
Optimizing Qur'an Interpretation with Natural Language Processing Through Critical Review and Practical Implications

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Abstract

Objective: The purpose of this study is to examine the potential and challenges of the integration of Natural Language Processing (NLP) technology in the study of Qur'an interpretation in response to the need for more adaptive interpretation in the digital era. **Theoretical framework:** The theoretical framework of this research is based on the interdisciplinary between Islamic studies, computational linguistics, and artificial intelligence, especially in the context of Natural Language Processing. **Literature review:** The literature review includes classical and contemporary literature on Qur'anic interpretation, as well as an exploration of digital projects that utilize NLP in the processing of religious texts. **Methods:** This study uses a qualitative descriptive approach based on a literature study to analyze the development of NLP technology and its relevance in interpretation studies. **Results:** The results show that NLP has great potential as a strategic tool in Islamic education, da'wah, and research, especially if it is developed ethically and collaboratively between experts from various disciplines. **Implication:** The implication of this study is the need to build a digital interpretation system that is not only technologically sophisticated, but also sensitive to the theological, cultural, and spiritual values of Muslims. **Novelty:** The novelty of this research lies in the proposal of NLP integration as an alternative approach in the study of contextual and adaptive interpretation of the Qur'an to the needs of the digital generation, as well as the emphasis on the importance of cross-field collaboration to ensure scientific accuracy and relevance.

Keywords: interpretation, digitalization, nlp (natural language processing), critical review, tafsir.

INTRODUCTION

The ability to understand the Qur'an in depth has been the main focus in the scientific treasures of Islam throughout the history of its civilization. The Qur'an as the holy book of Muslims is not only positioned as a spiritual reading but also as a source of law, ethical guidelines, as well as intellectual and civilizational inspiration. To explore the meaning contained in each verse, scholars develop the science of interpretation with various approaches and methods, both traditional and rational [1]. Tafsir bil ma'tsūr, for example,

uses the history of the Prophet Muhammad SAW and his companions as the main basis for understanding the context of revelation, while tafsir bil ra'yi accommodates reason, ijtihad, and contemporary knowledge as an interpretive aid [2]. Over time, thematic (maudhū'i), philosophical, Sufistic, and even hermeneutic approaches emerged as part of the intellectual dynamics of Islam in facing the challenges of the times [3]. This shows that tafsir is a living discipline that is adaptive to the intellectual and social development of Muslim society [4].

Nevertheless, the rapid change of the times, especially in the realm of information and communication technology, has created a new landscape in the way Muslims interact with the Qur'an [5]. Modern society, especially the digital generation, has more access to religious texts through digital media such as Qur'an applications, interpretation websites, and social media platforms [6]. In these conditions, the question that arises is how can the interpretation of the Qur'an continue to be relevant and easily accessible without sacrificing scientific accuracy and depth of meaning. One potential answer to this challenge is through the use of artificial intelligence, especially Natural Language Processing (NLP) technology, which is now an important part of global digital transformation. NLP technology enables interaction between humans and machines based on natural language processing, including in the context of religious texts [7].

Natural Language Processing, as a branch of artificial intelligence, has developed rapidly and become a solution in the processing and understanding of natural language by machines [8]. NLP allows computer systems to analyze, interpret, and generate text and conversations that resemble human interactions [9]. In various sectors, ranging from customer service, and healthcare, to law, NLP has been used to speed up the information search process, make it easier to understand complex documents, and provide sentiment analysis in real-time [10]. In the context of Islam, especially in the management and dissemination of the Qur'an and its interpretations, NLP has great potential to support more efficient, personalized, and contextual understanding [11]. NLP can also provide easy access to ordinary people who do not have a background in Arabic or in-depth interpretation.

The great potential of NLP in managing Qur'anic texts can be seen from its ability to perform semantic analysis, identify linguistic patterns, and automatically group topics [12]. For example, with NLP technology, verses of the Qur'an that address social, legal, or moral themes, can be grouped and presented to users according to their needs. Furthermore, NLP can be used to build a contextual interpretation search system, namely by associating user questions with verse explanations from various classical and contemporary books of interpretation [13]. In other words, NLP can bridge the needs of modern people with the vast and rich intellectual heritage of Islam, thus facilitating the process of internalizing the values of the Qur'an in daily life [14].

However, the application of NLP to sacred texts such as the Qur'an is not without obstacles. The complexity of the classical Arabic language used in the Qur'an has its challenges for modern technology. The Arabic language of the Qur'an is not only structural and grammatical but also contains rhetorical, spiritual, and historical dimensions that are difficult to reduce to purely linguistic data [15]. The vocabulary of the Qur'an is often polysemic, one word can have a variety of meanings depending on the context. In addition, the sentence structure in the Qur'an also does not always follow a standard grammatical order, which makes conventional NLP systems often suffer from errors in syntactic and semantic analysis [16]. Therefore, the usual linguistic approach must be combined with a deep understanding of tafsir and ushul fiqh so that the results do not mislead [17].

The next challenge is the question of ethics and theological accuracy. NLP, in essence, works by processing large amounts of data and building models based on statistics or machine learning. In this case, there is a risk that the NLP system may produce interpretations of verses of the Qur'an that are distorted or invalid because they do not consider the rules of interpretation that are recognized [18]. Tafsir is not just a linguistic process, but also an ijtihadi activity involving spirituality, the historical context of revelation

(asbāb al-nuzūl), as well as the principles of maqāṣid al-syarī'ah [19]. When AI models are run without the supervision of credible interpreters or religious institutions, there is a danger of reductionism and misuse of the meaning of the verses, especially if they are used by irresponsible parties [20].

Several efforts have been made by the Islamic scientific community and digital institutions to utilize NLP for the study of the Qur'an. The Quranic Arabic Corpus, for example, is one of the leading projects that provides systematic linguistic annotations of Qur'anic verses, complete with morphological and syntactic analysis [21]. The Tanzil.net and Quran.com sites also provide commentary in multiple languages and support interactive navigation of Qur'anic themes. However, these approaches are still largely textual and do not integrate NLP models that truly understand the context or can answer user questions based on complex interpretive logic [22]. Thus, further innovation is urgently needed.

NLP-assisted interpretation optimization should be seen as a complement, not a replacement, of classical methods. Technology should play a role as a reinforcement of the learning, research, and da'wah process. For example, in Islamic education, NLP can help students understand the verses of the Qur'an thematically, provide explanations based on authoritative commentaries, and support critical thinking skills against sacred texts. In the context of da'wah, NLP allows da'i to convey the message of the Qur'an that is more relevant to the social conditions of the audience, for example by automatically adjusting the topic of the sermon based on the actual issues or spiritual needs of a particular community [23].

In order for NLP to be applied effectively in the world of interpretation, interdisciplinary collaboration is needed. The development of an authentic and contextual system requires the involvement of interpreters, Arabic linguists, computer engineers, and Islamic ethicists [24]. Each party must understand its limitations and responsibilities in creating technology that is not only technically sophisticated but also value-adhered to [25]. Interdisciplinary research is a rational middle ground to integrate traditional science and modern technology without negating each other [26].

In the context of digital Islam, where people are increasingly dependent on software and online platforms to gain religious understanding, NLP can be a strategic medium to strengthen Qur'anic literacy. Technology in Islam not only serves as a neutral tool but also shapes the structure of religious discourse and practices of the ummah. Therefore, NLP which is developed consciously and responsibly can be an instrument for creating a more rational, inclusive, and contextual understanding of Islam. Finally, optimizing the interpretation of the Qur'an through NLP also has the potential to reduce the spread of extreme or deviant religious understanding. By presenting interpretations from credible sources tailored to the needs of modern audiences, NLP can lead Muslims to a moderate and scientific understanding. Therefore, the urgency to develop an NLP system based on the Qur'an and tafsir is not only an academic agenda but also a social and spiritual agenda for Muslims in this digital era [27].

Through this study, the author wishes to critically examine the opportunities and challenges of NLP integration in the study of Qur'anic interpretation, with an interdisciplinary approach oriented towards practical implementation. The main focus is on how NLP can be developed and utilized ethically, accurately, and inclusively in understanding the content of the Qur'an, as well as how this technology can support the digital transformation of Islam in the fields of Islamic education, da'wah, and research. It is hoped that this study can be an initial contribution to building a solid bridge between cutting-edge technology and Islamic intellectual heritage [28].

LITERATURE REVIEW

The interpretation of the Qur'an (tafsir) has a long-standing intellectual history, with classical exegetes such as Al-Tabari, Al-Zamakhshari, Al-Razi, and Ibn Kathir laying the

foundations for exegetical methodology through linguistic, theological, and legal lenses. These scholars approached the Qur'anic text with rigorous attention to grammar (*nahw*), morphology (*sarf*), rhetoric (*balaghah*), and the historical contexts of revelation (*asbab al-nuzul*). Traditional commentaries often emphasized the synchronic and diachronic structure of verses, the coherence (*nazm*) of the text, and engagement with Hadith literature. This classical corpus remains a cornerstone for any serious academic or religious inquiry into the Qur'an [29].

In the modern era, contemporary scholars have adopted diverse approaches to Qur'anic interpretation, ranging from thematic (*mawḍūʿī*) tafsir to hermeneutical, philosophical, feminist, and sociopolitical readings. Thinkers like Fazlur Rahman, Nasr Hamid Abu Zayd, and Amina Wadud have broadened the interpretative space by including ethical, contextual, and reader-response dimensions. These methodologies stress the dynamic relationship between the text and its audience, making tafsir an evolving discipline that must respond to contemporary realities [29].

Alongside these intellectual developments, the digital humanities have emerged as a pivotal domain reshaping religious scholarship. Natural Language Processing (NLP), a subset of artificial intelligence, has increasingly been used to analyze sacred texts, offering scalable, data-driven insights into language patterns, semantic relations, and discourse structures. Several initiatives have emerged at the intersection of computer science and Qur'anic studies. Notable among these is the Corpus.Quran.com project, which offers a syntactic treebank and morphological analysis of the Arabic Qur'an. Similarly, the Tanzil project and Quranic Arabic Corpus have laid the groundwork for machine-readable and linguistically annotated Qur'anic texts, enabling complex linguistic queries and intertextual analysis [30].

In the broader context of digital religious studies, NLP has been utilized to map semantic networks, detect linguistic patterns, and analyze sentiment and themes across sacred corpora. For instance, sentiment analysis and topic modeling have been applied to Biblical and Hadith literature to explore theological emphasis and rhetorical structure. In the case of the Qur'an, NLP tools have assisted in identifying recurring motifs, tracing lexical evolution, and supporting machine translation for non-Arabic speakers. However, these projects are not without challenges. Arabic, particularly Classical Arabic, poses significant difficulties for NLP due to its rich morphology, lack of diacritical marks in raw texts, and the prevalence of elliptical structures [30].

Despite these challenges, the convergence of tafsir studies and NLP holds substantial potential. NLP can enhance tafsir by automating the extraction of linguistic features, identifying syntactic ambiguities, and mapping intertextual references among Qur'anic verses and classical commentaries. Some scholars have suggested using NLP to develop critical editions of tafsir texts, evaluate theological consistency, or trace the evolution of exegetical themes over time. Others propose the integration of NLP into educational platforms to assist learners in exploring Qur'anic meanings contextually and interactively [31].

Nevertheless, critical caution must be exercised. Algorithmic interpretations can never replace human hermeneutics, particularly in matters requiring spiritual insight, legal judgment (*ijtihad*), or theological nuance. Thus, while NLP offers valuable tools, it must serve as a complement—rather than a substitute—to traditional methodologies. In sum, the literature on Qur'anic interpretation, when integrated with developments in NLP, presents a fertile ground for both scholarly inquiry and pedagogical innovation. The fusion of classical tafsir with cutting-edge technologies opens new pathways for understanding the Qur'an, enriching both academic research and the spiritual engagement of Muslim communities worldwide [31].

Table 1. Literature Review: Qur'anic Interpretation and the Role of NLP

| Theme | Key Insights |
|--------------------------------|--|
| Classical Tafsir Foundations | Classical scholars (e.g., Al-Tabari, Al-Zamakhshari, Al-Razi, Ibn Kathir) emphasized grammar, morphology, rhetoric, and asbāb al-nuzūl in interpreting the Qur'an. |
| Exegetical Methodologies | Traditional tafsir focused on textual coherence (nazm), historical context, and integration with Hadith literature. |
| Contemporary Approaches | Modern scholars (e.g., Fazlur Rahman, Abu Zayd, Amina Wadud) introduced thematic, hermeneutic, ethical, feminist, and sociopolitical perspectives. |
| Digital Humanities Emergence | NLP is reshaping religious studies by enabling computational analysis of sacred texts, including semantic relations and discourse structures. |
| NLP Applications in Qur'an | Projects like Corpus.Quran.com, Tanzil, and Quranic Arabic Corpus support syntactic and morphological analysis, aiding tafsir and textual research. |
| Broader Use of NLP in Religion | NLP is applied in Biblical and Hadith studies for sentiment analysis, motif detection, and topic modeling, offering cross-textual theological insights. |
| Linguistic Challenges for NLP | Classical Arabic's complex morphology, elliptical syntax, and diacritic ambiguity pose major obstacles for NLP-based interpretation. |
| Potential of NLP in Tafsir | NLP aids in feature extraction, ambiguity resolution, intertextual mapping, and development of digital tafsir tools and educational platforms. |
| Scholarly Proposals | Scholars recommend using NLP for critical editions, thematic tracking, and pedagogical enhancement, but stress human oversight. |
| Ethical Considerations | Algorithmic interpretation lacks spiritual discernment; human mufassir remains essential for legal, theological, and contextual depth. |
| Concluding Perspective | The integration of NLP and classical tafsir enriches Qur'anic scholarship and pedagogy, but must maintain balance between technology and tradition. |

METHODOLOGY

This study uses a descriptive qualitative approach with a literature study method. This approach was chosen because the main focus of the study was to explore and analyze various literature related to the integration of Qur'an interpretation with technology *Natural Language Processing* (NLP). The research is not carried out through the collection of field data, but through a critical review of scientific works, both classical and contemporary, that are relevant to the theme. These sources include authoritative commentaries, journal articles with national and international reputations, proceedings, research reports, and documentation of NLP-based Qur'anic digital projects [32].

In the data collection process, the researcher uses documentation techniques to trace primary and secondary sources. Primary sources include books of tafsir such as *Tafsir al-Misbah*, while secondary sources include scientific publications on NLP technology, Arabic linguistics, and digital Islamic studies [33]. Literature searches are conducted through databases such as Google Scholar, and ScienceDirect. In addition, Islamic technology projects such as *Quran.com* have implemented some of the NLP concepts in the management of Qur'anic texts.

The collected data is then analyzed using content analysis techniques. This analysis aims to identify patterns, themes, and relationships between key concepts such as interpretation approaches, the development of NLP, and the potential for integration of the two [34]. The researcher emphasizes a critical analysis of the strengths, weaknesses, opportunities, and challenges of the application of NLP in the study of Qur'an interpretation [35]. In addition, the hermeneutic approach is also used in a limited way to interpret the theological and epistemological implications of the use of machines in the process of understanding revelation.

The validity of the data in this study is maintained through triangulation of sources, namely by comparing data from various references and scientific approaches. Researchers also apply the principle of prudence in selecting sources so that they only refer to works that have academic credibility and scientific validity [36]. With this methodology, it is hoped that the research results will not only be conceptual but can also make a practical contribution to the development of Islamic technology and the digitization of the interpretation of the Qur'an ethically and contextually.

Table 2. Methodology Overview Table

| Aspect | Description |
|---------------------------|---|
| Approach | Descriptive qualitative research |
| Method | Literature study (critical review of classical and contemporary sources) |
| Data Collection Technique | Documentation technique (non-field based) |
| Primary Sources | Classical and modern tafsir books (e.g., <i>Tafsir al-Misbah</i>) |
| Secondary Sources | Journal articles, conference proceedings, research reports, and digital Islamic studies focused on NLP and Arabic linguistics |
| Databases Used | Google Scholar, ScienceDirect, and online Qur'anic digital platforms (e.g., <i>Quran.com</i>) |
| Analysis Technique | Content analysis (to identify patterns, themes, and key relationships); supported by limited hermeneutic analysis |
| Focus of Analysis | Exploring integration between Qur'anic interpretation methods and NLP technologies, evaluating strengths, weaknesses, opportunities, and challenges |
| Validation Strategy | Source triangulation (comparing multiple references and approaches) and critical selection of academically credible sources |
| Expected Outcome | Conceptual and practical contributions to Islamic digital scholarship and ethical, contextual Qur'an interpretation through technological integration |

RESULTS AND DISCUSSION

Technological developments *Natural Language Processing* (NLP) has brought about significant revolutions in various fields, including in the study of religious texts such as the Qur'an. NLP enables automatic natural language processing that was previously difficult to do manually due to the complexity of classical Arabic and the depth of meaning of the scriptures [37]. With tokenization, stemming, and parsing capabilities, this technology is able to parse the linguistic structure and morphology of the Qur'anic text with high precision [38]. This opens up new opportunities for the development of a more systematic, objective, and efficient interpretation, allowing Muslims to gain wider and easier access to the understanding of the word of Allah [39]. This digital transformation also facilitates the management of interpretation data which has been scattered and manual, strengthening the foundation of Islamic science by the times.

One of the advantages of NLP in the context of Qur'an interpretation is its ability to group verses based on theme and context of meaning automatically. Through machine learning techniques, the system can recognize thematic patterns and manage verse data to facilitate *maudhūf* studies [40]. This approach speeds up the search and analysis of verses related to certain topics such as morality, law, or faith, so that interpretation can be done in a more structured and comprehensive manner [41]. Studies by Ira Puspasari and Pranoto Hidayat Rusmin show that the application of machine learning in the classification of Qur'anic texts increases the effectiveness of thematic searches with significant accuracy, providing a solid foundation for the development of modern interpretations that are more adaptive and responsive to the needs of the ummah [42].

The development of Quran Ontology that connects concepts and words in the Qur'an with semantic relationships is an important step in advancing NLP-based interpretation studies [43]. This ontology not only allows for word-for-word analysis but also reveals a wide

network of meaning relationships so that the interpreter can see a more holistic and comprehensive context. This is in line with the findings of Shatha Altammami¹, Eric Atwell, and Ammar Alsalka who underline that the Quranic Arabic Corpus and its underlying ontology are able to provide a comprehensive picture of the meaning and context of the verses, thus enriching interpretation and avoiding fragmented interpretations [44]. Thus, NLP technology can strengthen the quality of interpretation science while maintaining consistency of understanding.

Although NLP technology brings great convenience, the limitations in understanding the inner dimension and historical context of the Qur'an remain a major challenge [45]. The multi-interpretation of the *mutasyābihāt* verse requires the sensitivity of a human *mufassir* who is insightful and understands the *asbāb al-nuzūl* and the socio-cultural context at the time the revelation was revealed. Current AI algorithms and models are not yet able to fully capture these non-linguistic dimensions accurately [46]. Therefore, NLP technology should be seen as a tool that complements, not replaces, the expertise of traditional *mufassir*. The combination of technological sophistication and human scientific insight is believed to be the most ideal approach to producing valid and quality interpretations [47].

In the context of education, NLP makes a real contribution to creating a more interactive and personalized method of learning the Qur'an [48]. With a system that is able to answer questions and manage materials based on student needs, the learning process becomes more engaging and efficient [49]. This approach also facilitates a deeper and adaptive understanding of technological developments and the needs of the younger generation who are more familiar with digitalization [50]. The results of the research by Jeje Abdul Rojak emphasized that the application of AI in religious education increases the motivation and quality of students' understanding, opening up opportunities for learning the Qur'an which is more modern but still rooted in religious values [51].

The use of NLP in the context of digital *da'wah* provides added value by providing data-based and thematic materials so that the delivery of religious messages becomes more directed and easy to understand [52]. Technology-based *da'wah* that utilizes the results of NLP analysis can reach a wider audience in a more effective and targeted way [53]. This is very important in facing the challenges of *da'wah* in the information age which is full of various information and opinions that contradict each other. With a technology-based approach, Islamic *da'wah* can maintain its relevance and appeal without losing the substance of religious teachings.

NLP technology also has a strategic role in expanding access to cross-lingual Qur'an understanding through automated translation that is increasingly accurate and contextual. This is particularly relevant in dealing with the needs of Muslims in different countries who have different language and cultural backgrounds. The use of NLP to translate and interpret the text of the Qur'an accurately and naturally will help maintain the purity of meaning while facilitating understanding for a global audience [54]. This innovation is an important bridge in strengthening the Islamic *ukhuwah* and the universal dissemination of religious knowledge.

In the realm of academic research, NLP opens up opportunities for a more objective and systematic textual study of the Qur'an with quantitative analysis of language patterns, word frequency, and conceptual linkages [48]. This approach gives a new dimension to the science of interpretation which has been more dominant using qualitative methods [55]. Khafaji stated that the mapping of Qur'an concepts with NLP techniques provides reliable results for the development of advanced academic studies [56]. This opens up a wider horizon of research and encourages interdisciplinary collaboration between religious science and technology [57].

The development of NLP based on Islamic scientific principles and academic ethics is essential to maintain the integrity of the resulting interpretation. Collaboration between scholars, linguists, and technology experts is the main key so that the implementation of this

technology does not cause bias and misinterpretation that can damage religious values [58]. Research by Mohammad Andryan and Aji Prasetya Wibawa emphasized that this cross-disciplinary synergy must be maintained so that NLP technology functions as a tool that reinforces, not weakens, the tradition of Islamic interpretation [59].

The optimization of the interpretation of the Qur'an with NLP is concrete evidence that technological advances and Islamic scientific traditions are not contradictory, but can work together to produce a deeper, more precise, and relevant understanding of the times [60]. This technology not only accelerates and expands access to interpretation, but also encourages a more critical and data-driven approach, which is needed to address the complexity of contemporary Muslim problems without abandoning the basic values of religion [61].

The existence of NLP technology in the interpretation of the Qur'an also provides space for innovation in the delivery of religious knowledge that is more democratic and inclusive. Ummah from various social and educational backgrounds can have equal access to the main sources of Islamic teachings, thereby reducing the gap in understanding that has often occurred. This opens up opportunities to strengthen the quality of faith and the practice of Islamic teachings in society more evenly. Finally, although NLP brings many benefits, the researcher emphasizes that this technology should be seen as an aid that enriches the interpretation process, not as a substitute for human mufassir who has deep spiritual and scientific sensitivity. The integration of the two is the key to success in utilizing technology for the advancement of Qur'anic interpretation while maintaining the traditional values that have long been the heritage of Muslims [62].

Table 3. Key Findings on the Use of NLP in Qur'anic Interpretation

| Theme | Key Findings |
|-------------------------------|--|
| Technological Transformation | NLP revolutionizes Qur'anic studies by enabling precise linguistic processing (tokenization, stemming, parsing) of Classical Arabic, making interpretation more systematic, efficient, and accessible. |
| Thematic Classification | Machine learning enables automatic grouping of verses by theme, aiding maudhū'ī (thematic) studies and enhancing structured, relevant interpretations for topics such as ethics, law, and belief. |
| Qur'an Ontology Development | Ontology-based NLP connects words and concepts semantically, supporting holistic understanding and preventing fragmented interpretations. |
| Interpretive Limitations | NLP cannot fully capture inner, spiritual, and historical contexts of the Qur'an (e.g., mutashābihāt verses), emphasizing the irreplaceable role of the human mufassir. |
| Educational Applications | NLP-based tools enhance Qur'anic learning by offering personalized, interactive systems that engage digital-native learners and improve understanding and motivation. |
| Digital Da'wah Enhancement | NLP improves da'wah through structured, data-driven message delivery, enabling wider, clearer communication and thematic outreach in the digital age. |
| Cross-lingual Access | NLP facilitates high-quality automated translation of the Qur'an, promoting accurate global understanding and supporting intercultural and multilingual Islamic learning. |
| Academic Research Utility | NLP introduces quantitative analysis into tafsir, enabling pattern recognition, conceptual mapping, and interdisciplinary research in Qur'anic studies. |
| Ethical Integration | The application of NLP in Qur'anic interpretation must follow Islamic ethics, requiring collaboration between scholars and tech experts to avoid misinterpretation and maintain integrity. |
| Synergy of Tradition and Tech | NLP complements—rather than replaces—classical tafsir, bridging traditional scholarship and modern technology to produce accurate, |

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|-------------------------------|---|
| | timely, and spiritually grounded interpretations. |
| Inclusivity and Accessibility | NLP democratizes access to Qur'anic knowledge, allowing people from diverse backgrounds to understand and engage with Islam's core teachings more equally. |
| Balanced Implementation | NLP should be treated as a supportive tool, not a substitute for human exegesis. The ideal model combines AI tools with deep human insight and religious scholarship. |

Critical Analysis of NLP Integration in Qur'anic Interpretation

The integration of Natural Language Processing (NLP) into the interpretation of the Qur'an presents a pioneering approach to Islamic scholarship in the digital era. The article by Maulana et al. provides a comprehensive and forward-thinking analysis of how artificial intelligence, particularly NLP, can transform the traditionally human-centric discipline of tafsir into a more systematic, accessible, and adaptive form without compromising its epistemological depth. At its core, the study recognizes that classical Qur'anic interpretation is deeply rooted in linguistic precision, spiritual sensitivity, and historical awareness. Exegetes like Al-Tabari and Al-Razi approached the text with a full understanding of Arabic morphology, syntax, and theological context. These dimensions remain indispensable, but they also pose significant challenges to modern readers, particularly those who lack proficiency in Classical Arabic or access to scholarly traditions. Here, NLP emerges as a promising aid rather than a replacement [62].

The article carefully identifies the operational strengths of NLP technologies, such as tokenization, stemming, parsing, and semantic classification. These tools enable digital systems to process Qur'anic verses with high linguistic accuracy. Through machine learning, NLP can identify recurring themes, associate user queries with relevant verses, and even categorize Qur'anic messages based on legal, moral, or spiritual topics. These features are especially beneficial for thematic (*maudhū'ī*) tafsir, making it easier for users to explore topics comprehensively and efficiently. One of the significant contributions discussed in the paper is the development of Qur'an Ontology. By linking words and concepts semantically, this ontology-based approach fosters a more interconnected understanding of Qur'anic meanings. Such frameworks are critical in preventing fragmented interpretations and in encouraging holistic, coherent exegesis. Initiatives like the Quranic Arabic Corpus illustrate how NLP can serve as a bridge between classical knowledge systems and contemporary information processing needs [63].

Nonetheless, the article does not overlook the critical limitations of NLP when applied to sacred texts. The Qur'an's depth goes beyond language—it carries spiritual weight, theological subtleties, and historical contexts (*asbāb al-nuzūl*) that cannot be fully captured by algorithms. Verses with *mutashābihāt* (ambiguous or multilayered meanings) demand human sensitivity and interpretive authority. The risk of reductionism—where verses are flattened into literal, decontextualized outputs—is a genuine concern. The article emphasizes that NLP must be supervised by scholars and institutions to ensure that the outputs align with Islamic ethics and interpretative norms [63].

The paper is commendable for proposing a balanced model: NLP should function as an interpretive assistant rather than a substitute for the human mufassir. In educational settings, NLP-based tools can personalize Qur'anic instruction, respond to student inquiries, and generate explanations tailored to user profiles. In da'wah, preachers can utilize NLP-generated thematic materials to deliver context-sensitive messages to diverse audiences. In academia, the introduction of quantitative tafsir studies through NLP opens new interdisciplinary research opportunities, combining linguistics, theology, and computer science [64].

Importantly, the article underlines that such innovations require robust ethical frameworks. Without oversight and collaboration between scholars, linguists, and technologists, there is a risk that NLP may inadvertently distort or commercialize the sacred. Therefore, the paper

calls for an interdisciplinary ethos in NLP application, reinforcing the idea that faith-based technologies must align with religious values. In conclusion, the analysis provided in the article is both visionary and grounded. It illustrates how technological tools like NLP can enhance the accessibility, relevance, and depth of Qur'anic interpretation in the digital age. However, it also urges caution and ethical responsibility, highlighting that true tafsir is not only a linguistic act but a spiritual and intellectual endeavor that must remain firmly rooted in Islamic scholarly tradition [64].

CONCLUSION

The optimization of Qur'an interpretation through Natural Language Processing (NLP) technology shows great potential in developing more systematic, efficient, and easily accessible interpretation methods for various groups of Muslims. NLP can unravel the complexities of classical Arabic and manage interpretation data thematically, thus supporting a more in-depth and structured understanding. However, this technology is not a substitute for human mufassir who has spiritual sensitivity and historical insight that is very important in interpreting verses that are mutasyābihāt and socio-cultural contexts. The combination of the sophistication of NLP technology and the science of traditional mufassir is the ideal approach to producing valid and meaningful interpretations while maintaining the authenticity of Islamic teachings. In addition, NLP also makes a real contribution to modern Islamic education and da'wah through the provision of interactive and thematic materials that are relevant to the needs of the digital generation. With the support of cross-disciplinary research and collaboration, NLP can be a strategic tool to expand access and quality of understanding of the Qur'an globally without compromising essential religious values. Overall, the use of NLP in the interpretation of the Qur'an is an innovative step that brings new hope for the development of Islamic science in the digital age. However, further development must be carried out by considering ethical, scientific, and cultural aspects so that this technology can provide maximum benefits while minimizing the risk of misuse or misunderstanding in the interpretation of sacred texts.

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Author Contribution

All authors contributed equally to the conception, design, and completion of this collaborative study. Muhammad Ardiyanto Maulana led the manuscript writing; Kharis Nugroho and Yeti Dahliana coordinated data collection and review; Andri Nirwana and Muhammad K. Ridwan contributed to analysis and theoretical integration. All authors reviewed and approved the final version of the manuscript.

Conflicts of Interest

All authors stated that there was no conflict of interest.

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