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Analyzing the Rhythm of Quranic Verses through a Computational Approach to Revelation Chronology

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Introduction

One of the most significant aspects of the miraculous nature of the Holy Book of Muslims is its eloquence, which immediately captivates the audience. Throughout history, numerous stories have been narrated of individuals embracing Islam upon hearing the sounds of this divine speech, demonstrating the profound power and astonishing appeal of the Word of God. A key research question in this field is how the rhythm of Quranic verses adapts to their conveyed meanings, transferring the message to the minds and ears of the audience within different contexts. This study examines the miraculous nature of the Quran by analyzing the relationship between its content and the rhythm and acoustic frequency of its verses through the analysis of sound harmonies. The research hypothesis posits a meaningful correlation between the content of each verse or chapter and the frequency of its acoustic rhythms, suggesting that it is possible to categorize verses or determine the thematic scope of a chapter based on these rhythmic patterns.

Methodology

This study introduces a novel interdisciplinary approach for analyzing the content of the Holy Quran by examining the rhythm of the verses' sounds through computational methods. The sound harmonies that compose the Quranic verses are extracted using a mathematical method called "Fast Fourier Transform" (FFT) through computer software. The relationship between these harmonies is then analyzed using mathematical correlations. The subject matter falls under a specific area of study known as "phonosomantics," which aims to discover and establish connections between phonetic signs and the resulting variables with semantic themes. In addition to a library-based study, this research employs an engineering perspective and computer-assisted analysis of the verses. It analyzes the harmonies and their compositions, examining the relationship between different themes such as supplication, admonition, warning, and good tidings with the combination of rhythmic patterns.

Findings

The computer-assisted analysis of the Quranic verses' audio content reveals that the nature of the sounds consists of both the intrinsic properties of the words and the specific characteristics of the reciter’s melody. Therefore, it is possible to largely eliminate the individual reciter's melodic features to access the intrinsic frequencies of the sounds. These audio frequencies serve as the basis for further processing and comparison. This is achieved through custom-developed software

that transforms audio signals into the frequency domain using the Fast Fourier Transform (FFT), applies band-pass filters, and converts them back to the time domain.

The frequency spectrum diagram of Meccan surahs significantly differs from that of Medinan surahs. The Medinan surahs generally exhibit a calm melody, with harmonic frequencies dispersed across the spectrum. In contrast, Meccan surahs employ intense and fast-paced rhythms, often conveying themes related to the Hereafter, resurrection, and descriptions of the Day of Judgment. Consequently, they display a highly variable and turbulent frequency spectrum. Surah Al-Ma'idah, as a distinctive surah, presents a different spectrum compared to three other Medinan surahs, suggesting a unique rhythm corresponding to specific circumstances and thematic content.

Many complex problems are solved using computers that can model human thinking and reasoning processes. The advanced computational ability of machines in rapid numerical calculations enables them to analyze and understand natural languages through extensive and comprehensive searches, supported by mathematical, philosophical, psychological, and logical frameworks. The Holy Quran, as a supreme language, contains numerous secrets and mysteries that have yet to be fully comprehended by humankind. Today, intelligent machines with high computational capabilities can contribute to uncovering the hidden meanings and profound themes within this sacred text. Thus, the subtle connections between meanings, words, and the rhythm of the Quranic verses can be discovered through computational analysis.

Conclusion

As an initial step, this study attempts to utilize machine learning techniques for computational Quranic analysis. The overarching perspective of this research suggests a clear correlation between the rhythm and acoustic style of a surah and its internal content and themes. This harmony can be applied to date the Quran, categorize surahs, conduct semantic analysis, or uncover the chronological order of revelation.

Another key finding is that the general rhythmic pattern of surahs can be examined through the specific spectrum of harmonic frequencies composing the sounds. Moreover, it is consistently possible to separate the intrinsic words from the reciter’s melody within the audio content. The categorizations presented in this study are solely based on the measurement of the frequency spectrum.

Keywords

Holy Quran, Rhythm, Harmony, Audio Processing, Revelation Chronology.

Ethical Considerations

Compliance with research ethics. The authors observed the ethical principles in conducting and publishing this scholarly research, and this is confirmed by all of them.

Conflict of interest

The authors declare that they have no conflict of interest.

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