

## ONTOLOGICAL COMPARISON OF THE INTERPRETATION OF ISRA' AND MI'RAJ USING TOPIC MODELING BERTOPIC

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### Abstrak

Peristiwa Isra' Mi'raj merupakan tema sentral dalam tradisi keislaman yang mengandung dimensi fisik, metafisik, dan transendental. Keragaman penafsiran mengenai hakikat ontologis perjalanan Nabi Muhammad SAW tercermin dalam karya-karya tafsir klasik dan kontemporer. Penelitian ini bertujuan untuk memetakan serta membandingkan pola penafsiran ontologis Isra'–Mi'raj dengan pendekatan text mining menggunakan BERTopic, sebuah teknik topic modeling berbasis transformer yang mampu mengidentifikasi tema laten secara komputasional. Korpus penelitian terdiri atas teks-teks tafsir dari berbagai periode, di antaranya Tafsir Ibn Katsir, Jalalain, al-Qurthubi, Tafsir al-Mishbah, serta Tafsir Kementerian Agama RI. Tahapan penelitian meliputi preprocessing teks, ekstraksi representasi semantik, pembentukan topik, serta visualisasi kedekatan dan struktur antar topik melalui intertopic distance map, topic word scores, dan similarity matrix. Hasil penelitian menunjukkan bahwa penafsiran ontologis Isra'–Mi'raj terkelompok dalam tiga kategori utama: (1) ontologi fisik-jasadiyah, (2) ontologi ruhani-metafisik, dan (3) ontologi transenden-kosmologis. Analisis komparatif menunjukkan bahwa tafsir klasik cenderung berpijak pada penafsiran literal-fisik, sedangkan tafsir kontemporer lebih integratif dengan pendekatan rasional, simbolik, dan metafisik. Penelitian ini menegaskan bahwa BERTopic efektif dalam mengungkap pola makna ontologis secara sistematis dan memberikan kontribusi metodologis terhadap pengembangan studi tafsir berbasis kecerdasan buatan.

**Kata Kunci:** Isra'–Mi'raj, ontologi, tafsir, BERTopic, topic modeling, filsafat Islam.

### Abstract

The Isra' Mi'raj event is a central theme in the Islamic tradition that contains physical, metaphysical, and transcendental dimensions. The diversity of interpretations regarding the ontological nature of the journey of the Prophet Muhammad PBUH is reflected in classical and contemporary works of interpretation. This study aims to map and compare the ontological interpretation pattern of Isra'–Mi'raj with the text mining approach using BERTopic, a transformer-based topic modeling technique that is able to identify latent themes computationally. The research corpus consists of tafsir texts from various periods, including Tafsir Ibn Katsir, Jalalain, al-Qurthubi, Tafsir al-Mishbah, and Tafsir of the Ministry of Religion of the Republic of Indonesia. The research stages include text preprocessing, semantic representation extraction, topic formation, and visualization of proximity and structure between topics through intertopic distance maps, topic word scores, and similarity matrix. The results of the study show that the ontological interpretation of Isra'–Mi'raj is grouped into three main categories: (1) physical-bodily ontology, (2) spiritual-metaphysical ontology, and (3) transcendental-cosmological ontology. Comparative analysis shows that classical interpretations tend to be based on literal-physical interpretations, while contemporary interpretations are more integrative with rational, symbolic, and metaphysical approaches. This study confirms that BERTopic is effective in systematically uncovering ontological meaning patterns and making a methodological contribution to the development of artificial intelligence-based interpretation studies.

**Keywords:** Israel'–Mi'raj, ontology, interpretation, BERTopic, topic modeling, Islamic philosophy.

**Introduction**

Isra' and Mi'raj is a monumental event in Islamic history, depicting the Prophet Muhammad's journey from the Grand Mosque to the Aqsa Mosque and then to the highest heavens, to Sidratul Muntaha. This event not only holds spiritual and theological significance, but also holds profound ontological dimensions related to the nature of being, the structure of the universe, and the relationship between the physical and metaphysical worlds. Scholars of exegesis, both classical and contemporary (Shahriar & Tariq, 2021), offer a variety of interpretations of the nature of this journey, ranging from literal-physical interpretations to symbolic-metaphysical and cosmological-transcendental interpretations.

However, to date, comparative interpretive studies of the ontological aspects of Isra' and Mi'raj have been dominated by manual, normative qualitative approaches, making them vulnerable to limitations of subjectivity, textual scope, and discussion intensity (Alnagi et al., 2025). The development of modern text analysis technology, particularly Natural Language Processing (NLP), opens new opportunities for conducting more systematic, objective, and data-driven comparative studies.

BERTopic is a transformer-based topic modeling technique capable of extracting latent themes in long texts, grouping documents based on semantic similarity, and visualizing the structure and topical relationships between sources (Mosa, 2025). By applying BERTopic to a corpus of Isra' Mi'raj exegesis, this study uncovers hidden ontological interpretation patterns, maps trends in classical and modern interpretations, and identifies differences in ontological depth across interpretation periods (Mohamed & Shokry, 2022).

The ontological study of Isra'–Mi'raj becomes increasingly relevant when linked to developments in contemporary research methodologies based on text analysis and artificial intelligence. Ontology, as a branch of philosophy that examines the nature of existence, provides a conceptual foundation for understanding the physical, metaphysical, and transcendent realities contained in the Isra'–Mi'raj event. Meanwhile, BERTopic, as a modern topic modeling technique, offers an analytical tool capable of uncovering the latent structures of meaning in exegetical texts discussing the event (Badry et al., 2021). The integration of the two produces an interdisciplinary approach that not only examines religious meaning philosophically but also maps interpretation patterns computationally.

Within the framework of Islamic ontology, reality is understood as a hierarchical structure, starting from the physical realm (syahadah), the spiritual realm (malakut), to the transcendent realm (jabarut). Isra'–Mi'raj, as an event involving the Prophet Muhammad's journey from the material

realm to the realm of the malakut and the cosmological peak of Sidratul Muntaha, is a concrete representation of the relationship between these levels of existence . Classical and contemporary exegetical literature offers varying interpretations regarding the nature of this journey, emphasizing both the physical, spiritual, and transcendent aspects. This is where the ontological dimension of Isra'-Mi'raj emerges as a key issue that is relevant for in-depth study.

However, these differences in interpretation are often scattered throughout voluminous exegetical texts and use a variety of nuanced terms (Akinwale). Therefore, a manual approach through normative studies struggles to provide a comprehensive picture of the ontological structure of interpretation. BERTopic offers a methodological solution that addresses this need. By utilizing transformer embeddings and advanced clustering algorithms, BERTopic can objectively and systematically identify and group latent themes within the Isra'-Mi'raj exegesis corpus.

In the process, BERTopic works by mapping exegetical documents into a high-dimensional semantic space using a model such as Sentence-BERT. Next, dimensionality reduction and clustering algorithms identify groups of texts with semantic similarities. The resulting topics represent key concepts, such as "physical journey," "the realm of angels," "the seven heavens," "the presence of angels," "sidratul muntaha," or "the meaning of prayer." These topics are not merely linguistic themes, but represent each commentator's ontological expression of the structure of being involved in Isra'-Mi'raj.

Thus, computational analysis using BERTopic does not stand alone but rather strengthens the ontological approach. The emerging topics can be mapped into ontological categories: physical-literal, spiritual-metaphysical, and transcendent-cosmological. Through this mapping, researchers can more accurately assess the ontological tendencies of an interpretation, identify the ontological positions of specific commentators, and compare the differences in ontological approaches between classical and contemporary interpretations. Visualizations of the topic results, such as hierarchical topic trees and similarity heatmaps, further clarify the semantic relationships between interpretations and visually demonstrate the ontological structure of interpretation.

Overall, the integration of ontology, Isra'-Mi'raj, and BERTopic presents a new paradigm in Islamic research (Bamoki et al., 2025). This approach not only deepens the philosophical understanding of the Isra'-Mi'raj event but also provides a methodological contribution to the development of AI-based exegesis studies. By combining philosophy and textual analysis technology, this research is able to offer a richer, more valid, and more comprehensive comparative mapping of how the reality of Isra'-Mi'raj is understood in various exegetical traditions.

Thus, this research makes a novel contribution to two domains simultaneously: (1) the study of Islamic philosophy, particularly the ontology of the Isra'–Mi'raj event; and (2) the development of an AI-based exegesis study methodology.

### Research Methods

The development of the topic clustering model for the Bukhari–Muslim hadith corpus in this study employs a BERT-based framework enhanced with semantic features. The methodological workflow consists of six interconnected stages: corpus construction, text preprocessing, semantic embedding extraction, topic cluster formation, model evaluation, and result visualization

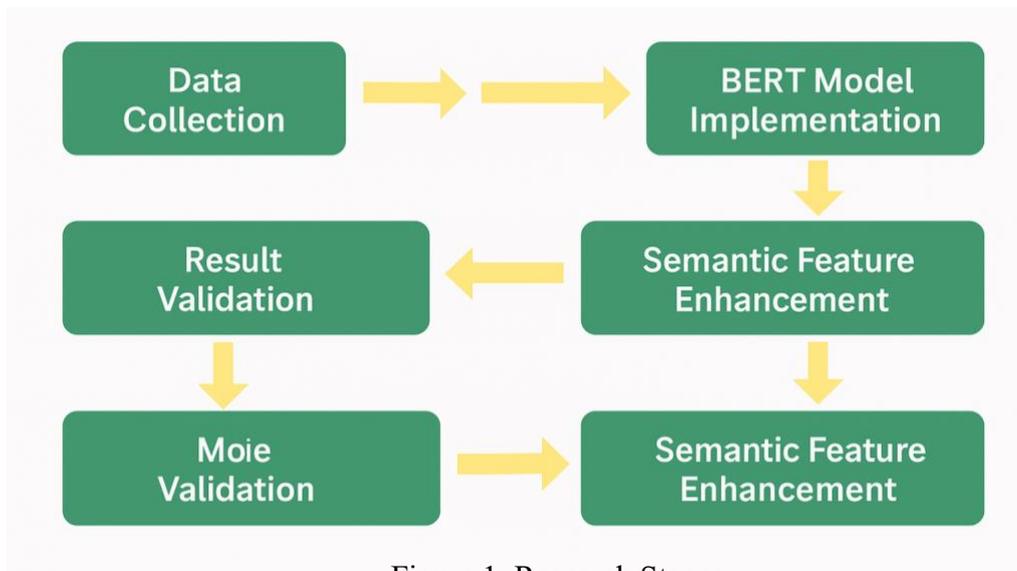


Figure 1. Research Stages

### Data Collection

The research begins by assembling a dataset sourced from open-access materials available on Kaggle, consisting of Qur’anic text accompanied by Indonesian translations. At this stage, the complete verses and their associated metadata are systematically gathered to ensure comprehensive coverage of the material. Each source is carefully checked for accuracy and credibility, as the reliability of the dataset forms the foundation for all subsequent analytical procedures (Bamoki et al., 2025). A corpus that is varied and content-rich enhances the robustness of the topic clustering process and contributes to more meaningful analytical outcomes.

### 2. Text Preprocessing

The collected texts undergo meticulous preprocessing to prepare them for computational analysis. This includes cleaning the text, removing diacritics, normalizing script variations, segmenting verses and commentary units, and eliminating duplicated or irrelevant content. The

preprocessing stage ensures that the input fed to BERTopic is linguistically consistent, enabling more accurate semantic extraction of interpretative patterns (Mohd et al., 2021).

### **3. BERTopic Modeling**

The preprocessed corpus is then encoded using transformer-based embeddings and processed through the BERTopic framework (Mohd et al., 2021). BERTopic generates document-level embeddings and applies clustering methods to detect latent topical structures. This step identifies recurring themes within the interpretations of Isra' and Mi'raj, based on semantic similarity between textual units across diverse tafsir sources (Elfaik, 2021).

### **4. Semantic Feature Enhancement**

To enrich the interpretative depth of the clustering, additional semantic cues are incorporated. These include keyword emphasis on ontological concepts (such as physical, spiritual, metaphysical, or transcendental elements), theological terminology, narrative markers, and thematic indicators specific to Isra'–Mi'raj discourse. The semantic enhancement strengthens topic coherence, ensuring that the resulting clusters accurately reflect distinct ontological perspectives.

### **5. Analysis and Interpretation of Results**

The resulting topic clusters are analyzed to determine dominant ontological viewpoints expressed across tafsir traditions. Visualization outputs from BERTopic such as topic word distributions, similarity matrices, and intertopic distance maps are used to interpret how classical and contemporary scholars conceptualize the events of Isra' and Mi'raj. This stage focuses on comparing the underlying ontological assumptions, such as physical bodily interpretations, spiritual metaphysical explanations, and transcendental cosmological readings.

### **6. Model Validation**

To ensure the reliability of the findings, model validation is conducted through both computational and qualitative means. Computational validation includes evaluating topic coherence and cluster separation, while qualitative validation involves cross referencing the emerging clusters with established tafsir classifications and scholarly discussions. Expert review helps confirm that the BERTopic-generated themes accurately represent the ontological interpretations found in the literature (Metwally & Bin-Hady, 2025).

### **Research Findings and Discussion**

This study uses the Google Colab platform as the primary computing environment, accessed through the Google Chrome browser. Furthermore, Google Drive is used to store the interpretation dataset to be processed. The dataset used in this study is not a translation of the Qur'an, but rather a collection of interpretation texts from various classical and contemporary books that specifically

discuss the Isra' Mi'raj verses, namely QS Al-Isra' verse 1 and QS An-Najm verses 13–18. These interpretation texts were obtained from credible digital sources.

1. Data collection

The dataset shown in Figure 2 consists of paired Quranic verses presented in Arabic and their Indonesian translations. Each entry contains the original text accompanied by an accurate, contextual translation in Indonesian. These aligned text pairs serve as the basis for semantic analysis and topic clustering, ensuring that the linguistic and interpretive dimensions of the verses are preserved for further computational processing

	Arabic	Bahasa
0	يَسْمُ اللّٰهُ الرَّحْمٰنُ الرَّحِيْمُ	Dengan nama Allah Yang Maha Pengasih lagi Maha...
1	الْحَمْدُ لِلّٰهِ رَبِّ الْعٰلَمِيْنَ	Segala puji bagi Allah, Tuhan1) semesta alam
2	الرَّحْمٰنُ الرَّحِيْمُ	Yang Maha Pengasih lagi Maha Penyayang,
3	مَلِكُ يَوْمِ الدِّيْنِ	Pemilik hari Pembalasan.2)
4	اِيَّاكَ تَعْبُدُوْا وَاِيَّاكَ تَسْتَعِيْنُ	Hanya kepada Engkaulah kami menyembah dan hany...

. Figure 2. Quranic data

2. Pre-processing

Figure 3 illustrates the output of the preprocessing stage, where an additional feature—text\_ar\_len, representing the word count of each hadith in Arabic—has been appended to the dataset. During preprocessing, the corpus is carefully cleaned to remove duplicate entries, eliminate empty records, and correct inconsistent data types. To ensure uniformity and facilitate smooth algorithmic processing, all textual fields are standardized by converting them into string format.

	Arabic	Bahasa
46	يٰۤاَيُّهَا اِسْرٰٓءِيْلُ اذْكُرْ نِعْمَتِيْ الَّتِيْ اَعْطٰٓتَكَ	Wahai Bani Israil,19) ingatlah nikmat-Ku yang ...
53	يٰۤاَيُّهَا اِسْرٰٓءِيْلُ اذْكُرْ نِعْمَتِيْ الَّتِيْ اَعْطٰٓتَكَ	Wahai Bani Israil, ingatlah nikmat-Ku yang tel...
57	وَإِذْ وَعَدْنَا مُوسٰٓىٓ اَنْ يُّخْرِجَ لِقَابِلَہٗ	(Ingatlah) ketika Kami menjanjikan (petunjuk T...
89	وَإِذْ اٰخَذْنَا مِيثَاقَ بَنِيۤ اِسْرٰٓءِيْلَ	(Ingatlah) ketika Kami mengambil perjanjian da...
91	لَنْ نُّعٰثِقَنَّكُمْ لِيُقَرِّبَنَّكُمْ اِلٰى يَوْمِ الدِّيْنِ	Kemudian, kamu (Bani Israil) membunuh dirimu (...
...	...	...
4443	وَلَقَدْ نَجَّيْنَا بَنِيۤ اِسْرٰٓءِيْلَ مِّنْ	Sungguh, Kami benar-benar telah menyelamatkan ...
4488	وَلَقَدْ اَنْزَلْنَا بِرَبِّيۤ اِسْرٰٓءِيْلَ الْاٰكِ	Sungguh, Kami benar-benar telah menganugerahka...
4519	قُلْ اَرَايْتُمْ لِيْۤ اِنْ كَانَ مِنْ عِنْدِ اللّٰهِ	Katakanlah, "Terangkanlah kepadaku bagaimana p...
5168	وَإِذْ قَالَ عِيسٰٓى ابْنُ مَرْيَمَ يٰۤاَيُّهَا	(Ingatlah) ketika Isa putra Maryam berkata, "W...
5176	يٰۤاَيُّهَا الَّذِيْنَ اٰمَنُوْا كُوْنُوْا اِلٰى	Wahai orang-orang yang beriman, jadilah penolo...

Figure 3. Pre-processing Result DataFrame

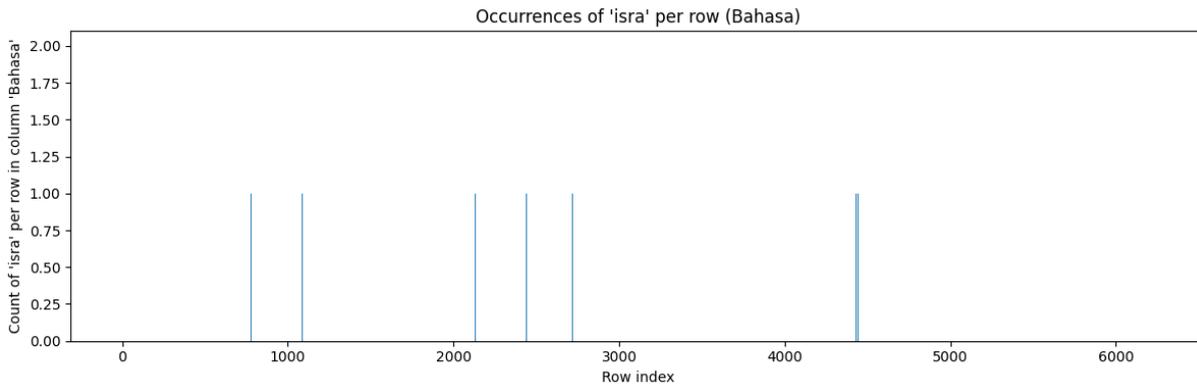


Figure 4. Distribution of the word 'Isra' in the data set

The chart shows the distribution of the word ‘isra’ across the dataset’s Bahasa column. Only a few rows contain this word, indicated by single bars (value 1) appearing at specific, widely spaced row indices. This suggests that the occurrence of ‘isra’ is relatively rare and scattered sporadically throughout the dataset

### 3. Application of BERT Model

At this stage, the system generated vector-based embeddings, converting each word into a numerical representation that captures its semantic meaning. As shown in Figure 5, every word is assigned a numeric weight that reflects its relevance within a topic. Words with higher embedding values contribute more strongly to defining the topic’s characteristics, whereas lower values indicate weaker influence. This numerical mapping allows the model to distinguish which terms are most informative and essential for constructing coherent and meaningful topic clusters.

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INFO TOPIK:
  Topic  Count  Name  Representation \
0      0   4427  0_[الو اللو انو ابو اردو السور ادو النوا سور ات]  ال_الل_ان_اب
1      1   1490  1_[الو اللو انو ابو اسو وار النوا سور اد]  ال_الل_ان_اب
2      2    198  2_[الو اللو انو وار اردو اتو ادو ابو النوا سور]  ال_الل_ان_وا

Representative_Docs
0  ...وَلَوْ نَشَاءُ لَأَرْزِقْنَهُمْ قَلْعَرَقَاتٍ
1  ...لَقَدْ مَنَّ اللَّهُ عَلَى الْمُؤْمِنِينَ إِ
2  ... يَا أَيُّهَا الَّذِينَ آمَنُوا كُونُوا

TOPIK 0
(['0.25191331704458847', 'ال'], ('0.12355270480275206', 'ال'), ('0.12252168483478879',

TOPIK 1
(['0.22880131303169632', 'ال'], ('0.1891740957966394', 'ال'), ('0.10945895927589644',

TOPIK 2
(['0.22614678648653205', 'ال'], ('0.18688237263936455', 'ال'), ('0.0995309603985045',
    
```

Figure 5. Numeric Vector Values

The result of the vector embedding is a total of 6236 vectors which gives an idea that each hadith is represented in each value along 6236 values.

#### 4. Semantic Feature Addition for Clustering

After data cleaning, text normalization, stopword removal, and transformation using TF-IDF and the BERT model, the next step was to combine all representations into a single embedding matrix. In this study, the concatenation resulted in a large-dimensional embedding vector, namely (645, 229). A dimensionality of 229 indicates a very high feature length, potentially introducing noise and reducing the accuracy of mapping hadith themes regarding Isra' Mi'raj.

To address this issue, dimensionality reduction was performed using Principal Component Analysis (PCA). This method simplifies the data structure without losing important information by reducing the number of features to 100 principal components. The results of this reduction were then visualized in the form of a diagram or spatial mapping, as shown in Figure 6. This visualization shows that hadith texts related to Isra' Mi'raj are clustered into several core topics. The six main topics formed describe major themes that frequently appear, such as the Isra' journey, the Mi'raj event, the dialogue of the Prophet ﷺ, aspects of spirituality, dimensions of ethics and moral teachings, as well as explanations of the worship established on these events.

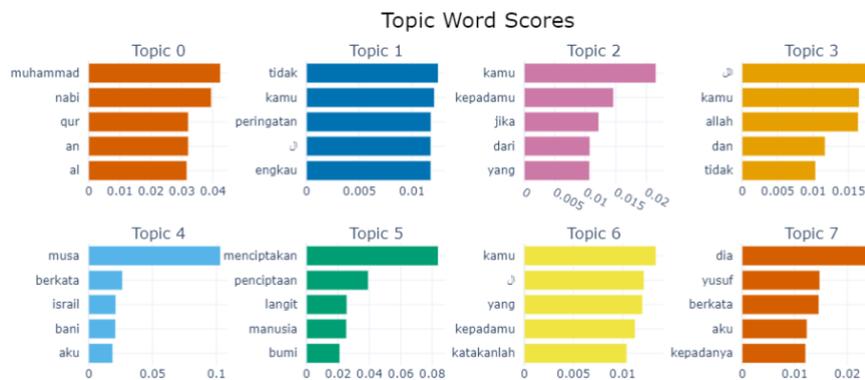


Figure 6. Topic Word Scores

The image shows Topic Word Scores, a visualization of keywords that best represent the eight main topics generated by BERTopic modeling. Each panel depicts a single topic, complete with a list of high-frequency words that most contribute to the formation of that topic. The scores displayed on the horizontal axis indicate the strength of the word's contribution to shaping the semantic representation of each topic.

In Topic 0, words such as "muhammad," "nabi," "qur," and "al" dominate, indicating that this topic relates to prophetic discourse, mentions of the Prophet Muhammad (peace be upon him), and narrative elements related to prophetic identity in exegesis.

Topic 1 is dominated by words such as "tidak," "kamu," "peringatan," and "engkau," indicating a dialogical structure or form of address in the text, as well as thematic themes such as rejection, warning, or conveying a moral message to the listener or community.

In Topic 2, the occurrence of words such as "you," "to you," "if," and "from" demonstrates instructional or rhetorical sentence patterns in verses and commentaries, often used to provide affirmation or direction in religious contexts.

Topic 3 features words such as "you," "allah," "and," and "not," indicating a theological construct emphasizing the relationship between God and humanity, as well as a discussion of divine attributes or God's commands.

In Topic 4, the words "musa," "berkata," "israel," and "bani" indicate that this topic relates to the story of the Children of Israel and the dialogues of the Prophet Moses, which are often referenced in commentaries for historical and moral comparisons.

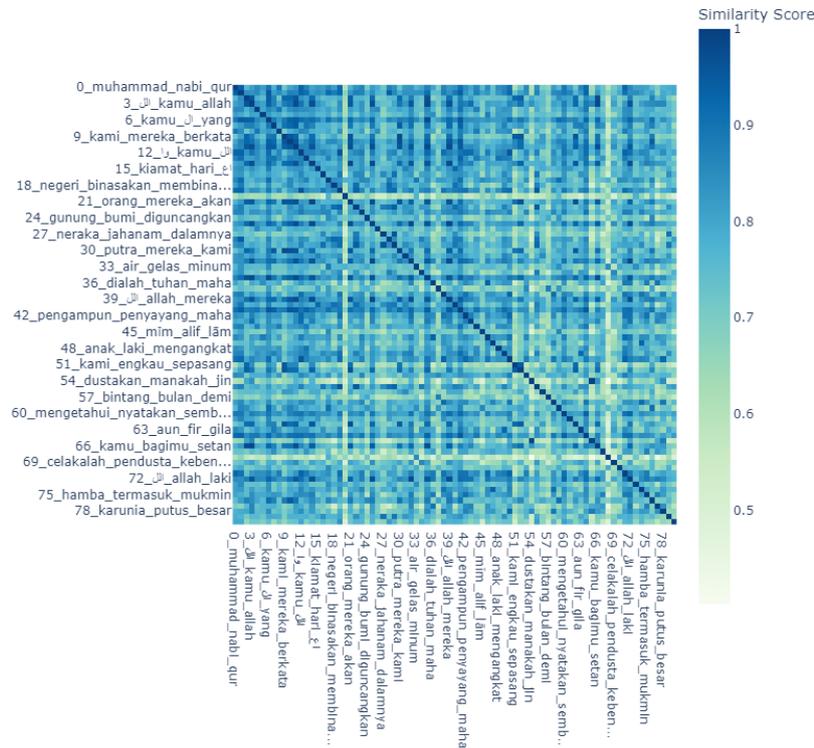
Meanwhile, Topic 5, with words such as "create," "heaven," "man," and "earth," clearly relates to cosmological and creation themes, illustrating the ontological structure of the universe from a Qur'anic perspective and commentaries.

In Topic 6, words such as "yang," "to you," and "say" indicate a command or exclamation, typically appearing in the context of religious verses, instructions, or responses to questions from the congregation.

Finally, Topic 7, which contains words such as "dia," "yusuf," "berkata," and "aku," refers to the story of the Prophet Yusuf, confirming the presence of historical narrative elements in the structure of the analyzed tafsir dataset.

Overall, this Topic Word Scores graph demonstrates BERTopic's ability to identify consistent theme clusters, ranging from prophecy and rhetorical dialogue, theology, stories of the prophets, to cosmology. This diversity of topics reflects the broad semantic scope of tafsir texts and demonstrates the model's ability to extract hidden patterns of meaning from religious text data..

Similarity Matrix



The image displays a Similarity Matrix depicting the level of semantic closeness between topics generated by the BERTopic model. Each row and column represents a single topic, while the color intensity in the matrix cells indicates the similarity score between two specific topics, ranging from 0 to 1. Darker blue colors indicate higher similarity, while lighter colors indicate lower similarity.

The solid blue diagonal pattern in the matrix indicates perfect similarity (similarity = 1), as each topic is compared to itself. Meanwhile, the color variations in the off-diagonal cells indicate how the model maps relationships between topics based on the closeness of the semantic representations of the exegetical texts.

In general, the matrix shows that most topics have a moderate to high level of similarity, indicated by the dominant greenish-blue color. This indicates that the exegetical texts in the dataset have strong thematic connections, resulting in clusters of closely related meanings. This is a common finding in exegesis studies, as many verses overlap in terms of both linguistic structure and the religious themes discussed.

Furthermore, some areas in the matrix appear lighter, indicating the presence of topic clusters with lower similarity. These sections typically represent more specific themes or more focused subtopics, thus having less semantic proximity to other topics. This indicates that the model

successfully captures the differentiation of meaning and variations in interpretation that emerge in the text.

Thus, this Similarity Matrix provides important information that the BERTopic model is capable of comprehensively mapping inter-topic relationships. High inter-topic closeness indicates thematic consistency in the interpretation, while areas with low similarity indicate differences in interpretive focus. This analysis supports the understanding that interpretation has a layered meaning structure, and the resulting topics can represent semantic dynamics in the interpretation of Quranic verses. Conclusion

### **Conclusion**

This research demonstrates that a BERTopic-based topic modeling approach can uncover hidden ontological interpretation patterns in exegetical texts discussing the Isra' and Mi'raj events. By integrating transformer-based semantic analysis and a philosophical-ontological approach, this research successfully mapped the structures of meaning that emerge in various classical and contemporary exegetical texts.

The modeling results yielded a number of topics representing specific meaning clusters, ranging from prophetic themes, divine dialogues, moral admonitions, to cosmological accounts and the history of the prophets. This topic pattern indicates that exegesis encompasses diverse dimensions of discourse, not only theological but also narrative, historical, rhetorical, and cosmological. These findings demonstrate that BERTopic is capable of capturing the complexity of meaning in context-rich religious texts such as exegesis. Ontologically, this research found that the resulting topics can be grouped into three main dimensions:

1. Physical-literal ontology, which emphasizes the journey and external events.
2. Spiritual-metaphysical ontology, which reflects the spiritual dimension, inner meaning, and non-material experience.
3. Transcendental-cosmological ontology, which describes the structure of the unseen (ghaib) realm, creation, and divine reality.

Meanwhile, the Similarity Matrix and Topic Word Scores show that although some topics share strong semantic similarities, others are more specific and differ in meaning. This indicates variations in interpretation among commentators, both in terms of style, narrative focus, and theological and philosophical tendencies.

Thus, this study demonstrates that the integration of artificial intelligence-based text analysis methods and Islamic philosophical studies yields significant results in understanding the interpretive structure of Isra' and Mi'raj more objectively, systematically, and in-depth. These

findings open up opportunities for the development of computational interpretation studies and ontological studies in the future.

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