

---

## Using Large Language Models for Conventional Metaphor Detection

---

Jiahui Liang<sup>1</sup>, Stephan Raaijmakers<sup>1,2</sup>, Aletta G. Dorst<sup>1</sup>, Jelena Prokic<sup>1</sup>

<sup>1</sup>Leiden University, Leiden, The Netherlands

<sup>2</sup>TNO, The Hague, The Netherlands

j.h.l.jiahui@hum.leidenuniv.nl, s.a.raaijmakers@hum.leidenuniv.nl,

a.g.dorst@hum.leidenuniv.nl, j.prokic@hum.leidenuniv.nl

Metaphor detection is a highly complex process, and requires high levels of abstraction by humans. Not surprisingly, metaphors also pose a challenge for natural language processing (NLP) due to their ubiquity and semantic complexity. Conventional metaphors, whose metaphorical meanings are lexicalized, account for 99% of linguistic metaphors (Steen et al. 2010). Some examples of conventional metaphors can be seen in the following sentences:

- (1) Inflation is *lowering* our standard of life.
- (2) Don't *waste* your time.
- (3) Your claims are *indefensible*.

The emergence of Large Language Models (LLMs) creates new possibilities for metaphor detection and sub-type labelling with their superior performance in language understanding and contextual semantic comprehension (Zhou et al. 2023). Prompting (in-context learning) has proven to be efficient for applying LLMs to NLP tasks (Chung et al. 2022).

Our work aims to provide insights into the impact of different LLM architectures and prompting scenarios on conventional metaphor detection. We explore the capabilities of LLMs on conventional metaphor detection across different prompting setups on a subset of the VUAMC metaphor corpus (Steen et al. 2010):

1. Zero-shot (bare task description to see what the model does “out of the box”)
2. N>0-shot prompting (providing N examples)

### 2.1 Labelled examples:

- providing sentences with word-level labels

### 2.2 Reasoning examples:

- Based on 2.1, providing explanation for metaphors in examples

Additionally, an error analysis will be conducted to retrieve linguistic information relevant for fine-tuning LLMs in metaphor detection.

**References:** • Chung, H.W. et al. (2022) Scaling instruction-finetuned language models, arXiv.org. Available at: <https://arxiv.org/abs/2210.11416> (Accessed: 15 June 2023). • Steen, G.J. et al. (2010) ‘Metaphor in usage’, *cogl*, 21(4), pp. 765–796. • Zhou, C. et al. (2023) A comprehensive survey on pretrained foundation models: A history from Bert to chatgpt, arXiv.org. Available at: <https://arxiv.org/abs/2302.09419> (Accessed: 15 June 2023).