

AI Text Generators and Text Producers

Henrik Køhler Simonsen
Department of Management, Society and Communication
Copenhagen Business School
Copenhagen
hks.msc@cbs.dk

Abstract — AI-generated text production is becoming increasingly important in many industries, and it has already brought about dramatic changes in the ways we write texts and generate content. The article draws on empirical data from a descriptive-analytical study involving 70 test subjects. The population comprised 115 test persons, who received an e-mail with instructions. A sample of 70 test subjects participated in the study. First, the test subjects were asked to test a specific AI text generator (ATG) and conduct three prompting operations with the same linguistic content. Second, having tested the ATG, the test subjects were asked to participate in a questionnaire with ten questions focusing on how they experienced the performance of the ATG and how they worked with the ATG. The majority of the test subjects found that the tested ATG was easy to use when producing texts. When asked about the perceived quality of the AI-generated content, the respondents were not impressed with the quality and indicated that they needed to perform several editing operations. The data also indicate that ATGs need help before, during and after. This paper presents a three-phase editing framework, which can be used when using and teaching ATGs.

Keywords—AI Text Generators; User Interaction; Editing

I. INTRODUCTION, PROBLEM AND METHODOLOGY

AI text generators (ATGs) seem to be bringing about dramatic changes in the ways we write texts and generate content for websites and social media [13]. The performance of ATGs also seems to be constantly improving, but this study seems to suggest that ATGs still need human help. The study discussed in this article suggests that ATGs need help before, during and after text generation. Students and professionals thus need to learn how to cooperate with an ATG.

The research questions of this short paper are 1. to investigate how users interact with an ATG and 2. to investigate how and when users are co-editors in the text generation process.

The paper is based on an overall interpretivist research philosophy [7] as the objective of the study carried out was to create new insights and in-depth understandings of ATGs and how humans interact with them. A simple mixed methods research design [7] was chosen and the study carried out was designed in such a way that it collected both quantitative and qualitative data. Users were asked to first test a selected example of an ATG [6] and then participate in an online survey eliciting both quantitative and qualitative answers. The study was conducted in the first quarter of 2021. A total of 115 users (60 professionals and 55 communication students) were contacted and asked to participate. A total of 70 users decided to participate and 70 textual responses were received.

II. THEORETICAL CONSIDERATIONS

This section of the paper outlines selected theoretical considerations from existing research in this area. As pointed out in several theoretical contributions such as [1], [5], [8], [11] and [13] human text production processes are a complex question. Every human writer is unique and it is difficult to describe precisely which steps he or she takes.

Some even argue that these steps are not at all sequential, but dynamic and interchanging [1]. Writing is a highly dynamic process for most of us, but writing may also be divided into several steps or phases see also [1], who argue that writing processes involve five phases as follows: A) drafting, B) planning, C) prewriting, D) rewriting and editing and E) pausing and reading. Each phase consists of different writing strategies, and according to [1] all writing phases and strategies are interdependent, non-linear and recursive.

According to [5] most writers write additional drafts and often stray off topic, but that is human nature and how the human brain works. [5] describes how most writers use the ARRR approach, i.e. we constantly and dynamically Add, Rearrange, Remove and Replace items of meaning from our texts. Also [10], [2] and [11] are relevant here. [10] interestingly argues that Correction and Editing should be seen as independent lexicographical functions in line with other lexicographical functions such as reception, production and translation. In fact, [2] and [11] both describe different phases and steps that users usually go through when accessing lexicographical information tools.

Furthermore, [8] uses Liew's DIKW model to explain how the division of labour between man and machine could be seen, and demonstrates at which levels machines and humans create value through the categorization of important elements such as data, information, knowledge, intelligence and wisdom [4]. The case in point used by [8] illustrates that powerful search and AI algorithms to an increasing degree take care of the data, information and knowledge levels in the DIKW model whereas humans should focus their attention on the intelligence and wisdom levels, i.e. on the editing phases. This argument is also made in [9], who writes about augmented writing tools and concludes that "augmented writing seems to challenge the type of lexicographical products, which focus exclusively on the delivery of data and information" [9].

Based on the above very brief literature review there seems to be a need for a proper editing framework, which describes the cooperation between humans and ATGs.

III. THREE-PHASE EDITING FRAMEWORK

Even though the above theoretical considerations offer substantial knowledge on writing phases, editing processes and post-editing, we need to expand our understanding of what constitutes editing in an AI era. The framework suggested here builds on [3], which offers a seminal discussion of AI-driven decision-making and [12], which discusses the concept of hybrid intelligence. All these theoretical considerations combined with the insights from the survey data led to the development of the three-phase editing model below.

According to [12] collaborative intelligence is needed. The three-phase editing model developed is based on a principle of division of labour dividing specific tasks between the human editor and the ATG. As the empirical data indicate, such a division of labour is crucial. It is about exploiting the collaborative intelligence of both humans and ATGs.

The empirical data also seem to show that the role of humans should be to prompt the ATG with quality start content, adjust the AI-generated content, select the AI-generated content and finally post-edit the AI-generated content. Human content editors should focus on adding world knowledge to the content generated. Figure 1 illustrates how humans pre-edit, mid-edit and post-edit content generated by the ATG.

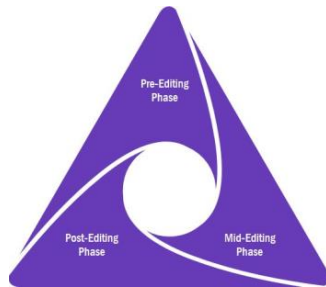


Figure 1: ATG editing framework.

IV. RESULTS

In total, 42 professionals (60%) and 28 students (40%) participated in the study. The internal distribution of the professionals was 17 communication specialists (24.3%), 9 marketing specialists (12.9%), 11 language specialists (15.7%) and 5 other types of specialists (7.1%) and the internal distribution of the students was 11 communication students (15.7%), 9 marketing students (12.9%) and 8 other types of students (11.4%). The survey participants were asked to rate the ATG on a scale from 1 to 5 where 5 is very high. An unpaired, two-tailed T-test was made to ascertain whether there is a significant difference between the two sets of data μ_1 (students) and μ_2 (specialists). The T-test used a significance level of $p < 0.05$. The P values for figures 2-6 were calculated to be 0.036565376, 0.243708183, 0.385737885, 0.06351195 and 0.903891484, which seem to indicate that the data were underpowered and that more data should be collected.

The quantitative data shown in figures 2-6 below was supported by 210 comprehensive qualitative comments to the following questions: 1. What tasks in the text production process did the ATG solve? 2. What tasks in the text production process

did you as a human solve? 3. What do you need to be able to work with an ATG?

When asked to assess the ease of use of the ATG, a large majority of the test subjects answered that it was either easy or very easy to use, as shown in Figure 2.

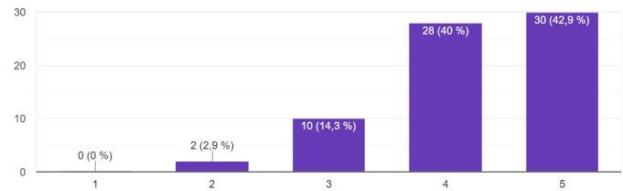


Figure 2: Ease of use assessment of ATG.

When asked to rate the quality of the text generated by the ATG, the picture was not as clear as shown in Figure 3.

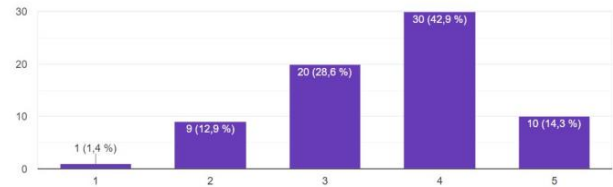


Figure 3: Quality assessment of text generated.

When asked about the probability of use, the majority of the testers were not completely convinced as shown in Figure 4.

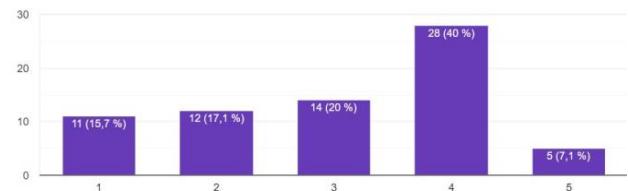


Figure 4: Assessment of probability of use.

Furthermore, Figure 5 below shows how the test subjects rated the perceived value of ATGs.

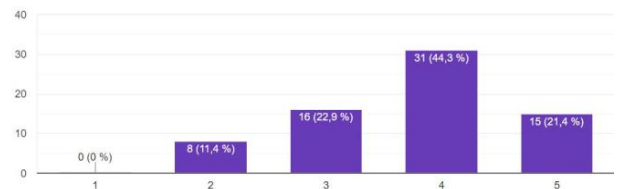


Figure 5: Assessment of value creation of AT.

Finally, when asked about the probability of working with an ATG in professional settings the users were not convinced.

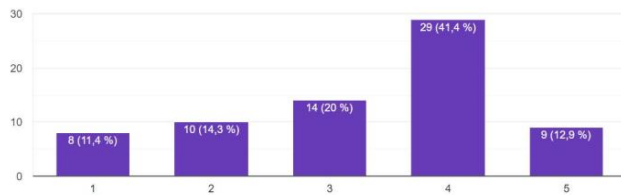


Figure 6: Assessment of probability of working with an ATG.

V. ANALYSIS AND DISCUSSION

When asked what type of tasks the ATG solved in the text production process one test subject (student) commented that “It was creative for me. I didn’t have to start from scratch making up a text about my subject” which is in line with [12] and [8]. Another test subject (professional) stated that “It came up with ideas to continue a text. It not only contributes to a perfectly grammatical text but also contributes with content ideas”.

When asked what type of tasks the users solved in the text production process a fifth test subject (student) said “I did have to edit a few things such as deleting a link which was inserted in the middle of a sentence and edited some half-finished sentences”, which was a type of comment which was typical for the test subjects. Other test subjects such as test subject seven (student) was impressed and said “I just checked for errors and small details. But it was all perfectly done by the ATG.” The comments seem to show how users and ATGs work together. They work together and combine their strengths, just like a hybrid intelligence as described by [12] and by this the first research question has been answered.

This leads to the second research question, which focuses on exploring how users edit and correct the content of an ATG. Several test subjects commented on the fact that they only had to provide very simple prompts such as test subject nine (professional), who said “The AI Writer finished the paragraph by listing what I was about to do with my predefined text. It, therefore, made my process much easier and quicker.” The test subjects also commented on how they performed mid-editing operations. Test subject eleven (student) described the editing as “I edited a sentence that could be structured better and used synonyms to some word choices to make the text more personal”. Finally, the test subjects also commented on what they did during post-editing. Test subject twelve (professional) described the approach as follows “I proofread the text as to make the grammar correct, removing passages that were almost identical” and test subject thirteen (professional) stated, “I proofread and fact-checked the text, adding context to the material and ensuring that red thread throughout the text”.

VI. CONCLUSIONS AND PERSPECTIVES

ATGs and human editors are already working together and when it comes to speed and overcoming writer’s block ATGs match the performance of humans.

This paper was based on data from a study involving 70 testers and the test subjects found that the ATG was easy to use and that the quality of the texts generated was relatively satisfactory. The data also showed how users perform pre-editing, mid-editing and post-editing operations and played an active role in the text generation process.

Based on this analysis the three-phase editing framework was developed and presented and it is argued that this simple three-step approach to text generation is useful in teaching as well as in practice.

REFERENCES

- [1] Abas, Imelda & Abd Aziz, Noor Hashima. (2018). Model of the Writing Process and Strategies of EFL Proficient Student Writers: A Case Study of Indonesian Learners. *Pertanika Journal of Social Science and Humanities*. 26. 1815-1842.
- [2] Bergenholtz, H., T.J.D. Bothma and R.H. Gouws. (2015). Phases and Steps in the Access to Data in Information Tools. In: *Lexikos* 25: 1-30.
- [3] Colson, E. (2019). What AI-Driven Decision Making Looks Like. <<https://hbr.org/2019/07/what-ai-driven-decision-making-looks-like>> (March 2021).
- [4] Liew, A. (2013). DIKIW: Data, Information, Knowledge, Intelligence, Wisdom and their Interrelationships. In *Business Management Dynamics*. Vol. 2, Issue 10, April 2013, 49-62.
- [5] LifeRichPublishing (2019). The 5-Step Writing Process: From Brainstorming to Publishing. <<https://www.liferichpublishing.com/AuthorResources/General/5-Step-Writing-Process.aspx>> (March 2021).
- [6] Sassbook AI text generator (2021). Accessed at <<https://sassbook.com/>> (March 2021).
- [7] Saunders, Mark N. K., Philip Lewis, and Adrian Thornhill (2019). *Research Methods for Business Students*, 8th edition. New York: Pearson.
- [8] Simonsen, H. K. (2020a). Augmented Writing: nye muligheder og nye teorier. In: *Nordiska Studier i Lexikografi* 15, 2020, Rapport från 15 konferensen om lexikografi i Norden – Helsingfors 4–7 juni 2019, pp. 307-315.
- [9] Simonsen, H. K. (2020b). Augmented Writing Needs Lexicography. In: Gavrilidou, Z., Mitsiaki, M., Fliatouras, A., 2020, *Proceedings of XIX EURALEX Congress: Lexicography for Inclusion*, Vol. I, Democritus University of Thrace, pp. 509-514.
- [10] Tarp, S. (2004). Korrektur og retning som leksikografiske funktioner. In: *Hermes, Journal of Linguistics* 33, p.117-147.
- [11] Tarp, S. (2019). Connecting the Dots: Tradition and Disruption in Lexicography. In: *Lexikos* 29, 224-249.
- [12] Wilson, J. and Daugherty, P. R. (2020). Collaborative Intelligence: Humans and AI are Joining Forces. <<https://hbr.org/2018/07/collaborative-intelligence-humans-and-ai-are-joining-forces>> (March 2021).
- [13] Zandan, Noah (2020). The Future of Human Communication: How Artificial Intelligence Will Transform the Way We Communicate. In: <<https://www.quantifiedcommunications.com/blog/artificial-intelligence-in-communication>> (March 2021).