, TCS Research NLPAI Executive Council Meeting*
06:00 PM - 06:25 PM	*Buffer*
06:25 PM - 07:00 PM	*Valedictory Session + Certification*