Artificial Intelligence and Literary Analyses: Challenges and Prospects

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Abstract
Whilst contemporary trends and developments in the areas of web-based facilities and artificial intelligence (AI) solutions have opened an interesting vista of a mechanised world of literary analysis, there is need to ask whether they can also effectively and creatively deliver useful insights on new ways to interpret literary texts. Beyond quantum analyses of patterns and relationships between events, machinesmight not be accurately configured and trained to match human cognition as well as behave like skilled analysts in the understanding and interpretation of feelings, body-language, emotions and atmosphere of literary texts. Using five excerpts from Chinua Achebe'sThings Fall Apart and two Natural Language Processing tools (NLP), this paper explores the challenges and prospects of AI. It focuses on how innovative literary digital aid can effectively and successfully be applied and implemented in literary analysis without reducing the art of creative imagination/reasoning to mere literary calculus. It posits that developing specialised metrics for analyzing fiction—a unique package of automated computational solution or programming that will be suited to qualitative assessment of fictional texts—might be a risk the creative literary analyst may be willing to take by subjecting literary texts to the power of machine interpretation(s). Hence, while AI may offer interesting potential for assessing quantum data in some literary texts, however, acceding to unrestricted digital solutions may undermine the human creative imagination, as analysis might tend more towards calculus and algorithm-friendly systematic literary output. Thus, for now, the full impact or significance of AI solutionsfor literary analysesis yet to be detained.

Keywords: Artificial intelligence, literary calculus, digital aid, machine learning, literature

Introduction

In a contemporary AI-controlled world of cars (self-driven), aircraft, buildings and drone fishing which run on advanced artificial intelligence, the digital

landscape is becoming increasingly fascinating. Thus, it becomes even more appealing to examine the advantages that artificial intelligence might hold for the literary analyst.The modern world is increasingly being governed by intricate algorithms and neural networks (real or virtual computer systems designed to emulate the human brain in its ability to learn and assess imprecise data).In that regard, what can literary-based algorithms (specialised computational procedures for literary analysis) reveal to the literary analyst about the emotions, sentiments and inner minds of characters in works of literature? Algorithms are guided by a series of instructions to decipher specific problems. They also comprise approaches which engender suitable outcomes from the options available for handling specified tasks. Given that algorithms are powerful predictors of human behaviour, literary analysis might, effectively, be bolstered through this mechanical formula.Thus, how can the literary critic exploit the resource of artificial intelligence (AI) to efficiently analyse certain psychological dimensions of characters such as sentiments and emotions?

With virtual intelligent voice assistants such as Apple's Siri, Google's OK Google and Amazon's Alexa, which make literary analysis easier right from text selection, the digital landscape has become more engaging and fascinating for the literary analyst. For instance, to select and analyse African novels featuring themes of fatherhood (e.g. the issue of absent fathers), the literary critic may take advantage of Amazon's Alexa Voice Service (AVS), which is an intelligent voice recognition software. This virtual assistant is triggered to a launch or a wake-up mode by a voice call of the word 'Alexa'. The voice assistant performs spoken tasks using Natural Language Processing (NLP), which is the ability of computers to analyse, understand and generate human language that also comes in speech form. The NLP includes a natural language interaction that makes it possible for the literary analyst to hold conversations with computers using plain, natural human language to perform tasks. For instance, if the literary analyst chooses Amazon's AlexaVoice Service as assistant or digital aid, the interaction between them might run thus:

> Alexa, which novels do I need to analyse father characters in African literature?
> Alexa, which novels do I need to analyse father characters in Nigerian literature?
> Alexa, which of these novels have the theme of absent fatherhood?
> Alexa, which of the novels have absent father characters as a result of death?

> Alexa, which of the novels have absent fathers as a result of divorce?
> Alexa, which of the novels have the theme of abandonment? Infirmity? Incarceration?

At the prompt of the wake-word 'Alexa', the virtual assistant is activated to respond to all the questions through an intelligent processing which understands the questions and identifies specific novels which portray father characters in African literature. Subsequently, Alexa responds by simultaneously sifting through large amounts of data (literary texts in electronic format), extracting and classifying their contents to show African novels which have the theme of absent fathers. In the process, the search can be narrowed down by asking Alexa to further fetch titles of novels with various reasons for characters'absent-father statuses – from death to incarceration. In this manner, the literary analyst is saved the preliminary time-consuming task of wading through the internet, searching for relevant texts for analysis.

However, beyond quantum selections as well as the analyses of patterns and relationships in huge literary data, there are possibilities that machines might be configured to match or even surpass human cognition.In other words, machines may be intelligently designed in such a way that they could behave like skilled human literary analysts. In that case, machines may be trained to think and understand socio-cultural meanings embedded in words to enable them to interpret the feelings (sentiments), body-language, emotions and atmosphere of literary texts.If the designing and training of AIs are effectively executed, they may present real prospects for advancing the quality of literary interpretation while saving time for human experts in literary analysis.Thus, this paper explores the challenges and prospects of AI, focusing on how innovative digital literary aid might effectively and successfully be applied and implemented in literary interpretation without reducing the art of creative imagination/reasoning to mere literary calculus. Creative analysis of works of literature is not a branch of mathematics where the use of numbers isoften utilisedto arrive at a trusted judgment or decision. However, juggling algorithms in the process of critically analysing a creative work ushers the creative analyst to the frontier of literary calculus. The sheer idea of applying mathematical language or expressions to literary analysis might prove to be quite unnerving for most literary scholars. This is because theliterary calculus approach to literary analysis demands a set of mathematical combinations and permutations whose end product is expected to yield functional artificial intelligence which will be useful for textual interpretation. In this instance, the literary calculus refers to a series of carefully

written algorithms that are dedicated to advancing textual readings in a manner that, when applied, will do an intelligent processing and arrive at a meaningful literary judgment of a given work of literature. Use of the application programming interface might yield some insight into how effectively or otherwise algorithms can be trained to understand diverse literary contexts with sometimes hidden cultural meanings in a novel such as Achebe's classical fiction *Things Fall Apart.*

Two Application Programming Interfaces (APIs)—i.e. Sentiment Analysis and Emotion analysis—which are under Natural Language Processing (NLP), are selected to assess the functionality of artificial intelligence with respect to literary analysis. The application programming interface is a software intermediary that essentially delivers requests and responses to them. In other words, an API serves as an interface which enables two different applications to communicate with each other. These AI tools are chosen because they generally extract and analyse human language in form of texts. This ability enables them to assess the emotions and sentiments that are revealed in the texts, such as the excerpts from *Things Fall Apart.* No doubt, literature is a cultural production and *Things Fall Apart* is rich in cultural and socio-religious symbols which depict the Igbo traditional worldview wherein meanings (both denotative and connotative) are communicated through the language used by the inhabitants of Achebe's imaginary Umuofia community in southeast Nigeria. For this study, five excerpts are randomly chosen since *Things Fall Apart* is written in language that allows for testing the accuracy of AIs in interpreting the symbol-laden language used in the fictional Umuofia. By running the five excerpts through the analytical power of artificial intelligence, the emotion and sentiment APIs are tested to determine if they meet the literary analysts' expectations for functionality and correctness.The Sentiment Analysis API responds to texts keyed in for processing with any of the following: Negative, Neutral or Positive. On its part, the Emotion Analysis API detects emotions in a text and understands its tones. After processing the text input, its mood detector returns a score for each of the six following emotions: Disgust, Sadness, Anger, Joy, Surprise, and Fear. While Natural Language Processing has other APIs for keywords, text classification, syntax, topic tagging, semantics and concept analysis, owing to the relevance of the Sentiment and Emotion Analysis APIs to this paper, they have been deployed to assess the correctness of the analytic capacity of NLP, which is specialised text-analysis software.

Digital Aid Application and Literary Analyses

To explore the challenges and prospects of AI in literary analysis, Natural Language Processing API Demo software such as Keyword Suggestion, Topic Tagging, Text Classification, Sentiment Analysis, Text Similarity and Emotion Analysis from the Watson and Twinword sites are examined. However, the Sentiment and Emotion Analysis API Demo is specifically used because the words in the five selected excerpts from *Things Fall Apart*are analysed to make sense of the degree of correctness of AI-based textual analysis which is centered on the emotions and sentiments of characters.

Excerpt 1

> You think you are still a child. I began to own a farm at your age. "And you," he said to Ikemefuna, "do you not grow yams where you come from?" Inwardly Okonkwo knew that the boys were still too young to understand fully the difficult art of preparing seed-yams. But he thought that one could not begin too early. Yam stood for manliness, and he who could feed his family on yams from one harvest to another was a very great man indeed. Okonkwo wanted his son to be a great farmer and a great man. He would stamp out the disquieting signs of laziness which he thought he already saw in him. I will not have a son who cannot hold up his head in the gathering of the clan. I will sooner strangle him with my own hands. And if you stand there staring at me like that, he swore, Amadiora will break your head for you!" (25)

Using the Watson Natural Language Understanding Sentimental Analysis Demo API, the overall sentimental content of the Excerpt 1 above is returned as "Negative" at a ratio of -0.39. The overall emotion of the text is analysed and presented thus – Joy: 0.61, Anger: 0.13, Disgust: 0.16, Sadness: 0.49 and Fear: 0.14. The 'emotion scores' suggest that the prevailing emotions in Excerpt 1 are those of joy, sadness and disgust. However, the Twinword Sentimental Analysis Demo API detects an overall "Neutral" sentiment from the same text above with a score of 0.007 at a ratio of -0.06. The verdict of an overall neutral sentiment in the passage is grounded on some keywords in the passage such as 'great', 'like' and 'will' to which this Sentimental API attaches different scores and, as a result, judges the general sentiment in the selected text as neutral. Similarly, from the same excerpt above, the Twinword Emotion API Demo detects and returns 'emotion scores' of Joy: 0.16, Disgust: 0, Sadness: 0, Anger: 0, Surprise: 0 and Fear: 0. The generated scores, rather erroneously, suggest that the only emotion

revealed in Excerpt 1 is that of joy. A close appreciation of the following contextual background of the excerpt will demonstrate that the emotion revealed through the API scores is inaccurate.

Contextual Framework: Excerpt 1

Readers who are conversant with Achebe's *Things Fall Apart* will readily identify the character of Okonkwo with the speaker in the passage. The negative sentiment associated with the passage is correct but the neutral assessment is not. Okonkwo's character can hardly be identified with any form of neutrality because of his temperament. Moreover, the two APIs analysed the prevailing emotion in the passage as that of joy. Okonkwo demonstrates obvious dissatisfaction with the attitude and conduct of his supposed weak (i.e. feminine) first son, Nwoye, who does not share his masculine ideals of a good son. Therefore, the pervading emotions in the excerpt are clearly those of sadness and erupting anger. Certainly, there is no discernible emotion of joy in the text as Okonkwo appears to lose his temper: "[a]nd if you stand there staring at me like that, he swore, Amadiora will break your head for you!" (25).

How does AI work in literary analysis? The literary analyst must train APIs to understand "Amadiora" in the context in which it has been used by Achebe in the passage.Part of the challenges of applying artificial intelligence to literary interpretation is the issue of creating a software package that would learn to analyse literary works in a manner that considers the narrative context. In the text, 'Amadiora' is a dialectal variant of the Igbo name (also 'Amadioha') for the god of thunder. Surely, therefore, a context in which a father threatens to invoke the god of thunder to break his son's head cannot be a joyous one. For the emotional analysis API to get this interpretation right, thealgorithms will only interpret Amadiora as a destructive element/god when they are subjected to training until they can effectively understand the nature and personality traits of Amadiora. In this case, the human literary analyst will have to keep training and retraining algorithms to meet the needs of various cultures and their uses of language that are represented in literary texts. Marcus Du Sautoy remarks that algorithms learn how to act based on the data presented to them. This implies that they will always be condemned to producing more of the same (11). Du Sautoy's concern revolves around the lack of human analytical creativeness which the use of AIs will introduce to literary analysis. To further demonstrate the complex nature of literary interpretation and the importance of analysing or interpreting a text to suit its contextual background, Jerry Hobbs explains thus:

> To an outsider, particularly to someone doing discourse analysis in an Artificial Intelligence (AI) framework, the recent controversies in literary theory concerning the nature of interpretation is puzzling. One camp claims that the interpretation of a text can be anything. The other side claims that there is a single correct interpretation. But all these confusion can be swept away by a simple observation: in mathematical terminology, interpretation is a function of two arguments, the text and a set of beliefs. In interpreting a text, one therefore presents not only an interpretation but also the beliefs that warrant the interpretation. (9)

Hobbs's explanation, which focuses on the significance of literary context to error-free textual analysis, speaks to the deficiency of the results returned by the two APIs used for the analysis of Excerpt 1. Hobbs rightly argues that literary interpretation should be anchored on the text and the set of beliefs on which the text is grounded.His argument is significant in a metric-driven analysis of works of literature, if the degree of error must be reduced or eliminated.

Excerpt 2

> Who killed this banana tree?' he asked. A hush fell on the compound immediately. 'Who killed this tree? Or are you all deaf and dumb? As a matter of fact the tree was very much alive. Okonkwo's second wife had merely cut a few leaves off it to wrap some food, and she said so. Without further argument Okonkwo gave her a sound beating and left her and her only daughter weeping. Neither of the other wives dared to interfere beyond an occasional and tentative, it is enough, Okonkwo, pleaded from a reasonable distance. (28)

The Watson Sentiment API analyses the sentimental content of the text in Excerpt 2 and returns a result of an overall Negative sentiment score of -0.57. Conversely, the overall emotional elements detected from the passage by this software are presented as Joy: 0.68, Anger: 0.48, Disgust: 0.13, Sadness: 0.20 and Fear: 0.48. Similarly, the Twinword Sentiment API also concludes that the passage has a Negative sentiment content at a "score" of -0.145 and a "ratio" of -0.233. This overall negative sentiment is based on certain keywords such as 'reasonable', 'dare' and 'enough' to which the Sentimental API attaches different scores to judge the general sentiment in the passage as negative. From the same text in Excerpt 2, the Twinword Emotion Analysis API detects the emotions of 'Sadness', 'Fear' and 'Anger' as the main emotional elements. Thus, the 'emotion

scores' of the text are presented as – Sadness: 0.23, Fear: 0.16, Anger: 0.14, Disgust: 0, Joy: 0 and Surprise: 0 -. These scores, unlike those produced in Excerpt 1, present more accurate contextual interpretation.

Contextual Framework: Excerpt 2

The two Sentiment Analysis APIs correctly returned the overriding sentiment in the above passage as 'Negative'. However, the two Emotional Analysis APIs analysedthe emotion in the text and returned the overall emotions of joy and sadness. As already shown, Excerpt 2 begins thus: "Who killed this banana tree?' he asked. A hush fell on the compound immediately. 'Who killed this tree? Or are you all deaf and dumb?" (28). Given the results from the analyses, it is worth asking if AI applications are foolproof? In this instance, Okonkwo appears to be in outright rage as he demands to know who cut the banana leaves from his family members (wives and children). Evidently, the pervading emotion in the passage is that of anger, which he demonstrated by beating up his second wife despite pleadings from other members of his family.

The incident in the passage happened during the New Yam festival, a time when Okonkwo finds the serene and celebratory mood of the community unnerving and looks for outlets for his irritation. As he paces around his large compound, he notices the banana leaves have been cut and instantly demands the attention of every member of his household. The New Yam festival is a time of joy and feasting in the land. However, because of his warrior nature, Okonkwo seems to lack the capacity for relaxation even during this brief merry-making period. Thus, having to sit around in idle tranquillity with his family and friends makes him uncomfortable, as there is no ready action for displaying his masculinity as an alpha male of Umuofia.

The degree of obvious analytical error so far noticed in Excerpts 1 and 2 demonstrates that AIs may not be smarter than their human designers after all or even take more credit than their creators. It may also be argued that using an existing set of pre-trained tools on other word-based contexts such as found in Watson and Twinworld's websites may not yield satisfactory results. In spite of this, the NLP tools from the two websites utilise deep learning to understand and interpret articles, using some text analytics designed to respond to texts in much the same way that human analysts do. As a result, a fair interpretation of the five excerpts from *Things Fall Apart* is expected. However, learning and training algorithms, perhaps for each literary form and genre of literature and the various

cultural backgrounds, might be a daunting task for the literary analyst whose field of expertise is outside the field of computing field.

As part of efforts in the application of AI to literature, Bringsjord Selmer and David Ferrucci created an artificially intelligent author, Brutus, a remarkably designed non-human author who engages in the art of creative storytelling (2). The question, though, is whether creativity can be taught to machines? Can Bringsjord and Ferrucci's Brutus effectively write a psychological novel and not run into the same hitch as the sentiment and emotion analysis APIs used in this paper. Artificially intelligent systems are trained to perform a clearly defined task. Whiletypical trained literary analysts (humans) often multi-task, AI systems mostly focus on and process a single/specific task in the course of a literary research. Thus, for the analytical results of the emotion and sentiment APIs to be error-free, the APIs must be trained and retrained to understand the nuances of an African or Nigerian novel such as Achebe's *Things Fall Apart*. No doubt, algorithms perform a useful role in textual analysis, with sentiment and emotion APIs serving as thinking machines which need to be configured in such a way that they understand that when the character of Okonkwo asks if anyone is deaf and dumb, the expression clearly spells trouble. Given that Okonkwo may be described as sad because he finds the festive period dull, there is obviously no basis for describing him as being joyful. The overriding emotion in Excerpt 2 is clearly that of anger.

Excerpt 3

> Ezinma led the way back to the road, looked left and right and turned right. And so they arrived home again. 'Where did you bury your iyi-uwa' asked Okagbue when Ezinma finally stopped outside her father's obi. Okagbue'svoice was unchanged. It was quiet and confident. 'It is near that orange tree,' Ezinma said. 'And why did you not say so, you wicked daughter of Akalogoli?' Okonkwo swore furiously. The medicine man ignored him. 'Come and show me the exact spot,' he said quietly to Ezinma. 'It is here,' she said when they got to the tree. 'Point to the spot with yourfinger,' said Okagbue. 'It is here,' said Ezinma touching the ground with her finger. Okonkwo stood by, rumbling like thunder in the rainy season. (60)

The text in Excerpt 3 above was keyed into the space provided by the Watson Sentiment API software. This API analysed the sentimental content of the passage

and returned a result of an overall Positive Sentiment score of 0.28. Moreover, the overall emotional elements detected from the input of the text for processing by this software are presented as - Joy: 0.50, Anger: 0.16, Disgust: 0.47, Sadness: 0.20 and Fear: 0.14. On its part, the Twinword Sentiment API returned a score of 0.116 and a ratio of 0.169 using some keywords from the excerpt such as 'right', 'confident' and 'like' that are awarded high positive scores which affected the overall sentiment verdict. From the same text in Excerpt 3, the Twinword Emotion Analysis API detected the emotions of 'Joy' and 'Surprise' as the main emotional elements. Therefore, the 'emotion scores' of the text are presented as - Joy: 0.027, Surprise: 0.007, Disgust: 0, Sadness: 0, Anger: 0 and Fear: 0, all of which are outside the context of the third excerpt from *Things Fall Apart*.

Contextual Framework: Excerpt 3

The two Sentiment Analysis APIs wrongly returned the overriding positive sentiment in the passage. In the same vein, the two Emotion Analysis APIs also erroneously analysed the prevailing emotion in the excerpt as joy. Intelligent machine analysts do not often interpret imagery correctly and are not expected to do so except when algorithms have been subjected to rigorous trainings. The last sentence in the excerpt reads: "Okonkwo stood by, rumbling like thunder in the rainy season" (60). Obviously, to a human analyst, the rumbling of thunder does not connote joy. Algorithms might be great at tasks such as sifting through large amounts of data and easily recognising patterns but they appear to be deficient at grasping contexts and imageries as evidenced from the high ratio of joy analysed by the two emotional APIs.

In the passage above, Okonkwo's favourite child, Ezinma, is an *ogbanje* child. She is believed to have the power to die and reincarnate repeatedly to be born to the same parents.In order to prevent her from repeatedly dying and returning, Okagbue, the medicine man is contracted to dig up the girl's *iyi-uwa*, which is believed to be some kind of magical object like a pebble which ties her to the spirit world.Consciously or otherwise, the process of severing an *ogbanje* child's link to the spirit world is usually not one which the child willingly participates in. It is often accompanied by antics and outright lies by the child, who attempts to evade questions in order to frustrate the process. As a result, patience is generally required if such children must cooperate with medicine men since nothing can actually be done if the exact spot of the burial of this magical pebble is not identified. While Okonkwo knows these facts as everybody in the community does, when the Ezinma begins to play pranks on this occasion, Okonkwo can hardly contain himself. Okagbue's calm demeanour thus contrasts sharply with

Okonkwo's stressed, impatient disposition and loss of control over his temper. He is portrayed as a roaring, rumbling father with destructive tendencies. In fact, all through the process, he keeps roaring in feats of anger at the young girl's *ogbanje* antics.On this occasion, Okonkwo seems to switch roles with the medicine man, who exhibits fatherly patience and firmness in dealing with Ezinma's antics, in contrast to Okonkwo's unhelpful fits of rage.

The clear difference between the contextual reality of the sentiments and emotions in the text and Natural Language Processing result through the emotion and sentiment analysis APIs calls for concern. It establishes that an engagement in the art of smart literary investigation which uses AI tools to drive creative analysis of a piece of literary work demands serious groundwork. Thus, before inputting data for the machine to juggle and arrive at a meaningful and relevant analysis, the analyst must engage in some level of the creation of algorithms which must be derived from the text(s) selected for investigation. Subsequently, the human analyst must perform some analytical permutations and combinations of software in order to derive an error-free analysis. In the text shown in Excerpt 3, the overriding sentiment is not positive and the predominant emotion is definitely not joy but great anger.

Excerpt 4

> Okonkwo was popularly called the roaring flame. As he looked into the log fire he recalled the name. He was a flaming fire. How then could he have begotten a son like Nwoye, degenerate and effeminate?
> No! he could not be. His wife has played him false. He would teach her.
> But Nwoye resembled his grandfather, Unoka, who was Okonkwo's father. He pushed the thought out of his mind. He, Okonkwo, was calleda flaming fire. How could he have begotten a woman for a son?
> At Nwoye's age, Okonkwo had already become famous throughout Umuofia for his wrestling and his fearlessness. He sighed heavily, and as if in sympathy the smothering log also sighed. And immediately Okonkwo's eyes were opened and he saw the whole matter clearly. Living fire begets cold, impotent ash. He sighed again, deeply. (112)

The Watson Sentiment API analysed the sentimental content of the text in Excerpt 4 and returned a result of an overall Negative sentiment score of -0.82. Equally, the overall emotional elements detected from the passage by this software are presented as - Joy: 0.15, Anger: 0.16, Disgust: 0.14, Sadness: 0.61

and Fear: 0.09. On its s part, the Twinword Sentiment API also concluded that the passage has a Neutral sentiment content at a score of --0.004 and a ratio of 0.054. The overall neutral sentiment is based on some keywords such as 'famous', 'like' and 'clearly' to which the Sentimental API attached different scores and as a result considers the general sentiment in the passage as neutral. From the same text in Excerpt 4 above, the Twinword Emotion Analysis API detects the emotions of 'Fear'', 'Surprise' and 'Anger' as the main emotional elements. Thus, the 'emotion scores' of the text are presented as follows - Fear: 0.09, Surprise: 0.07, Anger: 0.03, Disgust: 0, Sadness: 0 and Joy: 0, which correlate with the context of the excerpt.

Contextual Framework: Excerpt 4

The two sentimentanalysis APIs individually returned different overriding sentiments in the passage as negative and neutral. They also individually analysed the pervading emotions as joy and fear with different ratios. The passage is loaded with imageries and begins with the lines: "Okonkwo was popularly called the roaring flame. As he looked into the log fire he recalled the name. He was a flaming fire. How then could he have begotten a son like Nwoye, degenerate and effeminate?" (112). The degree of error in the interpretations of the text in Excerpt 4 might stem from the fact that imageries abound in the passage which the APIs have not been trained to recognise or understand.

In the passage, Okonkwo becomes pensive as he gradually pays a very high price for being one of the most powerful men in Umuofia owing to his hegemonic masculine disposition. Thus, towards the end of the narrative—and incidentally towards the end of his life—Okonkwo tries to make sense of his failed fatherhood. He wonders what happened to the flaming fire persona of his younger days. Although he has been labeled as a man of action who is incapable of engaging in deep or complex thought, he suddenly goes philosophical as he weighs the religious implications of his son's action as it would affect his lineage and ancestors and considers Nwoye's action an abomination. The question that plays around his troubled mind is why he should beget such a weak son as Nwoyewho appears incapable of stepping into his shoes or attending to his ancestorswhen he is gone. He feels a cold shudder run through his spine at this terrible prospect of annihilation. Achebe lets the reader see into the great warrior's mind as Okonkwo's "roaring-flame father versus roaring-flame son" ideal suddenly collapses.Consequently, while the analysed negative sentiments are appropriate for the passage, the neutral sentiment verdict is wrong. On the other hand, emotions of joy and fear are detected by the emotion analysis APIs

from the same passage. While the emotion of fear might be deemed to relate to the emotions in the text, the emotion of joy is inexcusably wrong. The passage ends with a sad reality for Okonkwo as he realises that "[l]ving fire begets cold, impotent ash. He sighed again, deeply" (112). Obviously, a sighing man will not be expressing the emotion of joy but that of regret and sadness.

Excerpt 5

> You have all seen the great abomination of your brother. Now he is no longer my son or your brother. I will only have a son who is a man, who will hold his head up among my people. If any of you prefers to be a woman, let him follow Nwoye while I am alive so that I can curse him. If you turn against me when I am dead I will visit you and break your neck. (126)

The final text selected for AI-aided analysis in Excerpt 5 above was also keyed into the space provided by the Watson Sentiment API software. This API analyses the sentimental content of the passage and returns a result of an overall Negative Sentiment score of -0.62. On the contrary, the overall emotional elements detected from the input of the same text are processed by the Emotion analysis API software and are presented as - Joy: 0.56, Anger: 0.50, Disgust: 0.07, Sadness: 0.50 and Fear: 0.11. Conversely, the Twinword Sentiment API returned the verdict of a Neutral sentiment score of -0.045 and a ratio of 0.015 by selecting certain keywords from excerpt 5 such as 'great', 'prefer' and 'will. These keywords are awarded high positive scores which affected the overall neutral sentiment verdict attracted when the passage was processed by the software. From the same excerpt above, the Twinword Emotion Analysis API detected the emotions of 'Joy' and 'Surprise' as the main emotional elements. Consequently, the 'emotion scores' detected and returned by the software after processing the text are presented as - Joy: 0.104, Surprise: 0.078, Sadness: 0.071, Disgust: 0.015, Anger: 0.015 and Fear: 0. The 'emotion scores' detected in the text suggest that the major emotions in the passage are 'joy', 'surprise' and 'sadness' which, obviously, do not represent the accurate textual context.

Contextual Framework: Excerpt 5

In this excerpt, the two Sentiment Analysis APIs individually returned the overriding sentiment as negative and neutral sentiments, while the emotional APIs both analysed the pervading emotions in the text erroneously as joy.It is worth noting that machine error is not new or uncommon in textual analysis. In

1989, using stylometric computer analysis – an application of linguistic style to textual analysis–Donald W. Foster concluded that "W.S's Elegy, at 99.3 percent, has a greater concordance with Shakespeare than do most poems of comparable length by other authors" (93). In 2002, however, Foster admitted errors in his attribution.

After all his threats, beatings, frustration, disappointment and a sense of turmoil over Nwoye, it becomes clear to Okonkwo that he has indeed lost his first son to the new religion. As he tries to come to terms with Nwoye'sirreverent action against him and his ancestors, his anger and turmoil deepen. These emotions are revealed in the passage where he assembles all his male children and issues the threat: "If any of you prefers to be a woman, let him follow Nwoye while I am alive so that I can curse him. If you turn against me when I am dead I will visit you and break your neck" (126). He is never the same again after Nwoye opts for Christianity and denounces him as a father. So, to redeem whatever credence remaining of his fatherhood and masculine strength, he ushers his other sons into his *obi* and vents his rage. The two emotion analysis APIs are unable to detect this rage and anger in Okonkwo's soul. Consequently, both APIs analysed the prevailing emotion in the last excerpt as joy. The proof of correctness lies in recognising the fact that the text and the context in which it is analysed must align. Proofs can be formal or informal but it has significant implications for testing the correctness of an analysed text. In this case, the textual analysis manifestly fails the proof of correctness. According to Steven Skiena, "there are three desirable properties for a good algorithms. We seek algorithms that are correct and efficient, while being easy to implement" (4). Oftentimes, the literary analyst with a pressing deadline may not have the luxury of indulging in the time-consuming venture of recalibrating the artificial intelligent software as well as giving it adequate time to train and fully read and analyse a literary piece efficiently.

From John McCarthy, Alan Turing to Ada Lovelace, even through later writers and researchers in the area of machine intelligence, there has been a longstanding debate on its efficiency.Thus, scholars such as Margaret A. Boden (163), Alan Graham (126), Nils J. Nilsson (12) and Start Russell (4) have, at different times, argued on whether machine processing can achieve the desired functional outcome and produce functional analyses which might be comparable to the creative human analytical efforts of literary texts. Lovelace maintains thus: "[t]he Analytical Machine has no pretensions whatever to originate anything. It can do whatever we know how to order it to perform" (236). For Michael J.Beeson,

machines may be capable of thinking but "they might not be any better than humans are" (77). Thus, it is necessary to design writing programs that will intelligently analyse works of fiction with wordings and expressions which must effectively carry the mood, temper and atmosphere of the literary text or analyse the narrative in the right context. The desired product from such efforts might yield automatic approaches to textual analyses which mimic basic human analytical skills. Can co-working with machines expose the natural human analytical mind to becoming a victim of AI? Literary interpretation is more than examining patterns and making comparative analyses, for much is driven by the writer's previous experience and knowledge of the historical and socio-cultural frameworks of a particular text. Currently, human analysts make better meanings from words because of their ability to appropriately situate the contexts of texts to particular meanings. However, it is hoped that, with time, AI systems will improve on their sentiments and emotional intelligence. Thus, this paper has attempted to explore the challenges and prospects of AI for the literary analyst and provided a general overview of likely pitfalls of AI in the area of analytical tinkering. Hopefully, the literary analyst will be enriched with this knowledge and, thus, be better-suited to grasp when to apply AI tools and when the human mind becomes a more resourceful and rewarding imaginative tool in the evaluation of literary works.

Conclusion

There has been anxiety concerning the computational creativity of the algorithms which are currently being applied to literary analysis, especially regarding a possible machine takeover of this area of literary scholarship from humans. For instance, artificial intelligence scholars such as Bringsjord and Ferrucci ask, "will robots soon be smarter than us?" (XVI). To address anxieties over machine takeover of literary analysis, there is a need to state that in spite of cutting-edge developments in artificial intelligence and robotics, human intelligence may continue to be an inevitable factor in literary interpretation for a long time to come. However, it is possible that artificial intelligence might help to discover aspects of literary interpretation that are indiscernible to human analysts. This way, some advantages may be gained not only in establishing analytical patterns but in terms of advancing the analysis of literary representations of intangible or qualitative elements such as body-language, emotions and atmosphere. In spite of these advantages, AI may not entirely replace the skills of a proficient keen scholar regarding the interpretation of literary texts. Thus, artificial intelligence will continue to develop in the future but for now its real merits and benefits and the extent to which they could positively affect literary analysis remain unclear.

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