Functional Linguistic Competence of LLMs

- A prominent point of view on the human intelligence says that humans model the world in concepts. Thus for a „real“ understanding of the human language, a system (be it a human or an LLM) should map language inputs to concepts and manipulate those
- It is argued that embodiment and ability to couple form and reference are essential to acquire such concepts
- Moreover, for a proper understanding of other human beings via language, we should model which concepts they do have in their minds (theory of mind)
- However, LLMs have no mental models of the world [1], and the generated text is not grounded on any model of the reader’s state of mind [5]
  - => Opinion: since LLMs are not able to build conceptual models, they cannot infer meaning from the text; humans may believe LLMs „really“ understand what they generate only because of the human tendency to attribute meaning to things whether it is there or not; *coherence is in the eye of the beholder* [5]

However, if we consider this argumentation, it stands on a shaky ground

Embodiment & Reference

- The ability of reference — linking a sequence of signals (text in case of LLMs) to an object in the real world — is argued to be decisive when it comes to a „real understanding“
- Example: an octopus learns to use words correctly by eavesdropping on a conversation between two people on land will not be able to determine which object is a coconut, even though it knows how to use the word [4]
- Opinion: since the training data for LLMs is only form, they do not have access to meaning [5] (just like that octopus)
- Opinion: reference does **not** define meaning
  - Many terms that are meaningful to us have no real referent [4]
  - There are terms that cannot have a referent [4]
  - Absence of embodiment — which is claimed to be a precondition for being capable of reference — does not always hinder this ability