

Introduction: Language Understanding in the Human-Machine Era

Large language models (LLMs) have revolutionized the way interactional artificial intelligence (AI) systems are developed by making them accessible to the general public. Significant advances have been observed in fields such as conversational AI and machine translation, and their widespread use in the so-called human-machine era Sayers et al., 2021 is undeniable; those models have produced remarkable achievements in several benchmarks Gao et al., 2021; Hendrycks et al., 2021; Srivastava et al., 2023; A. Wang et al., 2019; Zhou et al., 2020, and the scientific community has discussed emergent properties Wei et al., 2022 that result from scaling laws Kaplan et al., 2020. Nevertheless, state-of-the-art systems are still prone to brittleness in language understanding, which raises doubts about the extent to which such systems can truly *understand* human language(s) Mitchell and Krakauer, 2023.

The concept of language understanding has always been controversial Lyons, 1990; Michael et al., 2023. As contemporary linguistic theories have shown, meaning-making relies not only on form and (immediate) semantic meaning, but also on context. Thus, understanding natural language entails more than observing the form and the meaning withdrawn from that form; instead, harnessing meaning Bender and Koller, 2020 requires access to grounding of some sort Allein et al., 2025. Therefore, understanding language is unsurprisingly a very complex task, even for humans Lyons, 1990. As discourse, pragmatics, and (social) context are particularly relevant for understanding language, how to equip language models with such linguistics-grounded capabilities is yet to be fully understood Mao et al., 2025. Nevertheless, language models are seemingly capable of generalising concepts, which could be seen as some kind of meaning understanding Piantadosi and Hill, 2022, even if modest.

Consequently, understanding language is a doubly challenging task. Besides understanding the intrinsic capabilities of LLMs, it is increasingly important to investigate the requirements and impact of using such systems in real-world applications. As has been empirically demonstrated, LLMs can be used effectively in various applications, even without sophisticated language understanding skills, but the absence of solid theories that support these findings raises concerns about which kinds of applications pose greater risks and ethical concerns, such as bias X. Wang et al., 2025, particularly those dealing directly with human interaction. Notable examples of such risks and concerns include the impact of language technology on teaching and language work. For instance, research is underway on the use of language models in educational settings Garcia-Varela

et al., 2025; S. Wang et al., 2024.

Machine translation (MT) is increasingly ubiquitous, as it is used by both language professionals and general speakers at (apparently) no cost. Causal language modeling is now becoming the new standard for MT Xu et al., 2024. Yet, as MT systems can take in a limited amount of context, they tend to make mistakes similar to what may happen to inattentive human translators if they rely on the source text alone. To understand and convey the intended meaning, human translators also need to rely on their own text-external knowledge. More broadly, recent research has called increasing attention to the role of situated and embodied cognition in translation Risku and Rogl, 2020.

As the way AI systems are intertwined with human expertise in language understanding is quickly changing, some have raised the question of the role played by language professionals in tasks such as translation. These professionals systematically add value to building next-generation language models that use linguistic and commonsense knowledge to provide more robust systems. Furthermore, it is important to understand how increasing human-machine interaction impacts the work of language professionals.

The “Language Understanding in the Human-Machine Era” (LUHME) workshop aims to reignite, retrieve, resume, and refocus the enduring debate about the role of understanding in natural language use and related applications. Specifically, it seeks to elucidate the nature of language understanding and ascertain whether it is indispensable for computational natural language tasks such as automated translation and natural language generation. Furthermore, it aims to provide insight into the role played by language professionals (e.g., linguists, professional translators, interpreters, language educators) in computational natural language understanding. It will, therefore, convene researchers interested in the intersection of language understanding and the effective use of language technologies in human-machine interaction.

The workshop’s call for papers included the following topics: Language understanding in LLMs; Language grounding; Psycholinguistic approaches to language understanding; Discourse, pragmatics and language understanding; Intent detection; Evaluation of language understanding; Human vs. machine language understanding; Machine translation/interpreting and language understanding; Multimodality and language understanding; Socio-cultural aspects in understanding language; Effects and risks of language misunderstanding; Manifestations of language (mis)understanding; Natural language understanding and toxic content; Ethical issues in language misunderstanding; Distributional semantics and language understanding; Linguistic theory and language understanding by machines; Linguistic, world, and commonsense knowledge in language

understanding; Role of language professionals in the LLMs era; Understanding language and explainable AI.

Each of the 15 papers submitted to the workshop was carefully revised by three PC members, and 10 papers were accepted. The program also includes a keynote by Chloé Clavel (INRIA Paris). The workshop's program is organized into four thematic sessions:

- Transparency and Social Dynamics in LLMs
- Cultural and Ethical Perspectives
- Extending the Capabilities of Language Models
- Evaluation, Judgment, and Public Discourse

Each session is composed of paper presentations and a discussion.

We thank all the authors and members of the PC for their invaluable contributions to make LUHME a very successful workshop. We also thank our keynote speaker. Finally, we thank the ECAI 2025 organizers for their support.

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