



Representation of the Use of the Adjective 'Love' between Human and AI Using ATLAS.ti Software

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Abstract. This study aims to examine the differences and similarities in the representation of the adjective 'love' between humans and artificial intelligence (AI) using the ATLAS.ti software. This study analyzes qualitative data from human and AI-generated texts to understand how both sources describe and use the adjective 'love'. The research methodology involves the collection of text data from human sources that are 20 years old. The text produced by the AI language model is taken from three databases, namely "ChatGPT4o", "Humanise Ai" and "Write for Me". Systematic ATLAS.ti Analysis Procedure is applied to identify and categorize the word 'love' according to its usage category. The findings of the study show that there is a significant difference in the frequency of use of the word 'adjective love' which can be observed through four categories, namely 'style', 'context of love', 'context of speech' and 'structure'. Humans tend to use the word 'love' in a normal language style, while AI tends to use it in a poetic language style. In the 'love context', AI tends to give definitions while humans tend to show love to their partner and country. In the 'context of speech', AI does not have speech that refers to itself, instead, humans have this privilege. Finally, in the 'structure' category, AI tends to use the word love at the beginning of a sentence while humans tend to use it at the end of a sentence. This study is important to understand the uniqueness of language representation by humans compared to AI, as well as to evaluate the effectiveness of the ATLAS.ti software in analyzing qualitative data. The results of this study contribute to the field of linguistics and natural language processing (NLP), as well as help in the development of more sophisticated AI models that can interact with humans in a more natural and empathetic way.

Keywords: artificial intelligence, ATLAS.ti, love.

1 Introduction

Adjectives are a class of words used to describe or modify nouns, providing additional information about the object or subject being discussed (Biber, 1995; Wierzbicka, 1996). This study aims to investigate how humans and artificial intelligence (AI) use adjectives and identify differences and similarities in the application of adjectives in

communication. With the rapid development of artificial intelligence technology, especially in the field of natural language processing (NLP), it is important to understand how AI processes language and compare it to the use of language by humans (Jurafsky & Martin, 2020; Horiuchi et al., n.d.; Jomana Anwar et al., 2024; Olivato et al., n.d.).

ATLAS.ti software was chosen as the main analysis tool because of its ability to manage and analyze complex qualitative data. ATLAS.ti provides sophisticated coding and visualization tools that assist in understanding patterns and themes in the data (Friese, 2014; Saldaña, 2015). Through this study, we hope to get a clearer picture of the differences and similarities in the use of adjectives by humans and AI, as well as measure the effectiveness of ATLAS.ti in conducting this analysis. The findings from this study will make a meaningful contribution to the field of linguistics and natural language processing, as well as help in the development of more sophisticated AI models that can interact with humans in a more natural and empathetic way.

2 Research problems

A deeper study of the difference in the use of adjectives between humans and artificial intelligence (AI) has been a subject of significant interest in the fields of linguistics, language psychology, and linguistic computing (Mergen et al., 2024; Oliveira et al., 2024; Pesapane et al. et al., 2024). Previously, the use of adjectives by humans has been identified as subjective, often influenced by emotions and different social contexts (Wierzbicka, 1996; Biber, 1995). While AI, which is trained through large and extensive data processing, tends to use adjectives in a more structured and formal way (Jurafsky & Martin, 2020).

Nevertheless, despite the initial identification of these differences, there is ample room for further research and deeper analysis. Researchers need to examine in more detail how language, culture, and context of use affect the use of adjectives among humans and AI. In addition, linguistic aspects such as semantic and syntactic diversity in the use of adjectives also need to be considered in the context of this comparison.

Next, advanced research can cross traditional research fields by applying sophisticated qualitative data analysis tools such as ATLAS.ti. Previous studies have shown that the use of ATLAS.ti in analysing text has a high effectiveness in coding and analysing complex text data (Friese, 2014; Saldaña, 2015; Ismail & Sarudin, 2022, 2023). However, the use of ATLAS.ti in the context of comparison between human text and AI is still underexplored, providing a wide opportunity to expand the application of this tool in new contexts.

In addition, it is also important to consider the ethical and social implications of the difference in the use of adjectives between humans and AI. How the emphasis on emotion and social context in the use of adjectives by humans can affect human perception

and interaction with the growing AI system. This study also provides an opportunity to examine how the use of these different adjectives can have an impact on fields such as language-based artificial intelligence and increasingly complex human-machine interactions.

Therefore, further research in this field will not only improve our understanding of the use of adjectives in human and AI contexts, but will also lead to deeper developments in related fields such as computational linguistics, language psychology, and text-based artificial intelligence."

3 Methodology

This study is qualitative and uses ATLAS.ti software 24. Systematic ATLAS.ti Analysis Procedure Ismail et al. (2024) was adopted in this study. This procedure involves three components in the analysis process, namely the 'Noticing things', 'Collecting things' and 'Thinking about things' components. This procedure also combines the thematic content analysis (TCA) of Friese et al. (2018) which provides 7 phases for the analysis process research, namely the 'familiarization' phase, the 'initial code generation' phase, the 'structured code construction' phase, the 'theme search' phase, the 'theme review' phase, the 'theme definition' phase ' and finally the 'report writing' phase. The following is a diagram of Ismail et al.'s Systematic ATLAS.ti Analysis Procedure. (2024)

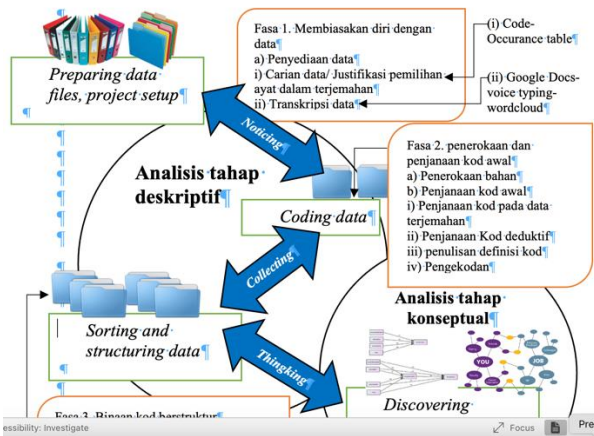


Fig. 1. Systematic ATLAS.ti Analysis Procedure Ismail et al., 2024

The data used in this study involved 61 human respondents of a 20-year-old youth. This takes into account the appropriateness of the words used to be constructed by a certain age level. AI data sources have been taken from 'ChatGPT4o', 'Humanise Ai'

and 'Write for me'. The selection of these three AI databases is seen to be based on the fact that preliminary analysis has shown that there are similarities in certain categories in sentence construction.

4 Findings

The study conducted on the use of the adjective 'love' in sentences between humans and artificial intelligence has produced four categories of usage phenomena that are interesting to examine. This category is from the aspects of 'style', 'speech context', 'love context' and 'structure'. In the context of 'style', the construction of sentences using the word love will be analyzed whether it is constructed in the form of ordinary language or poetic language. In the 'love context', the construction of sentences using the word 'love' is analyzed to examine the target of love. The category of 'speech context' is analyzed based on the owner of the speech, i.e. whether it belongs to oneself, a third person, the public or the voice of the heart. Finally, the construction of sentences using the word love is categorized according to structure, which is the layout of the word 'love' in the sentence. The following is a diagram of the categories that have been analyzed.



Fig. 2. Category Construction of the Use of the Word 'Love'

This difference can be observed through the frequency and way of using adjectives between text produced by humans compared to text produced by artificial intelligence (AI). The results of this study provide an in-depth insight into the difference in writing style and the selection of adjectives between these two entities.

4.1 Category 'Style'

In texts produced by humans, there is a tendency to use the adjective 'love' in a normal style. In AI, the 'poetic' style is used more. Here is a diagram to refer to the difference.

		ChatGPT4o 2 61	Human 2 61	Humanise Ai 2 61	Write for me 2 61	Totals
◆ Biasa 92		27	29	5	31	92
◆ Puitis 141		33	22	56	30	141
Totals		60	51	61	61	233

Fig. 3. Use of 'Ordinary' Style and 'Poetic' Style in Sentence Construction

Based on the figure, it can be observed that 'ChatGPT4o' uses more poetic language than normal language, which is 27 and 33 respectively. 'Humanise Ai' shows a significant difference, which is only 5 normal languages and 56 poetic languages.' Write for me' shows almost the same usage between normal language and poetic language, which is 31 and 30. In human language, the use of normal language is higher than in poetic language, which is 29 and 22 respectively. This finding shows that Ai is more tends to use the word 'love' in a poetic style. This is related to Ai's tendency to generate sentences by using the context of the words in an appropriate style. According to Tenney et al. (2019), the contextual representation model Ai is said to have a high ability to represent syntactic phenomena in sentences. However, in the construction of sentences by humans, the word 'love' is more likely to be in the normal construction. This is related to the context when this writing is done instead of the context of the words (Ismail et al., 2024).

4.2 Category 'Love Context'

In the 'love context' category, the construction of sentences is analyzed based on 15 love contexts that are constructed, namely 'nature', 'culture', 'definition', 'self', 'world', 'animals', 'divine', 'science', 'freedom', 'family', 'country', 'partner', 'work', 'friends' and 'general'. The following is a diagram for the analysis of this category.

		ChatGPT4o 2 61	Human 2 61	Humanise Ai 2 61	Write for me 2 61	Totals
◆ Alam Semula Jadi 3		1	1		1	3
◆ Budaya 1		1				1
◆ Definisi 69		27		34	8	69
◆ Diri 1			1			1
◆ Dunia 1		1				1
◆ Halwan 1		1				1
◆ Itahi 5		1	4			5
◆ Ilmu 6		6				6
◆ Kebebasan 1		1				1
◆ Keluarga 9		2	6		1	9
◆ Negara 14		1	13			14
◆ Pasangan 64		5	32		27	64
◆ Pekerjaan 3		3				3
◆ Sahabat 1		1				1
◆ Umum 67		11	5	27	24	67
Totals		62	62	61	61	246

Fig. 4. Analysis based on the 'Love Context' Category

Based on this diagram, it can be observed that the construction of the sentence using the word 'love' by Ai is more inclined to the form of definition, that is to define the word 'love'. This can be observed through the number coded on 'ChatGPT4o', which is

as many as 27 and 'Humanise Ai' as much as 34. In Ai represented by 'write for me', the tendency to use is more similar to 'human', which is in the context of 'couple', which is as many as 27. In human usage, the context of 'couple' is the highest context used to construct the sentence 'love'. However, 'write for me' also tends to use the word 'love' in the form of a 'general' sentence, which does not refer to anyone. This frequency equals 'Humanise Ai', which is 27. On 'ChatGPT4o', the 'general' context also shows a high frequency, which is 11. Different from the frequency by humans, which is only 5 in the 'general' context. Human is seen to be more inclined to choose the context of 'country' when using the word love after their main choice of the context of 'couple'. The only context that exists only in human constructs and is not owned by Ai is the 'self' context. This context refers to the construction of a sentence that refers to oneself.

4.3 Category 'Speech Context'

In the 'speech context', the analysis examines the source of the speech, i.e. whether it is from the 'third person', 'general', 'personal' or 'voice of the heart/humour'. The following is a description of this analysis.

	ChatGPT4o 2 61	Human 2 61	Humanise Ai 2 61	Write for me 2 61	Totals
Orang ketiga 35		4		31	35
Penyataan umum 181	61	29	61	30	181
Peribadi 31		31			31
Suara hati/Humor 5		5			5
Totals	61	69	61	61	252

Fig. 5. Analysis based on the 'Speech Context' Category

In the diagram above, it can be observed that AI's tendency is more towards utterances in the form of 'general statements'. This can be observed through 'ChatGPT4o', which is as much as 61 (Fully), 'Humanise Ai' as much as 61 (Fully) and 'Write for me' as much as 30. In the use of 'human', the context of the speech that refers to this 'general statement' only frequency of 29. A significant difference can also be observed in the diagram above, which is 'human' used in all speech contexts. On the other hand, AI only tends to the context of 'general statements' and 'third person' speech.

4.4 Category 'Structure'

This category analyses the use of the word 'love' based on the placement of this word in the construction of the sentence, i.e. whether it is at the front, in the middle or at the back of the sentence. Here is a diagram to illustrate this analysis.

	ChatGPT4o 2 61	Human 2 61	Humanise Ai 2 61	Write for me 2 61	Totals
Belakang 6		1		5	6
Depan 166	54	23	55	34	166
Tengah 72	7	37	6	22	72
Totals	61	61	61	61	244

Fig. 6. Analysis based on the 'Structure' Category

Based on the diagram above, it can be observed that AI tends to use the word 'love' at the beginning of the sentence. This statement is based on the frequency shown by 'ChatGPT4o', which is as many as 54, 'Humanise Ai' as many as 55 and 'Write for me' as many as 34. In contrast to the construction by humans, the tendency is seen more towards the 'middle' structure, which is as many as 37 while the structure in the front is lower, which is 23. The least used structure is the back structure, which is 1 by human and 5 by 'Write for me'.

5 Discussion

This study has analyzed the differences in the use of the adjective 'love' in texts produced by humans and artificial intelligence (AI) from four aspects of the main categories, namely 'style', 'love context', 'speech context', and 'structure'. The findings of the study show that there is a significant difference in the way these two entities use the word 'love'. In the 'style' category, text produced by humans tends to use ordinary language style, while AI more often uses poetic language style. AI such as 'ChatGPT4o' and 'Humanise AI' show a higher tendency to produce texts with a poetic style, compared to humans who more often use a normal language style (Tenny et al., 2019). In the 'love context' category, AI tends to define the word 'love', whereas humans more often use the word 'love' in the context of a couple. 'ChatGPT4o' and 'Humanise AI' often use the word 'love' in the form of definitions, while humans use it more in the context of partner relationships and countries. In Ismail et al., (2024), human writing tendencies are related to the context of the writing environment, rather than the context of words. Next, in the 'speech context', AI tends to use speech in the form of general statements, compared to humans who use various types of speech contexts, including the voice of the heart and humour. 'ChatGPT4o' and 'Humanise AI' show a high tendency to use general statements. Finally, in the 'structure' category, AI is more likely to put the word 'love' at the beginning of the sentence, while humans are more likely to put it in the middle of the sentence. The back structure is the least used by both entities

6 Conclusion

This study provides an in-depth insight into the differences in the use of the adjective 'love' between human and AI-generated texts. AI tends to use a poetic style, give definitions to the word 'love', and use general expressions. Humans, on the other hand, more often use common language styles, context pairs, and different types of speech contexts. This finding is important in understanding how AI can be optimized to produce text that is closer to human text. This study also provides a deep insight into the representation of adjectives by humans and AI. By using ATLAS.ti, differences and similarities can be analyzed in more detail, offering meaningful contributions to the fields of linguistics and natural language processing (NLP). Understanding how humans and AI

use language can help in improving human-machine interaction and in the development of more sophisticated language models in the future.

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