Statistical Nature of LLMs

- NLU benchmarks do not always require actual understanding [1]
  - LLMs utilize *shortcut learning*—a phenomenon that describes learning that relies on leveraging low-level co-occurrence patterns in the data (overlapping tokens and such)
  - LLMs use shortcuts in order to perform well on a particular benchmark [1, 5]
  - It is often the case that as soon as the obvious patterns are removed, the model's performance drops to chance levels [6]
- => LLMs can be "right for the wrong reason" [6]

=> Opinion: LLMs are *stochastic parrots* [5]

Formal vs Functional Linguistic Competence

- LLMs only infer the form of the language but not the meaning: while they are able to generate grammatically correct, humanlike language — they still lack the conceptual understanding
- Neuroscience provides evidence that even human processes the form and the meaning of the language differently [6]
- *Formal linguistic competence* — the knowledge of rules and statistical regularities of language, vs *functional linguistic competence* — non-language-specific cognitive functions that are required when using language in real-world circumstances