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Titel: "Lingua Ex Machina: The Role Of Grammar in the Imitation Game"

Abstract

When Natural Language Processing programs (NLPs) like ChatGPT became widely available in late 2022, they triggered a wave of mixed emotions among language professionals, mainly in education and linguistic research. For many, these reactions stemmed from a reluctant acknowledgment of AI's burgeoning linguistic proficiency, challenging the long-held belief in the unique and irreplicable nature of human linguistic creativity.

Our presentation explores the 'frontiers of grammar' via a corpus-based comparison of a set of AI-generated texts (referred to here as AISet) with an analogous set of texts penned by advanced EFL students at GU (HumSet). Each set consists of approximately 50 texts (100 combined), of about 1000 words each (in total, ~ 100 000 words). The HumSet comprises essays covering diverse topics such as environmental issues, cultural phenomena, and technological advancements. The AISet contains AI-generated texts that mirror the Humset texts, prompted by the same topics and constrained by similar word lengths as their human counterparts. With standard corpus linguistics methodologies, we analyze, compare, and contrast our two sets of texts. We focus primarily on grammar and grammatical choices, though we briefly highlight other areas of comparison, such as lexical choices, style, narrative coherence, information structure and even rhetorical strategies.

Positioned at the crossroads of linguistic research and pedagogy, this small-scale, focused case study has two main objectives:

- Firstly, it seeks to ascertain whether there are discernible linguistic fingerprints in AI-generated texts, (e.g., specific words, phrases, constructs) that might (relatively) reliably distinguish them from human-authored content.
- Secondly, the study explores the comparative efficacy of AI-generated texts against those written by students, with a particular focus on identifying aspects where AI excels. The goal is to potentially use these findings to develop educational materials. By analyzing the strengths of AI in language tasks, we feel it should be possible to create tailored teaching resources that can enhance traditional learning methodologies.

Our presentation also surveys some previous analogous work such as Herbold et al. (2023) and Yeadon et al. (2023). Though highly topical and relevant, Yeadon et al. focuses on AI's impact on short form physics essays, contrasting starkly with our broader linguistic analysis. Herbold et al. is more similar to our work, though it explores shorter, argumentative texts by younger native-speaking students, whereas our study examines a wider range of topics and texts by adult EFL learners. Previous assessments of AI texts vs texts by humans are typically based on qualitative assessments by educational professionals, in contrast we employ a corpus-based approach with an emphasis on grammatical and lexical analysis.

The findings not only differentiate some of the unique characteristics of human versus AI-driven language (at this point in time), but also tentatively explore the implications of AI for pedagogical purposes, preparing educators and learners alike for the challenges and opportunities of our new digital age.

References

Herbold, S., Hautli-Janisz, A., Heuer, U., Kikteva, Z., & Trautsch, A. (2023). A large-scale comparison of human-written versus ChatGPT-generated essays. *Scientific Reports*, 13(1), 18617.

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Yeadon, W., Inyang, O.-O., Mizouri, A., Peach, A., & Testrow, C. (2023). The Death of the Short-Form Physics Essay in the Coming AI Revolution. *Physics Education*, 58(3), 035027. <https://doi.org/10.1088/1361-6552/acc5cf>