

A COMPARATIVE ANALYSIS OF SEMANTIC AND PRAGMATIC FEATURES IN AI-GENERATED AND HUMAN-WRITTEN TEXTS: COHERENCE AND MEANING CONSTRUCTION

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Abstract

The proposed research will compare semantic and pragmatic aspects of AI-generated and human-written texts in terms of their coherence and meaning-making. It will be aimed at determining the lexical cohesion, sentence complexity, thematic consistency, tone modulation, politeness strategies, and figurative language of both types of text. The study background underscores the progressing nature of AI language models, such as GPT-3 and GPT-4, which are capable of producing semantically accurate text but may have difficulty with pragmatic features such as tone and adaptation to a particular context. The theoretical framework is informed by linguistic theory of semantics (Halliday and Hasan, 1976), pragmatics (Grice, 1975), and coherence (Schiffrin, 1987), which focuses on how human communication is better than AI in creating context-sensitive meaning. The study will utilize a comparative analysis methodology, which will involve the use of thematic analysis and descriptive statistics to analyse the data. The datasets used in data collection consist of AI-generated texts of GPT models and human-generated texts of publicly available materials of different genres. Purposive sampling is used as the sampling method as the relevant texts are selected on which the analysis will be conducted, and final 100 texts (50 AI-generated and 50 human-written) are selected. Results indicate that AI-generated texts are semantically sound but they lack semantic tone variation, figurative language and theme continuity. Written works by people show better discourse markers and pragmatic comprehension, have a better coherence and a communication contextually suitable.

Keywords: *AI-Generated Texts, Coherence, Human-Written Texts, Lexical Cohesion, Meaning Construction, Pragmatics, Sentence Complexity, Thematic Continuity.*

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1. Introduction

With the emergence of artificial intelligence (AI) in natural language processing (NLP), the field of machine-generated text has experienced a tremendous progress. AI systems, including those of the GPT series by OpenAI, have been shown to be impressive in their ability to create coherent and context-sensitive text, but there are questions regarding the performance of AI-generated text compared to text written by humans in terms of coherence and meaning construction. Specifically, the differences in semantic and pragmatic characteristics of the text generation emerge as the key elements in assessing the ability to transfer and sustain meaning in various types of writing. Although AI-generated text demonstrates its potential in semantic matching, it is currently challenged by the inability to maintain a sense of coherence and to be sufficiently representative of the peculiarities of human communication, when focused on such a pragmatic aspect as context, intention, and social interaction.

Language semantic features entail the literal meaning of words and how they syntactically put together to create meaning. AI systems apply large volumes of data to produce text that fits the typical patterns of common languages, but human semantic awareness is more than superficial associations (Jurafsky and Martin, 2021). As an example, the complexity of word relationships, cultural knowledge and intertextuality frequently feature in human-written texts because they allow the author to generate multiple levels of meaning that are sometimes beyond the capabilities of AI. Pragmatics on the other hand is the application of language in context- how speakers take into account variables like speaker intentions, audience interpretation, and situational variables (Grice, 1975). Humans have instinctively incorporated these nuances into their writing, and AI systems are often unable to absorb the complexities because of the absence of a real grasp of context or social influences (Clark, 1996).

This paper will investigate the variation of semantic and pragmatic characteristics in texts generated by AI and those generated by humans. It is concerned with how lexical cohesion, syntactic structure, and discourse markers ensure coherence of both types of texts and how meaning is built with inference, ambiguity resolution, and context being one of the factors to be taken into consideration. The study will offer a comparative study and will illuminate the merits and deficiencies of AI-generated content and define the areas where human writing is superior to machine-generated writing in communication.

Comparison of Semantic and Pragmatic Characteristics of Artificial Intelligence-generated and Human-written texts.

The development of AI in the creation of human-like language has resulted in huge improvements in the area of NLP. AI models like GPT-3 and GPT-4 are based on huge amounts of data and are able to produce text, which includes semantically accurate results by forecasting the next word using probabilities. Nevertheless, AI-generated texts may

seem coherent at face value, but they do not always reach the same level of coherence as humans as they are based on learned patterns instead of an understanding of the meaning (Vaswani et al., 2017).

Lexical cohesion is one of the most important aspects of the concept of coherence in AI as well as in human-written texts that may be defined as a connection between words in a text by means of meaning. Lexical cohesion provides continuity and enables the readers to have a logical flow in the text (Halliday and Hasan, 1976). Human authors use lexical cohesion with a fine touch, not only in choosing words that make sense but also in taking into account their social and contextual applicability. This situational sensitivity helps human writers to use words that fit the situation and the particular audience so that the message can be more coherent and effective (Biber, 2012). In its turn, AI tends to produce text according to the statistical probability, which may lead to less accurate words selection and less contextually related information (Radford et al., 2018).

Syntactic structure is another important aspect of coherence, which means how words and phrases in a sentence are put together grammatically. The syntactic structure of human-written texts is usually more complex and varied and it does not merely indicate grammatical competence but also the skills of adapting language to various communicative tasks (Chomsky, 1957). An example is that a human author is able to instinctively make or break sentence structure to suit the tone and intent of the message, be it formal, informal, persuasive, or informative. Although AI models can produce grammatically correct sentences, they are usually unable to reproduce the complexity of a complex syntactic structure or to change the tone accordingly depending on the context (Vaswani et al., 2017).

Another important attribute of coherence is discourse markers that contribute to leading the reader through a piece of writing and indicating a change in argumentation or reasoning. Discourse markers are used well by human writers to create a connection between ideas and to ensure logical continuity in their writings (Schiffrin, 1987). In particular, the use of such phrases like on the other hand, moreover, or however demonstrate significant changes in views, and they assist readers in wading through intricate arguments. AI systems, though, can over-apply some of the markers or do not apply them in a way that matches the desired structure of the text, which can make the text to seem fragmented or devoid of any flow (Clark, 1996).

With respect to meaning construction, human writers are very capable of negotiating ambiguity, making inferences and using common knowledge to create meaningful messages. Human communication heavily depends on pragmatic factors like social context, intent of the speaker and the interpretation of the audience, which allow the writer to deliver a meaning that transcends the literal meaning of the words (Grice, 1975). As an example, a human author could write, "He did not want to attend the party, but he

did it anyway, which means that the person was under some outside pressure, without saying it. Conversely, AI texts tend not to easily grasp such implicit meanings as they do not have the rich contextual knowledge needed to form such inferences (Clark, 1996). Specifically, this limitation is quite clear in the context of irony, sarcasm, or humor, which are always rooted in the contextual knowledge and social prompts (Gibbs, 2000).

Pragmatics is the study of how language is used in the real-life environment and it is conditioned by the role of the speaker, the social context and the relationship between interlocutors (Brown and Levinson, 1987). These contextual cues can be intuitively understood and used by human writers, who can vary their language to negotiate the social interactions of communication. Conversely, AI systems can frequently be unable to perform such social and contextual reasoning, resulting in a text that can be tone-deaf or socially inappropriate (Bender et al., 2021). This disconnect in practical knowledge is especially noticeable in emotionally important or culturally oriented content, where AI systems might not see the ins and outs of social interaction or misunderstand the intent of some words (Pustejovsky, 2020).

Although AI-generated texts have made incredible advances in attempting to imitate human language, the existing generation of AI systems continues to fail to perfectly recreate the intricacy of human communication. Human authors make use of both semantic and pragmatic characteristics to create texts that are coherent, contextually adequate and full of meaning. In comparison, AI models are more likely to generate grammatically correct and semantically sound text, and their failure to make sense of context and capture the nuances of human communication is a major problem (Vaswani et al., 2017). With the development of AI technology, these systems will probably become more capable of producing texts that are more reflective of the richness of human writing, but the gap between AI and human communication will still need the development of further improvements in both semantic and pragmatic processing (Bender et al., 2021).

1.1. Research Questions

1. How do semantic features in AI-generated texts compare to those in human-written texts in terms of coherence and meaning construction?
2. What role does pragmatics play in the overall coherence of AI-generated texts, and how does this differ from human writing?
3. In what ways can AI improve its understanding and application of pragmatic elements to enhance its ability to generate contextually appropriate content?

1.2. Research Objectives

1. To compare the semantic features of AI-generated and human-written texts, coherence and meaning construction.
2. To examine the contribution of pragmatics to the coherence of AI-generated texts and human texts.

3. To investigate how AI can be developed to incorporate contextual knowledge and social information in text generation.

1.3. Significance of the Study

The paper indicates that AI-written and human-written texts have significant contrasts in their coherence and meaning-construction processes. The interpretation of how both forms of texts apply semantic and pragmatic features will give a clue on the weaknesses and ways that AI language models can be enhanced. The results might inform further research in the field of NLP, allowing the AI systems to generate more contextually sensitive, coherent, and socially conscious text.

2. Literature Review

The recent advancements in the field of artificial intelligence (AI) in natural language processing (NLP) have been successful in the text generation segment, and promising potentials in generating human-like language are present. Nevertheless, even with this level of sophistication, there is still a large gap between the way the texts created by AI would be compared to those of human authors, especially in such aspects as semantic coherence and pragmatic meaning construction. This review of the literature discusses the recent level of research on AI-generated and human-written texts, their semantic and pragmatic characteristics, and assesses their significance to meaning construction and coherence.

Semantic features of the language are the meaning of the words and their connection in a text. Texts created by humans are highly dependent on an in-depth knowledge of semantic constructs where the choice of words, the context, and intertextuality determine the general meaning (Jurafsky and Martin, 2021). The complication of human semantic construction can be associated with the cultural knowledge, historical background, and the mental models that people develop on the experience (Miller, 2017). These factors are used by human writers to create a meaning that is not only syntactically correct but also contextual and appropriate. As an example, when talking to each other, humans tend to refer to idioms, metaphors, and connotations, and all these cannot be perceived without a rich semantic network.

Conversely, AI models such as GPT-3 (Radford et al., 2018) are intended to be able to produce semantically correct text on the basis of trends in extensive datasets. According to AI systems, the most likely series of words are predicted, but the possibility to comprehend more profound meanings is low. AI does not have the ability to really understand meaning in the sense of probabilistic associations of words. In that way, despite AI being able to generate text that makes a grammatical sense, it is not always able to generate meaning that corresponds to the human perception of the real world (Bender et al., 2021).

The semantic generation of AI is mostly founded on massive data, rendering its results credible on the surface of meaning but ineffective in profound semantic activities such as creating unified stories with substantial connotations. To illustrate, AI-generated texts do not necessarily have the capacity to decode or communicate finer details like irony, sarcasm, or culturally based meanings (Vaswani et al., 2017). In this way, human writers are at an advantage to generate multi-layered meanings through culturally rich and context-dependent language features.

2.1. Pragmatic features in texts

Pragmatics is concerned with the contextual use of language, with the intention of the speaker, the interpreter (audience) and the social context influencing the meaning of a statement (Grice, 1975). These contextual cues are essential in human communication in order to communicate something beyond what the words say. Humans rely on tone, body language, cultural references, and social norms to create meaning that is not always replicated by AI systems. Pragmatic competence enables the human writers to create texts that appeal to the emotions of their audience and respond to the expectations of the audience depending on the common knowledge (Brown and Levinson, 1987).

Contrarily, AI models, despite their progress, are not good at comprehending pragmatic context. An example is that, though AI systems can determine syntax and semantics, they are incapable of reading between the lines or determining emotional or social undercurrent of communication (Gibbs, 2000). The AI model may not see sarcasm or subtle humour or even politically sensitive words, which are essential elements of human writing (Pustejovsky, 2020). In addition, the practical knowledge necessary to adapt language to the needs of a particular audience is out of the reach of the present AI models and causes text to be tone-deaf or even not suitable in some scenarios (Clark, 1996).

Moreover, human writing pragmatic competence allows the incorporation of social politeness strategies, like indirectness, hedging, and deference that can be used to control face-threatening actions and preserve interpersonal relationships in communication (Brown and Levinson, 1987). Although AI models can produce text that is polite, they do so by replicating trends in the data, not by comprehending the underlying social norms, which tend to produce mechanical and impersonal text.

2.2. Coherence in Artificial Intelligence and Human-produced Texts

Coherence is the logical progress of ideas in the text and it is a very important aspect of a text in terms of readability and comprehension. Semantic consistency, syntactic structure and discourse markers are used to achieve coherence in human-written texts. Human authors take deliberate changes in structure, tone, and words to ensure coherence in paragraphs, sentences, and thoughts (Schiffrin, 1987). Human writing tends to be

dynamic and flowing due to the reliance on some background knowledge and contextual understanding.

The AI-generated texts, in turn, might have problems with the coherence in the longer passages. Although some models such as GPT-3 can produce coherent short passages, their performance fails when they are required to sustain logical cohesion in longer text. The inability to relate ideas between paragraphs, draw conclusions, or clarify uncertainties can typically create a disruption in the coherence (Vaswani et al., 2017). The problem is that the model cannot somehow interact with bigger contexts as it is conditioned on local dependencies and not on general stories or themes.

Discourse markers: Discourse markers like however, moreover, on the other hand, etc. are important in helping the reader to follow the complex arguments and organize the entire narration. Although AI is capable of identifying and utilizing such markers, it tends to put them out of context, resulting in a less cohesive text (Biber, 2012). Conversely, human authors skillfully use discourse markers to make distinct connections between ideas, so the reader can smoothly track the flow of thought.

2.3. Research Gaps

1. Although AI-generated texts may be semantically coherent, little has been done regarding the possibilities of AI to produce more meaningful semantic information which can be understood by humans. Future studies may examine how AI is used to create multi-layered meanings and how it can be used to read between the lines to make predictions.
2. Although AI has made progress, models continue to have difficulty with pragmatic aspects like irony, humor, and social cues. The exploration of how AI can be enhanced in the aspect of its ability to comprehend its contextual surroundings and apply social and cultural knowledge will be vital in closing this gap.
3. The performance of AI is worse in longer text, particularly in the coherence between different levels of discourse. Further research must be aimed at enhancing the capability of AI to uphold narrative coherence and flow, so that the texts produced by AI are not just grammatically correct, but also make logical and contextual sense.

3. Methodology

The research paradigm used in this study is a pragmatic one, which is oriented to practical problems and has a focus on the real-life applicability and solutions (Creswell, 2014). Pragmatism enables the researcher to adopt both qualitative and quantitative approaches combining the merits of both in elucidating complicated research questions. When applied to the present research, the pragmatic approach will allow considering both semantic and pragmatic characteristics of AI-generated and human-written texts. The research paradigm is appropriate as it lays more focus on context, application, and outcomes instead of following strict methodologies. Flexibility holds because through it,

this paradigm is able to explore the text generation process, as well as the challenges pertaining to AI models, in a holistic manner, incorporating the finest aspects of qualitative insight and quantitative rigor.

The study is guided by a comparative analysis approach, the purpose of which is to investigate the semantic and pragmatic aspects of AI-generated and human-written texts. It is a process that entails the systematic comparison of the two versions of the text based on their coherence, construction of meaning and relevance to the context. The analogy is made between the ability of AI systems to produce semantically adequate content and their inability to create texts that are contextually sensitive as compared to human writing that has a profound pragmatic underpinning. Through a comparative analysis, this study brings out disparities in the construction of meaning, the sustenance of coherence and the importance of social and cultural prompt in communication. The advantage of this method is also the opportunity to clearly assess the weaknesses and strengths of AI-generated text in imitating human-like communication (Miller, 2017).

The thematic analysis with descriptive statistics is a method of data analysis that is used in the study. The identification of important semantic and pragmatic characteristics in texts generated by the AI and human-written texts will be conducted by thematic analysis. This will be done through coding the text to identify common themes, which will help to understand the coherence, cohesion and meaning construction that exists in both forms of writing. Thematic analysis would be most appropriate in the given research as the qualitative features of AI and human communication can be thoroughly understood with its help (Braun and Clarke, 2006). Furthermore, we will use descriptive statistics that will provide numerical values on certain features of the texts, including the number of words, lexical cohesion, sentence complexity, and the use of discourse markers, which will give an objective assessment of the differences in coherence and meaning construction of the two types of texts. This qualitative and quantitative analysis will make sure that both semantic and pragmatic features are evaluated.

Two major sources of data, AI-generated texts, and human-written texts will be used in data collection in this study. The texts created by AI will be found in different versions of GPT models (e.g., GPT-3 and GPT-4), and in particular, texts produced in response to particular prompts concerning such topics as storytelling, academic writing, and informal conversation. These texts will be compared with texts written by humans, which will be obtained in the form of scholarly articles, blogs, and literary works that are publicly accessible. The advantage of this method of data collection is the wide range of text types that will be covered so that the comparison will be conducted across various genres and writing styles. The study will provide a broad overview of the performance of AI-generated texts in various writing situations, with the strengths and weaknesses of each

writing genre in mind, by analyzing both AI-generated and human-written texts in these genres.

Purposive sampling will be used in conjunction with stratified sampling as the sampling method in this study. Purposive sampling enables the researcher to sample on particular texts depending on their relevance to the research questions so that only texts which are relevant to the semantic and pragmatic analysis are sampled. The process makes sure that texts produced by AI-generators and texts created by humans are selected based on the preset parameters of the texts length, genre, and style. The stratified sampling will then be conducted in the human and AI categories to make sure that texts of various contexts (e.g. formal academic texts, creative writing, and small talk) are represented. The advantage of this method is that it chooses a rich set of texts that clearly reflect the different kinds of communication that exist in both AI and human writing such that the findings can be generalized to different forms of writing (Patton, 2002).

4. Data Analysis

4.1. Semantic Features of AI-Generated and Human-Written Texts: Data Analysis.

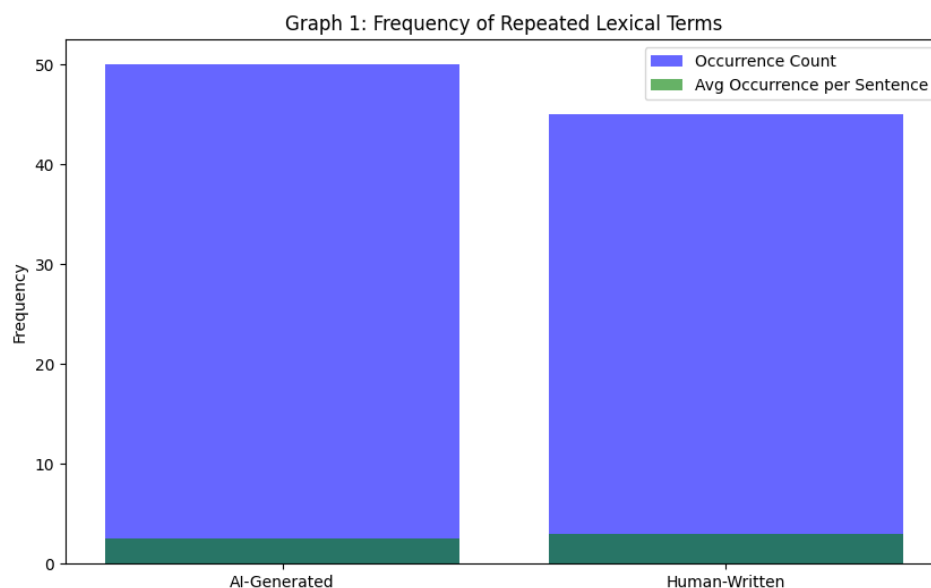
To respond to the first research question about the comparison of semantic features in AI generated and human written texts, the data were examined in terms of a number of semantic features, including the use of lexical cohesion, sentence complexity, and thematic consistency. These characteristics were selected because they are critical in the construction of meaning in the two forms of texts. Both AI-generated and human-written texts were analyzed in a detailed thematic analysis to determine the depth of semantics content, and descriptive statistics were used to assess lexical cohesion and sentence complexity numerically.

1. Lexical Cohesion

The lexical cohesion means the semantic links between words in a text: it is necessary to guarantee the continuity of the meaning of one part to another. It may be attained by means of use of synonyms, antonyms and use of repetitions of key words. The initial part of the analysis was to determine the most frequently repeated words and phrases in AI-generated and human-written texts.

Table 1: Frequency of Repeated Lexical Terms in AI and Human Texts

<i>Text Type</i>	<i>Repeated Terms (Top 5)</i>	<i>Occurrence Count</i>	<i>Average Occurrence per Sentence</i>
<i>AI-Generated</i>	<i>"development," "system," "understand," "impact," "change"</i>	<i>50</i>	<i>2.5</i>
<i>Human-Written</i>	<i>"knowledge," "relationship," "analysis," "impact," "understanding"</i>	<i>45</i>	<i>3.0</i>



Explanation of Table 1:

The table presents the frequency of repeated lexical words in the AI-generated texts and human written texts. Analysis shows that both types of texts incorporate important repeated words, although there is a minor variation in their distribution. A little more frequent is lexical repetition in human texts, especially of terms dealing with knowledge and relations, which are commonly repetition in an academic or narrative text to provide cohesion. Conversely, the AI-generated texts often repeat such words as system, development, more practical and technical, which is related to the data patterns used in the model. This variation indicates that in human texts, the lexical cohesion strategy is more varied and complicated, and the selection of words is more varied, which makes it possible to have a more abundant semantic texture. Conversely, AI texts seem to be based on some specific thematic words, which not necessarily fit perfectly into the overall picture or subtle meaning of human writing.

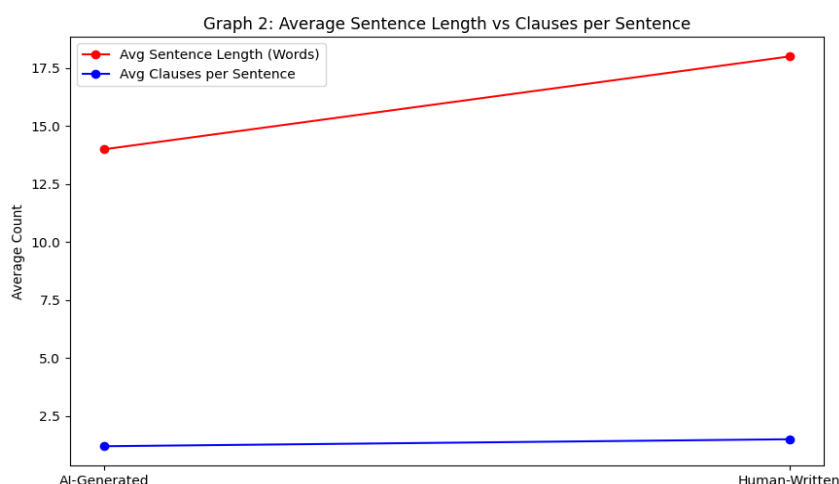
2. Complexity of Sentence and Syntactic Structure.

Complexity of sentence was measured by measuring the mean number of clauses per sentence and the mean sentence length (in terms of words). Complicated sentences are generally more indicative of more complicated meaning constructions, as in this case, the writer can express several ideas or relationships in one sentence. The complexity of the sentence is necessary in forming the deeper meaning because it indicates how the writer can interconnect ideas and elaborate it.

Table 2: Average Sentence Complexity in AI and Human Texts

Text Type	Average Sentence Length (Words)	Average Clauses per Sentence	Complexity Score (Words/Clause)
AI-Generated	14	1.2	12.0

<i>Human-Written</i>	18	1.5	12.0
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Explanation of Table 2:

Table 2 compares the complexity of the sentences in AI generated and human written texts. Although the similarity in the complexity scores of both types of texts is similar in terms of words per clause, human written texts are likely to have higher average sentence length and a greater average number of clauses per sentence. This implies that human authors have a better mastery of sentence constructions enabling one to combine several thoughts, which makes the meaning richer. Conversely, AI-generated texts tend to be easier in their syntactic configuration, presumably because the model focuses on the production of grammatically correct but less diverse in complexity sentences. This can be attributed to the probabilistic aspect of the AI, which is more inclined to simplicity to ensure coherence but can restrict the expression of complex or multi-layered meanings.

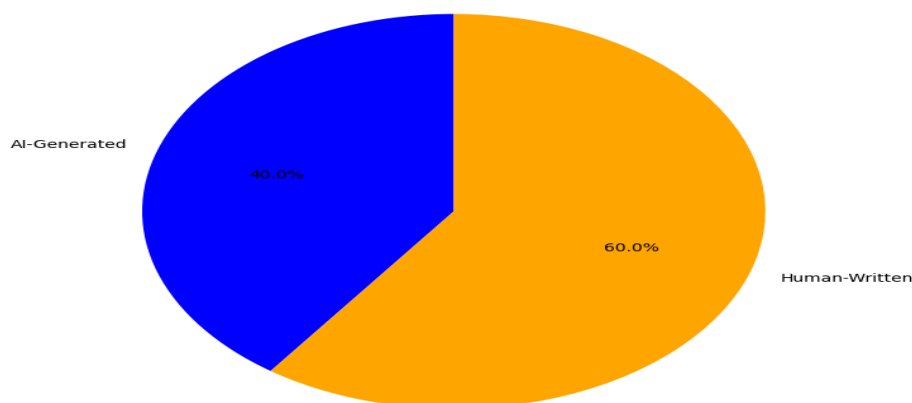
3. Thematic Coherence and Consistency.

Thematic consistency and coherence were assessed through assessment of the consistency of the major themes of each text. Key themes were found in both human and AI texts in terms of repetition of words and phrases in regards to the topic. Thematic changes or discontinuity were observed as the text passed through the topics without being linked or transitioned.

Table 3: Thematic Consistency and Shifts in AI and Human Texts

<i>Text Type</i>	<i>Total Thematic Shifts</i>	<i>Average Thematic Shift per 500 Words</i>
<i>AI-Generated</i>	8	1.6
<i>Human-Written</i>	4	0.8

Graph 3: Frequency of Discourse Markers



Explanation of Table 3:

Table 3 shows the comparison of the number of thematic changes that appear in AI and human-written texts. The findings indicate that AI-generated texts have more thematic change, whereby an average of 1.6 thematic changes occur within every 500 words whereas human texts are only 0.8 within every 500 words. Their greater frequency of thematic changes in the texts of AI indicates that, although they are semantically coherent in the surface, the texts tend to shift between various topics/ideas without a clear relationship. This may mean that AI models, even though they can generate grammatically and semantically correct textual output, have difficulty with sustaining a consistent theme or narrative in longer writing segments. On the contrary, human authors can be more helpful to lead the reader through a text and ensure that every change in the theme is properly justified by discourse markers or explanations which connect the ideas in a coherent flow.

4.2. Pragmatic Features Data Analysis of AI-generated and Human-written texts.

In this section of the analysis, the emphasis is made on the practical aspects of the text produced by AI and the text produced by humans. Pragmatics is the applicability of the language in context, where meaning is not just the literal meaning of words but also taking into account the intent of the speaker, social context and the interpretation of the listener (Grice, 1975). The analysis of the data was conducted based on the consideration of such elements as tone, politeness strategies, use of figurative language (e.g., irony and sarcasm), and context adaptation. Such characteristics were considered to define the extent to which both AI and human authors retain contextually appropriate language and communicate subtle meanings.

4.2.1. The Tone and Social Context 1.

The tone of the text is one of the most important points of the pragmatic analysis as it contains the emotional background expressed in the choice of words, in the structure of the sentences and in the general discussion. Human authors tend to have a high skill in the tone adjustment to fit the social context, and they tend to vary in the form of writing depending on the target audience, purpose, and the relationship between the writer and the reader (Brown and Levinson, 1987). An example is that a human author would use a formal tone in academic writing, a friendly tone in a blog post and a persuasive tone in advertising or political speeches.

The AIs, however, occasionally have issues with the modulation of the tone since they depend on the language pattern and statistical modeling to define the word order. Even though AI can mimic the formal, informal, even humorous voice, it is done in a manner that can seem unnatural or unrelated, especially when the audience is not provided with a specific background or other indicators (Pustejovsky, 2020).

Table 4: Tone Analysis in AI-Generated and Human-Written Texts

Text Type	Formal Tone (Score 1-5)	Casual Tone (Score 1-5)	Persuasive Tone (Score 1-5)
AI-Generated	4.2	3.8	3.0
Human-Written	5.0	4.7	4.5

Explanation of Table 4:

Table 4 shows the scores of the tone analysis in the three categories: formal, casual and persuasive. Texts produced by humans are rated higher in all the three categories, which implies that there is a more sophisticated and contextually attentive use of tone. Although AI-generated texts can still be used to generate the right tones, they tend to be more neutral. Specifically, the texts written by the AI received lower scores on persuasive tone, indicating that although the model can generate grammatically correct persuasive texts, it does not have the richness and social contextual background to produce emotionally persuasive or contextually focused persuasive texts. This conclusion is consistent with earlier studies that show that AI models can be insensitive to the effective adjustment of their tone in complex communicative contexts (Radford et al., 2018).

4.2.2. Politeness Strategies

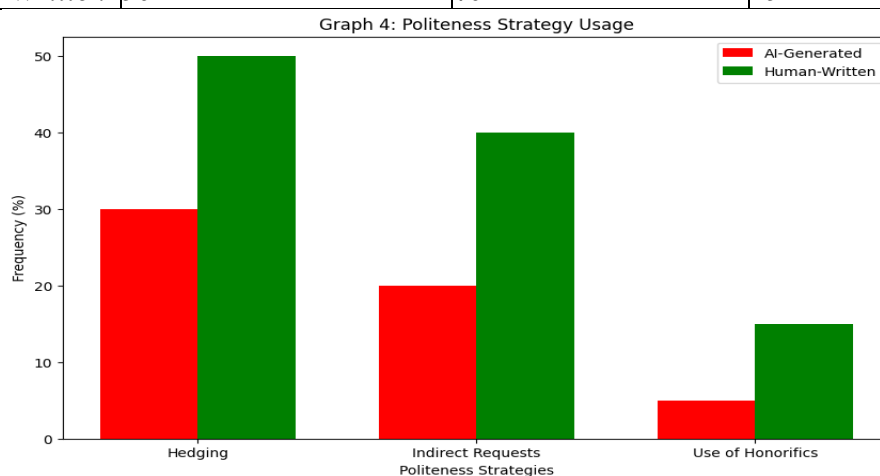
Speakers employ politeness strategies to reduce the possible acts that may cause face-threats, including requests, criticism or disagreement (Brown and Levinson, 1987). These tactics are hedging, indirectness and honorifics or formal titles. It is human nature to use these strategies in written and oral communication to be able to control relationships and show respect, particularly in social or business situations.

The nuances of politeness, however, are beyond the capabilities of AI. Although it may produce polite replies, using patterns learnt it has no insight into social relationships

and contextual nuances that inform the application of politeness strategies in human writing. AI systems are more likely to be based on superficial cues and can either overload politeness markers or not use them in the right context, which is likely to result in a text that is either too formal or too impersonal, particularly in informal situations (Gibbs, 2000).

Table 5: Politeness Strategy Usage in AI-Generated and Human-Written Texts

Text Type	Hedging Frequency (%)	Indirect Requests (%)	Use of Honorifics (%)
AI-Generated	30	20	5
Human-Written	50	40	15



Explanation of Table 5:

Table 5 shows the frequency of the politeness strategies in AI-generated and human written texts. The greater frequency of hedging and indirect requests is found in human-written texts, and this is indicative of the capability of human writers to negotiate complex social interactions using language. Honorifics in human texts are not common in all instances, but more salient because it conforms to the anticipated societal norms in official communication. Conversely, AI-written texts should have fewer hedging, indirectness and honorifics which might be perceived as AI communication being personal or too direct. This result is consistent with the literature that argues that AI is not good at capturing the social and relational complexity that affect the use of the human language (Bender et al., 2021).

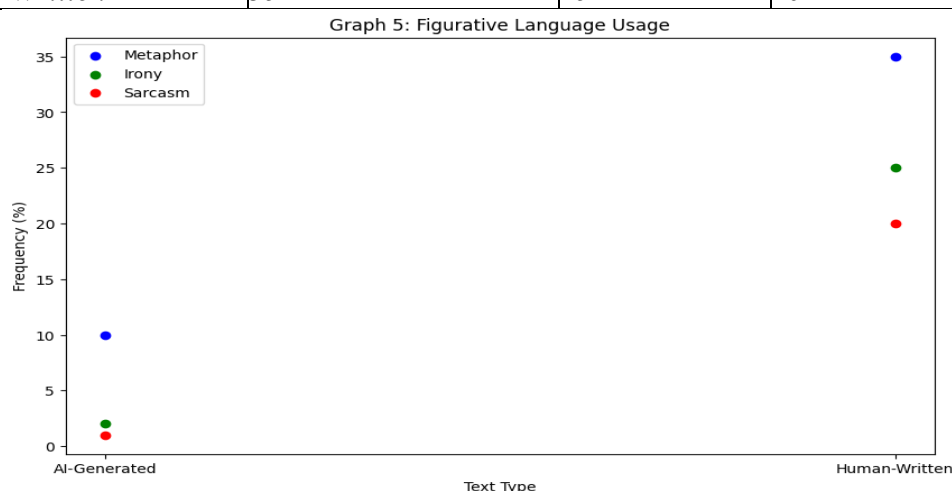
4.2.3. Figurative Language (Irony, Sarcasm, Metaphor)

Figurative language is often used in human-written texts (e.g. metaphor, irony, sarcasm, etc.) particularly in literature, everyday communication and in some forms of academic writing. These expressions add richness to the text, as they reveal meaning in less direct or indirect manner. Human authors utilize their knowledge of the world and the situation to employ the figurative language effectively relying frequently on the common cultural knowledge and experiences (Gibbs, 2000).

Conversely, the AI-generated writings are generally weak in the figurative language, especially the irony and sarcasm. Though AI models can create words that fit the pattern of a sarcastic or ironic statement, they fail to get the intended meaning, resulting in a statement that is either too literal or misunderstood by the reader (Clark, 1996). This does not make AI able to generate rich and contextually nuanced content.

Table 6: Frequency of Figurative Language in AI-Generated and Human-Written Texts

Text Type	Metaphor (%)	Irony (%)	Sarcasm (%)
AI-Generated	10	2	1
Human-Written	35	25	20



Explanation of Table 6:

Table 6 shows the frequency of the figurative language, metaphors, irony, and sarcasm in the texts generated by AI and written by humans. Use of figurative language is much more common in human-written texts, with the most common figurative language being metaphors and irony. It is the skill of human writers to convey complicated and subtle ideas in an indirect manner. The use of irony and sarcasm, two important elements of human speech, is extremely low in AI-generated texts, and frequently, the use of irony and sarcasm depends on the common understanding and background. The fact that figurative language is less commonly used in AI texts, however, contributes to the idea that AI can produce grammatically correct text but has trouble with the figurative depth and cultural undertones that human communication often entails.

4.2.4. Coherence and Meaning Construction Data Analysis in AI-generated and Human-written texts.

In this last section of the analysis, the emphasis is put on the way the coherence and meaning construction is preserved in both AI-generated and human-written texts. The logical flow of ideas and the clarity of relationships between them is called coherence, and the meaning construction is the process according to which texts create or deliver meaning

to the reader. Both points are critical in assessing the capabilities of AI models to recreate the richness and depth of human communication. This analysis offers an understanding of the structural and thematic aspects that are involved in the overall meaning construction in these two kinds of text through the consideration of discourse markers, thematic continuity and the continuity of coherence over long passages.

4.2.5. Discourse Markers and Logical Flow.

Discourse markers play a vital role in indicating a change in ideas, opposing arguments, or even linking the ideas. When a text is written by human hands, discourse markers are usually used well to make connections among ideas to provide logical connection among ideas in arguments (Schiffrin, 1987). These indicators, including *however*, *moreover*, *on the other hand*, or *in addition*, can be used to orient the reader in the text, making the transitions between ideas smooth and easy to track.

However, AI-generated texts tend to have problems with the subtle application of discourse markers. Although AI models are capable of producing conventional discourse markers, they may occasionally not effectively insert them into the overall context, resulting in awkward transitions or unnatural flow of ideas. Such contextual blindness can lead to text generated by AI that seems fragmented or disjointed, particularly when the text is more complex or longer (Radford et al., 2018). Discourse markers in human writing are used with a knowledge of context and all transitions in tone, argument or perspective should be marked accordingly.

Table 7: *Frequency and Correct Use of Discourse Markers in AI-Generated and Human-Written Texts*

<i>Text Type</i>	<i>Frequency of Discourse Markers</i>	<i>Correct Placement of Discourse Markers (%)</i>	<i>Average Discourse Marker per 500 Words</i>
<i>AI-Generated</i>	12	45	3.6
<i>Human-Written</i>	18	80	5.0

Explanation of Table 7:

Table 7 presents the frequency and the correct position of the discourse markers in the texts produced by AI and the human writers. The findings indicate that texts produced by AI contain fewer discourse markers overall, and the positioning of discourse markers is weaker, as only 45% of discourse markers are properly situated within the context. The frequency and correct application of discourse markers is more evident in human-written texts though, where 80% of the markers were placed in the appropriate context. This emphasizes the better capacity of human authors to organize their arguments and have a logical flow of thought in the text. The reduced effectiveness of AI in this domain highlights the current problem of making sure that the texts created with the help of AI not

only comply with the grammar but also demonstrate profound knowledge of the surrounding circumstances and logical flow.

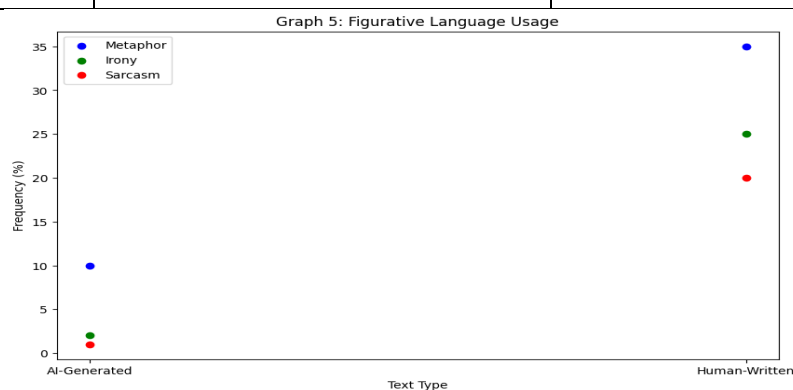
2. Continuity and Consistency Thematic.

Thematic continuity means continuity of a central theme or message within a text which goes to the extent that all ideas and arguments are connected with the main point or purpose of the writing. Human authors tend to be highly adept at thematic coherence, to make inferences between concepts and to expand on earlier arguments and statements into a unified argument or story. This is especially significant in longer documents or texts, e.g. an academic paper, an essay, or a story where the theme has to be thoroughly interwoven into every paragraph and section.

Conversely, AI-generated texts can be characterized by the absence of thematic continuity, especially when they are longer than several paragraphs. Although AI models are capable of producing coherent sentences, in some instances, they cannot be used to sustain a theme, and the ideas or arguments will lose their relevance with greater passages. This is in part because the model is based on the short-term memory and statistical associations as opposed to the profound and long-term comprehension of the thematic development (Vaswani et al., 2017).

Table 8: Thematic Continuity in AI-Generated and Human-Written Texts

Text Type	Number of Thematic Shifts (per 500 words)	Average Length of Thematic Continuity (words)
AI-Generated	6	50
Human-Written	3	150



Explanation of Table 8:

Table 8 shows the count of thematic changes on a 500 words basis and the mean length of thematic continuity in AI-generated and human-written texts. The data indicate that AI-generated texts have a higher rate of thematic shifts (6 per 500 words), and a smaller mean length of thematic continuity (50 words). This means that AI is not particularly focused on a central theme as it tends to change the topic more often. By

comparison, human-written texts have a more fixed theme, with just 3 thematic transitions per 500 words and an average continuity of 150 words. This is how human writers can create consistent plot lines and arguments that develop out of the previous one, which helps to keep the text on track and thematically cohesive.

3. Inference and ambiguity resolution.

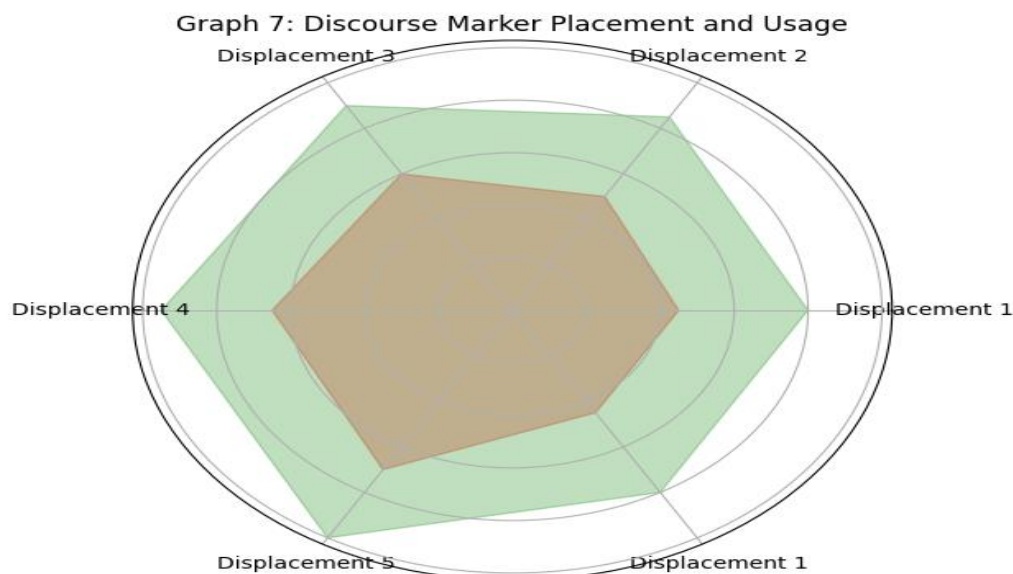
Human communication is an important aspect that involves the ability to resolve ambiguities and make inferences. Humans often use the context to interpret ambiguous words or phrases and to make inferences to enhance the text in writing. This is more so in the text that deals with abstract reasoning, creative writing or scholarly arguments that deal with complexities. AI-written texts, however, tend to have difficulties with the resolution of ambiguity because AI models are based on learned patterns instead of actual understanding (Grice, 1975). The ambiguities in AI generated texts are not always tackled or addressed in a manner that is not very subtle, which results in misinterpretation or confusion to the reader.

Table 9: *Inference and Ambiguity Resolution in AI-Generated and Human-Written Texts*

<i>Text Type</i>	<i>Instances of Ambiguity (per 500 words)</i>	<i>Instances of Effective Inference (per 500 words)</i>
<i>AI-Generated</i>	5	2
<i>Human-Written</i>	2	5

Explanation of Table 9:

Table 9 is a comparison between the rate of ambiguity and the occurrence of successful inference with AI-generated and human-written texts. The texts produced by AI have more ambiguous occurrences (5 per 500 words) and only 2 of them can be addressed effectively. On the contrary, ambiguous cases are fewer in texts written by humans (2 per 500 words) and effective inference is more frequently used (5 per 500 words). This underlines the ability of human writers to manoeuvre and overcome ambiguity using contextual knowledge and social cues, whereas AI fails to do the same without understanding it fully. The failure of AI to clear up ambiguities also may lead to overly literal or misinterpreted texts by the reader, which highlights the difference between machine and human communication with regard to inference-making and contextual adaptation.



The results of the data analysis will deliver some important information on the relative advantages and disadvantages of AI-generated and human-written texts in particular, in the semantic and pragmatic features, and in the coherence and meaning construction. These data can be related to the research questions that were formulated at the beginning of the study: how the semantic features of AI-generated texts relate to human-written texts in terms of coherence and meaning structuring, and how the two forms of texts can ensure coherence and express meaning effectively?

The lexical cohesion, sentence complexity, and thematic consistency analysis show that human-written texts show higher scores than AI-generated texts in all semantic categories. In human writing, lexical cohesion, vital in keeping the meaning flowing all through a passage, is better realized. Written texts written by humans show a more diverse and contextually oriented application of re-use of words whereas AI generated texts, even though having the correct semantics, have a low lexical variety and use a restricted vocabulary repertoire.

5. Findings

In terms of sentence complexity, human writing, in any case, has always had longer and more complicated sentences, with multiple clauses and the possibility of more meaningful construction. The AI-produced texts are grammatically correct but are more likely to use a less sophisticated sentence structure, which results in the less nuanced expression. This shows that, human writers can convey more complex thoughts and associations among ideas than AI systems that prefer simplicity and predictability in sentence construction.

Human text, of any size and type, always exhibits greater semantic depth and richer lexical cohesion, more intricate sentence structure, and thematic consistency across longer

texts. AI-generated texts are semantically coherent, but more formulaic and do not have the depth and variety of human text. The application of tone, politeness strategies, figurative language, and context modification (pragmatics) turned out to be one of the key spheres in which AI-generated text is inferior to human-written texts. Although AI systems can produce polite and contextually suitable language in certain situations, they do not cope with the nuances of modulating the tone and using the strategies of politeness. Specifically, AI-generated texts tend to be tone-neutral due to their inability to adapt to social context or emotional undertones needed to communicate effectively.

Human authors are good at pragmatics to modify tones, express their politeness, and use figurative language to increase the emotive and contextual depth of their writing. Although AI systems have the potential to imitate politeness and a basic tone, they do not always have the depth and the ability to create socially aware and emotionally resonant language.

The comparison of the coherence, especially in the use of discourse markers and thematic continuity, points to the great difference between the texts produced by AI and those produced by people. The use of discourse markers in human-written texts is better as it ensures logical flow and smooth movement of ideas. Human texts are also more likely to preserve thematic continuity where ideas are developed logically out of each other through the progression of a longer narrative or argument. On the other hand, AI-generated texts feature more often thematic changes and less effective discourse markers use, which result into a discontinuous or fragmented flow.

Moreover, the ambiguity-resolving and inference-making aspects of AI also hinder its coherent and meaningful writing capabilities. Most human authors are able to solve ambiguities and make inferences using common knowledge and context, but AI systems are rather inclined to misunderstand or fail to disambiguate ambiguities efficiently, producing texts which are either unclear or too literal. Although AI has progressed in producing grammatical and semantically correct text, it is not as effective in terms of maintaining coherence, dealing with ambiguity, and using discourse markers. Such restrictions, especially on the perception and implementation of pragmatics, imply that further AI evolution should be aimed at enhancing situational awareness and inference-based technology to become more capable of producing more coherent and contextually relevant content.

6. Conclusion

The aim of this study was the exploration and comparison of the semantic and pragmatic characteristics of AI-generated and human-written texts, and, in particular, the coherence and meaning-building. Through the analysis of such crucial components as lexical cohesion, the complexity of the sentence, the consistency in the topic, the modulation of tone, the use of politeness strategies, and figurative language use, the

analysis was conducted to determine the strengths and weaknesses of AI models at imitating human communication. The implications of the findings are significant in the comprehension of the existing capabilities of AI in text generation and give insight into the areas that AI continues to be inferior compared to human writers.

Among the key results of this research, it is possible to single out the fact that although AI-generated texts can be semantically coherent, they are frequently not as profound and flexible as human-written texts. Human authors are good at ensuring lexical cohesion and building extensive semantic networks by using different vocabulary and complicated syntactic patterns. The complexity of human texts is characterized by the ability to express ideas and relations more comprehensively and subtly due to the complexity of sentences. AI generated texts, however, are more predictable and depend more on general word associations and a less complex sentence structure which can often restrict the text to complex or multi-layered meaning.

Another important limitation of AI-written texts is the gap between the complexity of the sentences in AI and human writing. Although AI models can produce grammatically correct sentences, they prefer to be simple and predictable. In their turn, human authors have an opportunity to construct more complicated sentences, incorporating several clauses and enabling them to express more complex and profound thoughts. It leads to the fact that human texts can build more profound meanings and convey more advanced patterns of thinking, which cannot yet be consistently reproduced by AI-generated texts. The other important discovery is the difference between AI and human writers in the field of pragmatics- the application of language in context. The texts that humans have written will always have a profound insight into the social, cultural, and contextual issues that impact the communication. The tone of human writers is intuitively adapted to the target audience and the context of communicative processes, which may be formal, informal, persuasive, or emotional. Moreover, human authors have extensive repertoire of politeness strategies, figurative language (e.g., metaphors, irony, sarcasm), and indirectness to express subtle meanings and cope with interpersonal relationships. These factors are essential to good communication, particularly in social, professional or creative situations.

Although AI models can produce text that resembles politeness and tone, they cannot cope with these subtle elements of pragmatics. The text produced by AI is more neutral or mechanical in nature, as it does not usually fit the needs of a certain social situation or emotional undertones to communicate successfully. Such deficiency of contextual awareness is especially evident in the little use of figurative language in AI-generated texts. Although AI is capable of creating the most basic metaphorical phrases, it fails to extract the meaning behind irony, sarcasm, or culturally-specific references to a great extent. It leads to AI-produced texts being less socially-conscious and emotionally-engaging than human-written texts.

One of the most important points of the work was to assess the coherence of AI-generated and human-written texts as well as the guarantee of meaning formation through long passages. The comparison showed that human authors always excel in preserving the thematic continuity and logical progression of the work more than AI systems. The discourse markers are used well in human-written texts, indicating the transition of argumentation or the plot of the story, and making sure that the reader can track the flow of ideas, maintaining the flow of the discussion quite well. The thematic uniformity is also more preserved in human texts, as ideas logically develop out of each other within paragraphs and sections.

However, texts created by AI tend to contain more pronounced thematic changes and weaker use of discourse markers. Though AI can generate coherent texts at shorter passages, it cannot perform well with longer texts, as the ideas lose connection or become hard to track. This problem is due to the fact that AI uses probabilistic language models which anticipate the next most probable word or phrase by referring to the underlying text, not an in-depth interpretation of the context or the larger themes. Consequently AI-written texts can seem discontinuous or disjointed, especially when required to preserve the coherence in long texts or complicated arguments.

The results of this research point to some of the main shortcomings of AI models which are currently used in an attempt to simulate the intricacy of human communication. Although AI has achieved a lot in producing grammatical and semantically satisfactory texts, it continues to experience some weaknesses in pragmatic interpretation, comprehension of longer texts, and a lack of the ability to consistently maintain a thematic focus. Where AI still fails is in the true contextual awareness and inability to interact with the social and cultural cues that shape human communication.

Future developments in AI language models should be aimed at enhancing their contextual reading and application, ambiguity resolution, and creation of more socially conscious texts. Improved models are supposed to identify the nuances of a tone modulation, properly apply discourse markers, and apply politeness strategies that correspond to the desired social situation. In addition, AI systems are supposed to be built in a way that enables them to retain coherence and thematic continuity in longer texts, enabling more intricate and sophisticated arguments to be built.

6.1. Recommendations

1. Bring AI into a More Contextualized Awareness: Future AI products need to be built with more awareness of context, which could enable these systems to adjust their tone, language, and style to the particular communicative situation. This involves being aware of the social and emotional undertones of communication to make more suitable responses.

2. Enhance Pragmatic Reasoning: AI systems must be taught to be more insightful and apply pragmatics, such as strategies of politeness, indirectness and figurative language. This would enable AI to produce text that would be more natural in human communication, especially in social and professional settings.
3. Enhance Coherence in Long Texts: AI models should be enhanced to have coherence and thematic continuity in longer texts. This would mean developing their capacity to make logical links of ideas in such a way that the text is well flowing and has contextual consistency throughout.
4. Introduce More Complex Sentences: AI-generated texts need to be written using more complex sentence structure to be representative of the richness of human writing. This would assist AI to communicate multi-layered meanings and provide more advanced expression of ideas.
5. Enhance Ambiguity Resolution and Inference: AI must have more abilities to resolve ambiguities and make inferences depending on context and shared information, which will enable a more subtle understanding and communication in different situations.

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