

The Interplay Between Language Generation and Reasoning: Information Seeking Games

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1. Abstract

Large Language Models, and ChatGPT in particular, have recently grabbed the attention of the community and the media. Having reached high language proficiency, attention has been shifting toward its reasoning capabilities. It has been shown that ChatGPT can carry out some simple deductive reasoning steps when provided with a series of facts out of which it is tasked to draw some inferences. In this talk, I am going to argue for the need of models whose language generation is driven by an implicit reasoning process. To support my claim, I will present our evaluation of ChatGPT on the 20-Questions game, traditionally used within the Cognitive Science community to inspect the information seeking-strategy's development. This task requires a series of interconnected skills: asking informative questions, stepwise updating the hypothesis space by computing some simple deductive reasoning steps, and stopping asking questions when enough information has been collected. Thus, it is a perfect testbed to monitor the language and reasoning interplay in LLMs, shed lights on their strength and their weakness, and lay the ground for models that think while speaking.

2. Short Biography


Raffaella Bernardi is Associate Professor at CIMEC (Center for Mind/Brain Science) and DISI (Department of Information Engineering and Computer Science), University of Trento. Through her career, she worked both with symbolic and connectionist AI approaches. She studied at the Universities of Utrecht and Amsterdam specialising in Logic and Language, in 1999 she joined the international PhD Programme at the University of Utrecht and wrote a dissertation on categorial type logic (defended in June 2002). Since then she has continued to contribute extensively to this field by organising international workshops, summer schools and being part of Organizing Committees, Programme Committees, and Management Boards of international scientific events. She has also been quite active in disseminating the topic by means of teaching activities: she has been for long the local coordinator of the Erasmus Mundus European Masters Programme in LCT and of the Language and Multimodal Interaction track of the MSc in Cognitive Science offered by the University of Trento, she is now CIMEC Teaching Delegate. While being at the

NL4AI 2023: Seventh Workshop on Natural Language for Artificial Intelligence, November 6–7, 2023, Rome, Italy

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 CEUR Workshop Proceedings (CEUR-WS.org)

Free University of Bozen-Bolzano (2002-20011), she worked on Natural Language Interfaces to Structured Data. In 2011, she started working on Distributional Semantics investigating its compositional properties and its integration with Computer Vision models. Since then she has mostly worked on Multimodal Models in interactive settings (e.g visual dialogues). She has recently been the EU representative within the ACL Sponsorship Board, and she is member of the ELLIS Trento unit.

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