Special Session: Deep Learning Frontiers in Natural Language Processing

Natural Language Processing (NLP) is rapidly evolving, driven by continuous advances in deep learning models capable of capturing the structural, semantic, and contextual complexity inherent in human languages. Many languages exhibit rich morphologies, flexible word orders, and orthographic ambiguities, making NLP a challenging field that demands robust and adaptive computational methods. Recent deep learning paradigms—ranging from transformers and large language models to multimodal and self-supervised learning—have significantly transformed the way linguistic information is modeled and processed.

The Deep Learning Frontiers in Natural Language Processing special session aims to explore cutting-edge research pushing the boundaries of what is currently achievable in NLP. The session welcomes contributions that investigate innovative neural architectures, efficient training strategies, interpretability and alignment techniques, resource-constrained or lowresource settings, and applications that address complex linguistic phenomena. Topics of interest include, but are not limited to, machine translation, question answering, dialogue systems, sentiment and emotion analysis, information extraction, and multilingual or crosslingual modeling.

By bringing together researchers, practitioners, and industry experts, this session provides a platform to present recent breakthroughs, discuss emerging challenges, and identify future directions that will shape the next generation of NLP technologies. The goal is to foster meaningful exchanges around both theoretical advances and practical applications, encouraging novel perspectives on how deep learning can further enhance language understanding, generation, and interaction.

Topics

The special session welcomes high-quality contributions on all aspects of deep learning applied to NLP, including, but not limited to, the following areas:

- Machine translation (statistical, neural, multilingual)
- Sentiment, emotion, and stance analysis
- Question answering and reading comprehension
- Text classification and categorization
- Named entity recognition and information extraction
- Summarization (abstractive and extractive)
- Speech-to-text and text-to-speech integration
- Domain-specific NLP (medical, legal, financial, etc.)
- Dialogue systems, chatbots, and conversational agents
- Part-of-speech (POS) tagging
- Coreference resolution and anaphora resolution
- Semantic role labeling (SRL)
- Word sense disambiguation (WSD)
- Paraphrase detection and textual similarity
- Textual entailment and natural language inference (NLI)
- Knowledge base population and relation extraction
- Event extraction and temporal reasoning
- Topic modeling and keyphrase extraction
- Code-switching and multilingual text processing
- Style transfer and text transformation

- Data augmentation for NLP tasks
- Fake news detection and misinformation analysis
- Toxicity detection and content moderation
- Plagiarism detection
- Authorship identification and verification
- etc.

Organizers

- Maher Jaoua (ANLP Research Group, MIRACL Lab., FSEG, University Of Sfax, Tunisia)
- Samira Ellouze (ANLP Research Group, MIRACL Lab., ISIMG, University of Gabes, Tunisia)

Biography for each organizer

- **Dr. Samira Ellouze** is an Assistant Professor of Computer Science at the University of Gabes, Tunisia. She obtained her Ph.D. in Computer Science from the University of Sfax in 2017. A member of the MIRACL laboratory and the Arabic NLP (ANLP) research group, her research focuses on natural language processing, particularly automatic text summarization and deep learning approaches for morphologically rich languages.
- **Dr. Maher Jaoua** is an Associate Professor of Computer at the University of Sfax, Tunisia, and a member of the MIRACL laboratory and Arabic NLP (ANLP) research group. He holds a Ph.D. in Computer Science from the University of Tunis in 2004. His research expertise spans natural language processing, ontology-based modeling, automatic summarization, dialogue systems, and Tunisian dialect processing.

Call for Papers

Special Session

Deep Learning Frontiers in Natural Language Processing

at IEEE International Symposium of Systems, Advanced Technologies and Knowledge (ISSATK'2026)

25-27 April 2026, Hammamet, Tunisia

Submission Deadline **December 15th, 2025**

TOPICS

This special session focuses on deep learning for NLP, including but not limited to:

- Machine translation
- Sentiment, emotion, and stance analysis
- Information extraction
- Text summarization, text simplification
- Question answering,
- Dialogue systems, chatbots, and conversational agents
- Part-of-speech (POS) tagging
- Fake news detection and misinformation analysis
- Toxicity detection and content moderation
- Plagiarism detection
- Authorship identification and verification
- Event extraction and temporal reasoning
- Topic modeling and keyphrase extraction
- Code-switching and multilingual text processing
- Style transfer and text transformation
- Text generation and transformation,
- Text classification and categorization
- Semantic role labeling (SRL)
- Word sense disambiguation (WSD)
- Data augmentation for NLP tasks
- Domain-specific NLP (medical, legal, financial, etc.)
- Textual entailment and natural language inference (NLI)

DETAILS FOR SUBMISSION

We invite you to submit your original work to the Special Session Deep Learning Frontiers in Natural Language Processing at IEEE ISSATK'26 through the Easychair submission system via this link: https://easychair.org/my2/conference?conf=issatk2026. **The submissions should be assigned to Deep Learning Frontiers in Natural Language Processingg track.**

ORGANISATION COMMITTEE

Maher Jaoua (University of Sfax, Tunisia) Samira Ellouze (University of Gabes, Tunisia)

FOR MORE INFORMATION

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