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RESEARCH ARTICLE

Large Language Models for Metaphor Detection: Bhagavad Gita and Sermon on the Mount

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ABSTRACT Metaphors and associated literary devices were central to the composition of ancient religious and philosophical texts. Metaphors help portray spiritual messages with references to objects and situations that have deep symbolic meaning. However, the structural and contextual complexity of religious metaphors often poses a challenge in sentiment analysis. This complexity varies with different philosophical and religious traditions. There is a great need for comparative research to understand how various religious traditions are conceptualizing the elements of their experience. Recent innovations with deep learning have enabled the development of large language models (LLMs) capable of detecting metaphors. The Bhagavad Gita and the Holy Bible are central texts to Hinduism and Christianity, respectively. These texts feature a wide range of metaphors and literary devices to portray religious themes. In this paper, we use deep learning-based language models for detecting metaphors in the Bhagavad Gita and the Sermon on the Mount of the Holy Bible. We considered selected English translations of the Bhagavad Gita and Sermon on the Mount to evaluate the impact of the translation with changes in vocabulary on the detection of metaphors using LLMs. Our results show that the LLMs recognized the majority of the metaphors and the metaphorical counts in the respective translations of the religious texts. In qualitative analysis (expert review), we found that the metaphors detected have a fair consistency among translations, although the vocabulary greatly differs amongst them. Our study motivates LLMs for metaphor detection and analysis in a wide range of religious and philosophical texts.

INDEX TERMS Large language models, sentiment analysis, natural language processing, religion, metaphors.

I. INTRODUCTION

Religion reflects a set of ethical and cultural values that have shaped the social structure of our society. The study of religion enables an understanding of the set of principles in a particular society at different time frames [1], [2]. It has been argued that ethical and religious (moral) values can be distinctly apart [3], depending on the religion. Religious texts have shed light on our ancient history and how society evolved with questions and answers related to their existence and purpose [4], [5], [6]. *Philosophy of religion* refers to the philosophical study of religious and theological concepts [7], [8], [9], [10], while *religious philosophy* is the study of philosophical topics from a theological point of view, often constrained to study of Abrahamic religions by their own scholars. Religious texts generally have mysterious meanings, and it is common to have mistranslations and misinterpretations that lead to extremism [11]. Experts, particularly from India, Europe, and the United States, have placed a lot of emphasis on the challenges of English translations of religious texts, especially those that were written in languages that are not widely spoken, relevance and context, and evolution of source language(s) [12], [13], [14], [15]. It has been argued by believers that some religious texts are so sacred that it is not possible to translate or interpret them [12] which led to cases of extremism and terrorism

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[16]. The different interpretations and sometimes conflicting interpretations of religion have caused harm to society with political interference in governance [17].

Metaphors and related literary devices with analogies where reference to objects or events have symbolic or philosophical meaning, which can open to many forms of interpretations [18], [19], [20]. Metaphors face challenges when it comes to language translation since the same text can vary significantly in vocabulary and meaning, depending on the viewpoint of the translator. Metaphors are very important in understanding the meaning of verses in sacred texts [21], since they are written in ancient languages often not spoken in the present day, or languages having a low number of speakers, e.g. use of the Sanskrit language for the Bhagavad Gita. *Low resource languages* [22], [23] refer to languages that do not have enough resources for building language models. Chandra and Kulkarni [24] demonstrated that sentiment and semantic analysis can be used to compare translations of religious texts (Bhagavad Gita) from a low-resource language (Sanskrit). The study showed that the vocabulary largely differs across translations, but sentiments and semantic analysis show a high level of similarity. Shukla et al. [25] have shown that the translation of the Bhagavad Gita by Google Translate featured mistranslations, mainly due to the identification of metaphors and related literary devices. Theologians occasionally have to go from literal discourse to metaphorical speech due to the difficulty in interpretations [26]. *Conceptual metaphor theory* refers to the understanding of one idea (conceptual domain) in terms of another, and it has been proposed as a means to study comparative religion [27].

Natural language processing (NLP) [28], [29], [30], [31] specializes in a wide range of tasks that involves machine (language) translation [32], [33], speech recognition [34], chatbots [35], and sentiment analysis [36], [37]. Recurrent neural networks (RNNs) and their variants, such as long short-term memory (LSTM) networks [38] have been prominent for modelling temporal data and NLP problems. NLP has been revolutionized with pre-trained models such as the *bidirectional encoder representations from transformers* (BERT) model [39]. BERT is based on the Transformer model [40] that employs encoder-decoder LSTM networks with an attention mechanism. ChatGPT [41] is another example of a pre-trained Transformer-based model that has been prominent in question-answering and has a wide range of applications in education and medicine [42], [43]. The BERT model and ChatGPT are examples large language model (LLMs) [44] that have the potential to be used for metaphor detection in religious texts.

The detection of metaphors in the text has been of interest to the NLP community. Tsvetkov et al. [45] developed a cross-lingual metaphor detection model using common semantic features that does not rely on the availability of extensive manually-compiled lexical resources in target languages other than English. Schulder and Hovy [46] developed a model for metaphor detection through term relevance that utilizes the rarity of novel metaphors by marking the words that do not match the typical vocabulary of a given text as metaphor candidates. The model does not require knowledge of semantic concepts or the metaphor's source domain. Jang et al. [47] presented an approach that explicitly leverages the global context of discourse to detect metaphors and reported that syntactic information such as dependency structures can help better describe local contextual information. Tsvetkov et al. [48] implemented metaphor detection with a cross-lingual model transfer that detects whether a syntactic construction is meant literally or metaphorically using lexical-semantic features. Do and Gurevych [49] developed token-level metaphor detection using neural networks in combination with word embeddings trained on large corpora and produced comparable results to related methods from the literature. Gao et al. [50] developed *neural metaphor detection in context* using bidirectional LSTM model that gave favorable accuracy on verb metaphor detection benchmarks. Su at al. [51] presented a reading comprehension paradigm for token-level metaphor detection that encoded the global and local text context (whole sentence and sentence fragments) via an advanced pre-trained language model (also known as LLM). Gong et al. [52] developed a model to detect metaphorical words by combining the strengths of contextualized representation by a pre-trained language model and the rich linguistic information from external resources such as *WordNet* [53]. The literature suggests that it is vital to use pre-trained language models (LLMs) for metaphor detection.

The problem of metaphor detection becomes more challenging when we deal with texts that have been written in ancient languages and feature poetry and philosophical and theological foundations for a religion. In the case of the Bhagavad Gita, an earlier study showed that different versions of the text have vast differences in the word and metaphor count and vocabulary used for translation [54]. The *Bhagavad Gita* is a chapter of the Hindu epic Mahabharata [55] which comprises a set of questions by Arjuna and their answers by Lord Krishna. The *Sermon of the Mount* is a set of chapters from the Holy Bible that represents the teachings of Jesus Christ [56], [57]. We note that translated metaphors generally have problems in retaining meaning [58] which adds further challenges to our study. In related works, LLMs have been used for sentiment analysis for selected translations of the Bhagavad Gita [24], and comparison of expert translations with Google Translate [25]. LLMs have also been used for comparative analysis of topics in the Bhagavad Gita and the Upanishads [59], and for sentiment analysis for translations of the Bible's Sermon on the Mount [60]. These studies further motivate LLMs for metaphor detection in religious texts.

In this study, the religious texts of interest are the Bhagavad Gita and the Holy Bible, which are core texts of Hinduism and Christianity, respectively. In this study, we utilize LLMs to

analyze the relationship between word count and metaphor count in different chapters of selected translations of the Bhagavad Gita. We consider this in our study since the analysis of the entire Bible would be difficult and can be done in further studies. We further analyze different translations of religious texts such as the Bhagavad Gita and Sermon on the Mount using metaphor detection. We provide an analysis of metaphors detected in selected chapters and verses among all translations.

The rest of the paper is organized as follows. Section II provides a background on the Bhagavad Gita, the Sermon on the Mount, and literary devices. Section III presents the methodology, and Section IV presents the results, followed by a discussion in Section V. Finally, Section VI concludes the paper.

II. BACKGROUND

A. BHAGAVAD GITA

The Bhagavad Gita is an ancient Hindu scripture that contains 700 *shlokas* (verses) divided into 18 chapters written in the Sanskrit language. The Bhagavad Gita can be located in the Bhishmaparva – Book VI of the epic Mahabharata [61]. The Mahabharata features the battle fought at Kurukshetra between the descendants of the Kuru clan; the *Pandavas* and the *Kauravas*. It has been estimated that the time frame of the Kurukshetra war and the beginning of Kali Yuga was around 3100 BCE [62]; however, some historians proposed that the event took place around 1200 to 800 BCE [63]. Gangopadhyay [64] reviewed a wide range of time frames (600 BCE and 5600 BCE) by prominent scholars. Although the exact time frame is under investigation, we can safely state that the Bhagavad Gita is one of the oldest philosophical text written in verse form.

The Bhagavad Gita, literally meaning *"song of God"*, features a dialogue between *Lord Krishna* – the divine guru who is also the charioteer and mentor of *Arjuna* going to war. During the beginning of the Mahabharata war, Arjuna becomes preoccupied with a moral and emotional dilemma on seeing his kin and friends on the other side of the battlefield and begins considering the possibility of renouncing and becoming a monk (yogi). He seeks Krishna's counsel whose teachings form the crucial and core element of Hindu philosophy [65], [66], [67]. Given its significance as one of the main holy texts of Hinduism, it becomes important to analyze various versions and translations of the Bhagavad Gita [54], [68]. Arjuna became disillusioned and psychologically disturbed by seeing his friends and relatives on the other side of the battlefield and sought Krishna's counsel. This led to a discussion between them about the philosophy of life, karma, dereliction of duty, and other crucial topics, which are of great significance in Hindu philosophy.

In the past decades, the knowledge from the Bhagavad Gita has attracted research about its practical implications in the field of psychotherapy [69]. The philosophical and spiritual content has prompted scholars to translate the scripture into hundreds of languages across the world (initially mainly in Greater India) over the past millennium. The first English translation of the Bhagavad Gita was done in 1785 [70]. However, in the last century, many English translations have been made and a comprehensive list of all the translations would be massive [71].

The various English translations differ, especially in vocabulary, due to the differences in the translators' understanding of the philological and metaphorical concepts in the original Sanskrit text. The prominent translations mainly lacked the rhythm and rhyming patterns of the verses; however, a recent translation by Sushrut Badhe maintained them [72]. There is a need to bridge these variations in the English translations and deep learning-based language models can play a significant role in understanding the scholarly works. In this study, we select three translations that have been well received by readers and also used in past LLM research [24], [25], [59]; namely the translations of the Gita by Mahatma Gandhi, Eknath Easwaran, and Shri Swami Purohit.

B. BIBLE: SERMON ON THE MOUNT

The Holy Bible features the Sermon on the Mount, which is widely known as the summation of Jesus's teachings [56] that attracted immense commentary and analysis over the last two millenniums [73]. The Sermon on the Mount is featured in Chapters 5-7 of the Book of Matthew of the New Testament. Jesus delivered the message featured in the respective chapters on an unidentified mountain, which is commonly associated with the Mount of Beatitudes [74]. In the text, Jesus explained how to live a life pleasing to God and what it means to be a Christian and a good human being. The teaching features the topics such as prayer, salvation, justice, love and compassion, service, religious law, divorce, fasting, judging other people, etc.

The original Bible is a collection of books from multiple authors. The oldest books of the Bible were written in Hebrew (also known as Hebrew Bible [75]) and Aramaic [76] and translated into ancient versions of the Greek language [77]. The Bible has been translated many times, over the course of history and has several prominent versions. The King James Version of the Bible is available in 717 languages. The New Testament is available in an additional 1582 languages, and parts of the Bible are available in an additional 1196 languages [78]. However, within the same source language, different translations have been based on different variants of the text. For example, the translations of the King James Version (KJV) [79] and American Standard Version [80] are from Greek, but the former uses the Textus Receptus [81].

C. METAPHOR AND LITERARY DEVICES

A metaphor is a figure of speech that is used to express a point of view, which ends up meaning another for rhetorical effect [82]. Metaphors are used to describe an object or action, in a way that may not be literally true, but helps to explain an

idea and suggest a likeness or analogy between them. The word metaphor comes from the Greek word ''metaphorá,'' which means to ''carry across or beyond''. Metaphors are one of the most extensively used literary devices, making it easier to express oneself. They can be used to convey complex concepts in a simple and elegant form. As metaphors go beyond literal significance, they can help the reader to appreciate the meaning better and connect with the writer in a much deeper sense. This is particularly why metaphors abound in religious texts which makes it an interesting area of analysis.

The use of metaphors is common in religious literature [83] and poetry [84]. There has been a comprehensive study on the metaphor used in the Hebrew Bible [85], [86] and preaching in social media platforms such as Facebook [87]. In the case of Hindu texts, there exist studies about metaphors for the concept of enlightenment in the Bhagavad Gita [54] and theological events, such as the marriage of Hindu Gods [88], and metaphors about the relationship of Hindu Gods (Lord Siva) [89]. Hence, the studies about metaphors are not only based on the texts, but also on events and their symbolic meaning, i.e. in the case of Hindu theology which has been referred as Hindu mythology.

III. METHODOLOGY

A. LARGE LANGUAGE MODELS

Extensions such as bidirectional LSTM [90] and encoder-decoder LSTM [91] have been prominent in NLP applications. Attention-based mechanisms inspired by biological cognitive systems have further improved LSTM models for NLP applications [40], [92]. LSTM-based models such as Transformers [93] enabled a paradigm shift in NLP applications via BERT model [39]. BERT is a pre-trained language model on a large corpus, that is based on masked language modelling (MLM). BERT provided significant improvement to earlier models which looked at a text sequence from left to right, and combined left-to-right and right-to-left sequence processing. In our area of interest, BERT-based models have been used for the analysis of language translations via sentiment analysis [24], topic modelling to compare Hindu sacred texts such as the Bhagavad Gita with Upanishads [59], and evaluation of Google Translate for Sanskrit translation [25]. Apart from these, BERT-based models have been used for the United States election sentiment analysis [94] and COVID-19 sentiment analysis [95]. These applications motivate BERT-based models as the base pre-trained model for the detection of metaphors in selected religious texts.

A number of extensions of BERT have been developed to address certain limitations. RoBERTa (robustly optimized BERT) [96] is an extension of BERT that optimized the key hyperparameters and achieved improved performance. Multilingual BERT is a single-language model where annotations in one language are used to fine-tune the model for evaluation in another. Multilingual BERT been pre-trained from monolingual corpora in 104 languages. Cross-lingual language model (XLM) is a Transformer based architecture that is pre-trained using one of three language modeling objectives that include causal language modelling that models the probability of a word given the previous words, masked language modeling, and translation language modeling for improving cross-lingual pre-training. The cross-lingual language model (XLM-R) [97] combines RoBERTa and XLM and pre-trained on 100 languages, including low-resource languages. XLM-R obtained state-of-the-art performance on cross-lingual classification where the model is trained in one language and then used with other languages without additional training data. XLM-R leverages parallel data from different languages to learn shared representations using a large multilanguage corpus. It captures language-agnostic features, enabling effective transfer learning, and provides effective zero-shot learning capabilities., significantly outperforms multilingual BERT on a variety of cross-lingual benchmarks, including Swahili and Urdu over previous XLM models.

B. DATA EXTRACTION AND PREPROCESSING

In the case of the Bhagavad Gita, we selected the translations by Mahatama Gandhi, Eknath Eashwaren and Sri Purohit Swami, since these have been used earlier for sentiment and semantic analysis [24], [25]. These translations span different decades and have vast differences in vocabulary, as analyzed by Chandra et al. [24]. In the case of the Bible's Sermon on the Mount, we utilize the King James Version, the New International Version, and the New Revised Standard Version. We selected these translations due to their popularity in usage [98].

We applied data preprocessing and converted the files in printable document format (PDF) into text files and obtained a text dataset. We removed Unicode characters generated in the text files due to noise in the PDF files. We removed verse and chapter numbering from the respective texts and replaced archaic words (such as ''thy'' and ''thou'') with modern words and retained semantic information. We note that different translations of the Bhagavad Gita used different names for the protagonists, Krishna and Arjuna, and thus we unified to a common name. Furthermore, we retained the verses and removed commentary on the verses by the translators, and removed repetitive and redundant sentences such as ''End of the Commentary''.

C. FRAMEWORK

We present a framework for detecting and analyzing metaphors in religious texts, where we use different translations of the Bhagavad Gita and the Sermon on the Mount as a case study. Our framework leverages the power of XLM-R [97] to provide robust processing and feature cross-lingual context. However, we note that our framework for metaphor detection is based on the English language, which can be extended to other languages given future model refinement with associated training data.

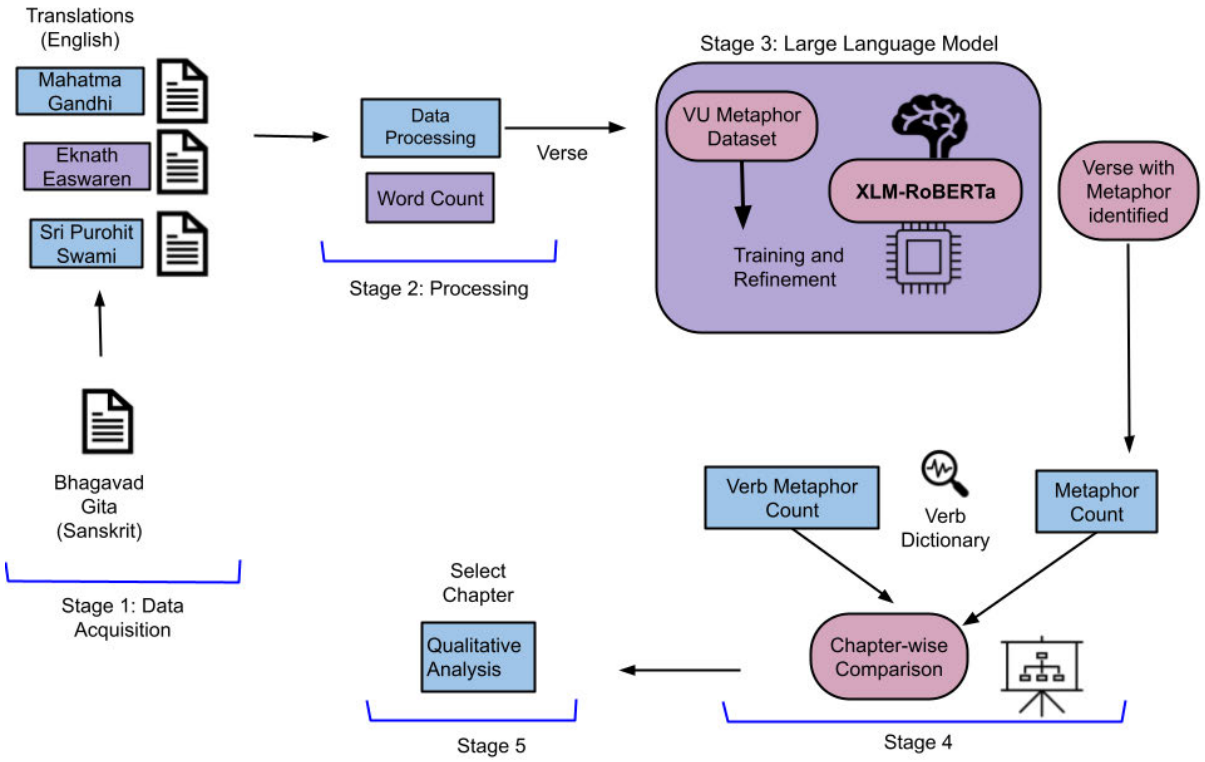


FIGURE 1. Framework for metaphor detection in selected translations of Bhagavad Gita. The same framework is used for the Sermon on the mount.

In Figure 1, Stage 1, we acquire data by selecting the source of text (Bhagavad Gita) and acquiring selected translations. We begin by converting the PDF files of the translated texts into text files and applying standard preprocessing techniques to ensure data quality and consistency, as shown in Stage 2.

Subsequently in Stage 3, we harness the capabilities of the XLM-R model for the metaphor detection task. In our framework, XLM-R serves as the foundation for cross-lingual understanding which is powered by RoBERTa to further enhance language understanding, enabling the model to identify metaphors when given a verse identified by a translation (e.g. Bhagavad Gita by Eknath Easwaren). We use the metaphor detection application programmer interface (API)[1] provided by *Hugging Face*, which employs XLM-R for metaphor detection. The metaphor detection model in our framework (Figure 1) is pre-trained on the VU Amsterdam Metaphor Corpus [99], [100],[2] an annotated dataset at the word level using the metaphor identification protocol proposed by Sheen et al. [99]. The dataset features 190,000 lexical units from a subset of four broad registers from the 4 million-word sub-corpus of the 100 million-word British National Corpus [101]. Additionally, it features academic texts, conversation, fiction, and news texts.

The metaphor detection model takes input text and provides predictions for metaphorical expressions present in the text. As shown in Figure 1, we pass the selected verse text as input in Stage 3, and the API returns the metaphor predictions on a token level. We retrieve the output, which includes the predicted metaphoric tokens for each verse. We then process the output obtained from the API to refine the detected metaphors in Stage 4. By considering part-of-speech tags, we filter out insignificant metaphoric expressions such as *determiners*, *prepositions*, and particles [102]. We also identify metaphorical verbs separately and record the refined metaphors, verb metaphors, and their respective counts and provide chapter-wise comparisons of the respective translations. Through our framework, we aim to extensively analyze metaphors in the Bhagavad Gita and the Sermon on the Mount. Finally, in Stage 5, we provide qualitative analysis of selected chapters and verses across the different translations. Our framework has the potential to detect metaphoric expressions accurately and uncover nuanced metaphorical themes within the translations. We use a combination of visualization and comparative analyses for understanding metaphor use and significance in the respective sacred texts.

D. MODEL EVALUATION STRATEGY

Our framework employs various analytical techniques to deepen our understanding of the metaphors within the texts. We analyze the detected metaphors by comparing the metaphor count in different translations, verb metaphor

[1]https://huggingface.co/lwachowiak/Metaphor-Detection-XLMR
[2]http://www.vismet.org/metcor/documentation/home.html

count, and other relevant metrics. We visualize word and metaphor counts to gain insights into the Bhagavad Gita and Sermon on the Mount. Firstly, we visualize and compare the word counts across all versions of the Sermon on the Mount and the Bhagavad Gita which provides valuable insights into the relative linguistic richness and variation among the translations. Additionally, we perform a detailed comparison of metaphor counts, including both overall metaphor count and verb metaphor count, across the different versions of the texts. This comparative analysis sheds light on the similarities and differences in metaphorical language usage within the translations. We also conduct a targeted analysis by selecting specific chapters from the texts.

IV. RESULTS

A. METAPHOR DETECTION: SERMON ON THE MOUNT

Different metaphors used within different translations (versions) of the same text can be interpreted differently; hence, it's important to analyze the metaphor count. We first report the number of words in all the translated versions of Sermon on the Mount as presented in Figure 2 where we find that the word count in all the three versions is very similar. We find that the King James' Version has slightly more words than the New International Version and the New Revised Standard Version, but the New International Version has almost the same word count as the New Standard Version in all three chapters. The plot shows that Chapter 5 has the highest word count, Chapter 6 has the second-highest word count, and Chapter 7 has the lowest word count among the three chapters.

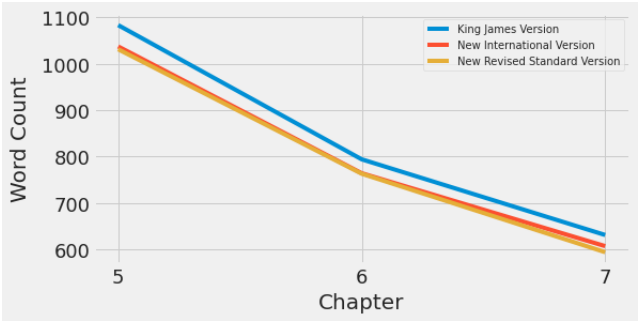
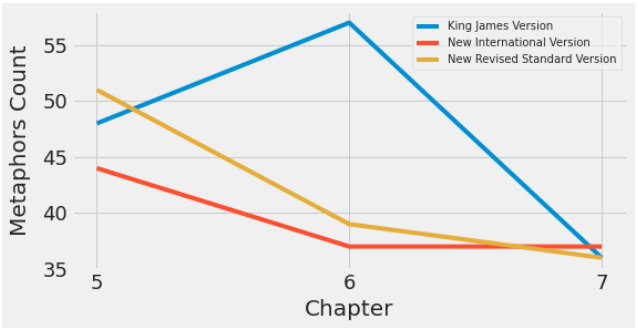
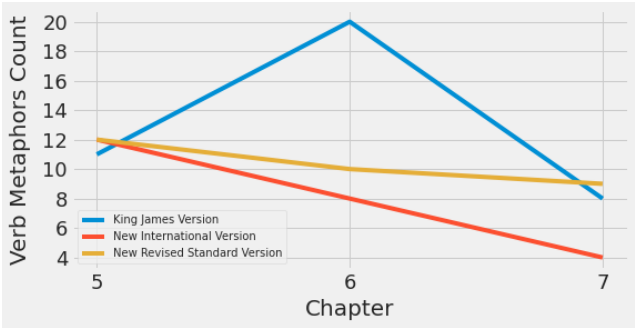


FIGURE 2. Visualization of word count in selected three versions (translations) of Sermon on the mount.

In Figure 3- Panel (a), we present the metaphors detected in the selected versions of Sermon on the Mount and observe that there is a significant irregularity in the number of metaphors. In Chapter 5, the New Revised Standard Version has the most number of metaphors without a major difference from the rest of the versions. However, in Chapter 6, the King James Version has a significant difference, when compared to the other versions that are similar in metaphor count. In Chapter 7, the metaphor count is almost the same in the three versions. We notice that the King James Version does not have a similar trend in metaphor count when compared to the word count (Figure 2) implying that King James Version – Chapter 6 has the most metaphors compared to the other two versions even though Chapter 5 has the similar word count. We further observe that the New International Version's metaphor count is slightly inconsistent with its word count, as Chapter 7 appears to have slightly more metaphors although having a significantly less word count than Chapter 6. Hence, we can state that there is no direct relationship between the word would and the metaphors detected in certain cases, which depends on the nature of the translations.



(a) Metaphor count



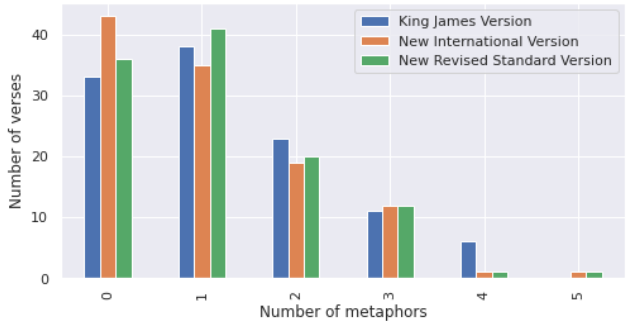
(b) Verb metaphor count

FIGURE 3. Visualization of metaphor count and verb metaphor in selected versions of the Sermon on the mount.

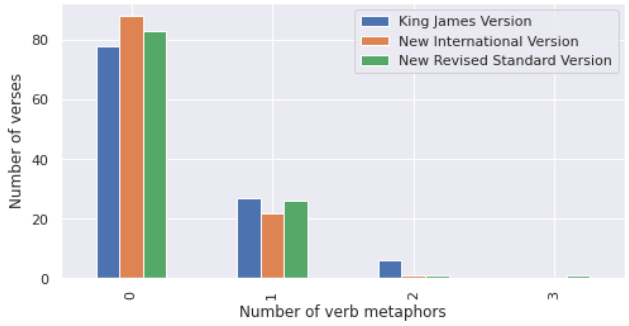
Next, we analyze the verb metaphor count detected in the translations. A verb metaphor differs from a conventional metaphor using an alternative description of an action to add new meaning to the replaced subject-verb and adds depth to descriptions of action [103]. This has been of interest to NLP; e.g. Klebanov et al. [104] used semantic analysis for the detection of verb metaphors. In our study, the verb metaphor is seen as a subset of the detected metaphor, where we identify verbs from a pre-defined dictionary.

In Figure 3- Panel (b), we observe that there's a huge irregularity in the number of verb metaphors between translated versions, and it isn't consistent with either word count or the metaphor count. In Chapter 5, we find that the verb metaphor count is almost similar across the three versions. In Chapter 6, there's a significant difference between the King James Version and the other versions. In Chapter 7, although King James Version and the New Revised Standard Version have similar verb metaphor count, the New International Version is relatively very different. The verb metaphor count for the New Revised Standard Version and New International is slightly different when compared

with the metaphor count (Figure 3); however, generally, the trend is similar with the difference being that we have a lower number of verb metaphor count when compared to metaphor count for the respective versions.



(a) Metaphor count



(b) Verb metaphor count

FIGURE 4. Visualization of verses with different metaphor count in the translations of the Sermon on the Mount.

Furthermore, we present an analysis of metaphor count in relation to the number of verses in the selected chapters, as shown in Figure 4 - Panel (a). We observe that the individual curves of the translations follow a different distribution over the number of metaphors. We can also observe that the categorical count of verses with metaphors is more than the count of verses without metaphors. Next, we observe verses in all the chapters vs verb metaphor count plot in Figure 4 - Panel (b). We observe that the individual curves of the translations follow a unique distribution that exponentially decreases over the number of verb metaphors. We can also observe that the categorical count of verses with verb metaphors is more than the count of verses without any metaphors.

B. METAPHOR DETECTION: BHAGAVAD GITA

Next, we provide results and analysis of metaphor detection in selected translations of the Bhagavad Gita. Figure 5 presents the analysis of the word count in the translations, where we find that similar to Sermon on the Mount (Figure 2), the selected translations of the Bhagavad Gita have a similar word count across all the chapters. However, we note that certain chapters have more words/verses than others, and this trend is visible in Figure 5.

Figure 6 presents the analysis of the metaphors detected in the respective translations, where we observe that although the word count plot was very similar to the given translations, the metaphor count have irregularities (Chapters 4, 5, 10, 12, and 13). Figure 7 presents the verb metaphors from the respective metaphor counts, where we observe that the verb metaphors count is inconsistent with the word and metaphors count plot. In Chapters 6, 7, 11, 14, 15, and 16, the verb metaphor count seems to be unusually irregular with both the word count and the metaphor count plot.

Next, we present the metaphors detected in the shloka's (verses) in all the chapters in Figure 8, where we observe that the different translations follow a unique distribution over the number of metaphors. We also observe that the categorical count of the shloka's with metaphors is more than the count of shloka's without any metaphors. The percentage of shloka's with 0 metaphors is 13.48% in the Mahatma Gandhi translation, 10.01% in the Ekanth Easwaran translation, and 11.28% in the Shri Swami Purohit translation.

We also present shloka's in Chapter 1 individually vs metaphor count in Figure 9 and observe that the individual curve of the translations also follows a unique distribution over the number of metaphors, which is not fully consistent with Figure 8. This is natural since different chapters have different word counts and shloka counts, depending on the nature of the discussion between Lord Krishna and Arjuna in the Bhagavad Gita. Figure 10 presents the number of shloka's in all the chapters vs verb metaphor count, where the distribution is exponentially decreasing over the number of metaphors. We can also observe that the categorical count of shlokas with metaphors is more than the count of shlokas without any metaphors, which are different when compared to conventional metaphors in Figure 8.

C. QUALITATIVE ANALYSIS

We conduct a qualitative analysis (expert review) of the metaphors detected from Chapter 12 of the Bhagavad Gita (Tables 3 and 4 and 5) from the respective translations (Gandhi, Easwaren, Swami) with metaphors detected by our LLM framework highlighted in blue. Table 1 presents chapter-wise metaphor count in the selected Bhagavad Gita translations. Table 6 and 7 present selected shloka from the translations of the Sermon on the Mount, and Table 2 presents the chapter-wise metaphor count.

In Chapter 12, in 6 out of 60 instances, the words were wrongly picked up as metaphors; i.e. shloka 12.1 (Swami), shloka 12.10 (Easwaran, Swami), shloka 12.11 (Easwaran, Swami), and shloka 12.13 (Gandhi). We explain why the metaphor detected is incorrect in the review section of Tables 3, 4 & 5. For instance, in the first row of Table 3, the LLM has rightly identified fairly complex metaphors 'attached' and 'formless' as metaphors used in the translations by Gandhi and Easwaren to describe the act of the devotee attaching to the divine and the seeking of a formless reality, respectively; but has wrongly identified the attributes

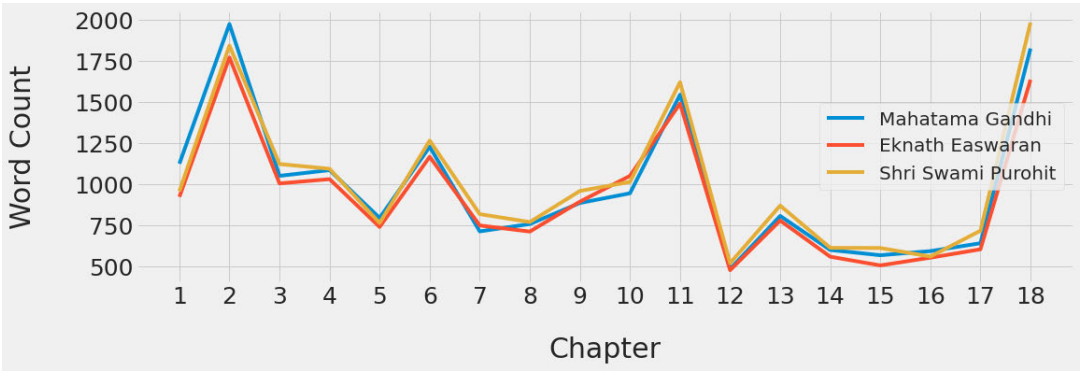


FIGURE 5. Word count per chapter in the respective translations of the Bhagavad Gita.

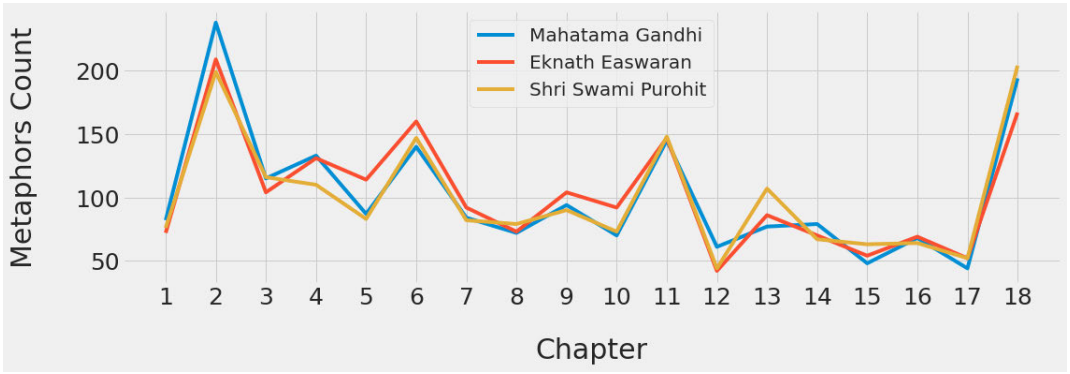


FIGURE 6. Visualisation of metaphor count in all the three translations of Bhagavad Gita.

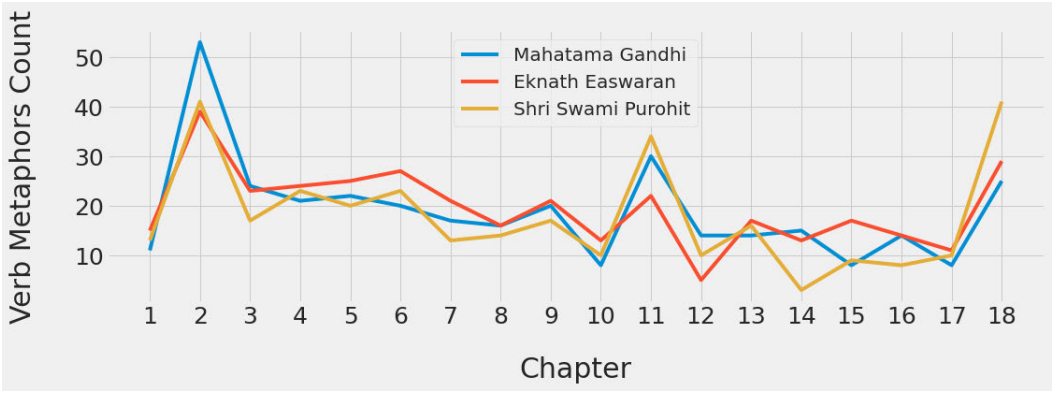


FIGURE 7. Visualisation of verb metaphor count in all the three translations of Bhagavad Gita.

'Lord' and 'indestructible' to be metaphors in the translation done by Swami.

In the translations where there were no metaphors, the LLM rightly detected the absence of metaphors. In some verses, it was observed that one or more translators had chosen to not use any metaphor in their translations for certain verses. The LLM was able to correctly detect both the presence and absence of metaphors in such cases.

As each word in Sanskrit has multiple root words, due to the nature of the language; we compared some of the correctly detected metaphors by the LLM with the original Sanskrit text to cross-examine if the metaphor were not lost in either the human translation or the LLM's metaphor detection. For instance, in the original text, in shloka 12.12, the principal metaphorical expressions in this verse are 'karmaphalatyāgas' and 'tyāgācchāntiranantaram' which mean 'surrendering the attachment to the fruits of one's action' and 'peace following afterwards'. All three translators (Gandhi, Easwaran, and Swami) used this metaphor in different ways as shown in Table 4 (shloka 12.12). Gandhi

TABLE 1. Chapter-wise metaphor count in the selected Bhagavad Gita translations.

Chapter	No. of Verses	Gandhi	Easwaran	Swami
1	47	129	101	111
2	72	325	295	264
3	43	178	151	166
4	42	206	200	161
5	29	131	152	113
6	47	217	238	208
7	30	126	126	124
8	28	123	113	121
9	34	141	155	137
10	42	101	149	113
11	55	224	198	217
12	20	97	80	73
13	35	118	119	148
14	27	116	104	91
15	20	73	75	92
16	24	103	93	87
17	28	84	94	97
18	77	307	255	300

TABLE 2. Chapter-wise metaphor count in selected Sermon on the Mount translations.

Chapter	No. of Verses	King James	New International	Revised Standard
5	48	92	72	90
6	34	89	59	61
7	29	62	63	58

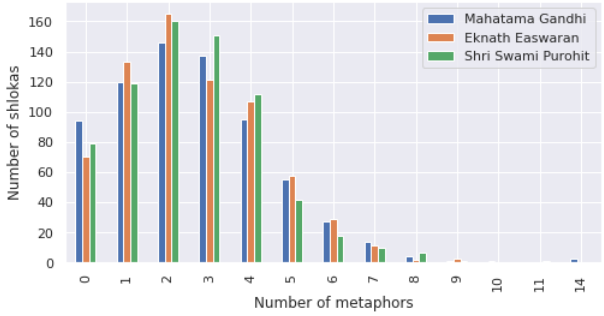


FIGURE 8. Visualisation of shloka's with different metaphor count in the three translations of Bhagavad Gita.

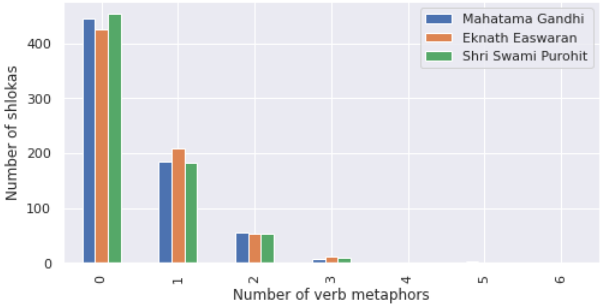


FIGURE 10. Visualisation of shlokas with different verb metaphor count in the three translations of Bhagavad Gita.

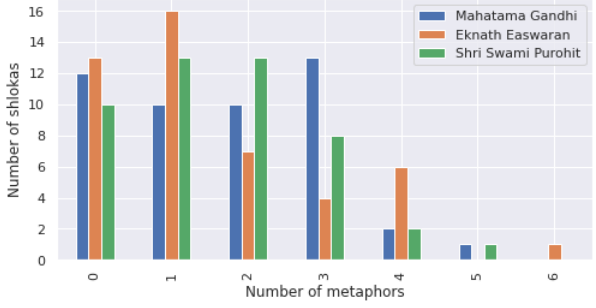


FIGURE 9. Visualisation of Chapter 1 shlokas with different metaphor count in the three translations of Bhagavad Gita.

used the metaphor of 'renunciation of fruit of action' along with 'directly issuing peace'. Easwaran used metaphors of 'surrender attachment to results' and "there follows immediate peace" whereas, Swami used 'blind action' as an additional metaphor apart from the two other metaphors of "renunciation of action" along with 'peace will follow'. We observe that all 7 metaphors used by the three translators for this verse were correctly detected by the LLM. Furthermore, we found that the metaphors detected by the LLM also matched the original Sanskrit text.

In one instance (Table 3, Chapter 12 shloka 1), the LLM found no metaphors in the translation of Easwaran, whereas it found metaphors in the translation by Swami and Gandhi even though the original verse contained metaphors. A deeper study of the LLM's results helped us realize that this discrepancy was due to the differences in styles utilized by the translators in their usage of pronouns for God. Gandhi and Swami used the capitalized pronoun 'Me' to refer to God, and hence the metaphors were rightly picked up. Since Easwaran

TABLE 3. List of metaphors in verses from Chapter 12 of selected Bhagavad Gita translations (Gandhi, Easwaren, Swami). We highlight the metaphors detected in blue.

Ch.	Ver.	Gandhi	Expert Review	Easwaran	Expert Review	Swami	Expert Review
12	1	Of the devotees who thus worship You, incessantly attached, and those who worship the Imperishable Unmanifest, which are the better yogins? The Lord Said:	The metaphor of the devotee attached to the divine has been rightly identified.	ARJUNA Of those steadfast devotees who love you and those who seek you as the eternal formless Reality, who are the more established in yoga?	The metaphor of seeking a reality that is formless has been rightly identified.	"Arjuna asked: My Lord! Which are the better devotees who worship You, those who try to know You as a Personal God, or those who worship You as Impersonal and Indestructible?	Both words 'Lord' and 'indestructible' are attributes that have been wrongly picked up as metaphors.
12	2	Those I regard as the best yogins who, riveting their minds on Me, ever attached, worship Me, with the highest faith.	The metaphor of 'riveting the mind and attaching it with the highest faith' has been rightly identified.	KRISHNA: Those who set their hearts on me and worship me with unfailing devotion and faith are more established in yoga.	The metaphor of 'setting their hearts on the divine' has been rightly identified.	Lord Shri Krishna replied: Those who keep their minds fixed on Me, who worship Me always with unwavering faith and concentration; these are the very best.	The metaphor of 'keeping the mind fixed with unwavering faith' has been rightly identified.
12	3	But those who worship the Imperishable, the indefinable, the Unmanifest, the Omnipresent, the Unthinkable, the Rock-seated, the Immovable, the Unchanging,	The metaphor 'rock seated' has been rightly identified.	As for those who seek the transcendental Reality, without name, without form, contemplating the Unmanifested, beyond the reach of thought and of feeling,	The metaphor of seeking a reality without form has been identified correctly.	Those who worship Me as the Indestructible, the Undefinable, the Omnipresent, the Unthinkable, the Primeval, the Immutable and the Eternal;	There are no metaphors in the translation and this has rightly been identified by the language model.
12	4	Keeping the whole host of senses in complete control, looking on all with an impartial eye, engrossed in the welfare of all beings these come indeed to Me.	The metaphors of 'keeping the whole host of senses in control' and 'beings coming to the divine' are rightly identified.	with their senses subdued and mind serene and striving for the good of all beings, they too will verily come unto me.	The metaphor of 'subduing senses' has been correctly identified but that of the beings merging into the divine has not been picked up.	Subduing their senses, viewing all conditions of life with the same eye, and working for the welfare of all beings, assuredly they come to Me.	The metaphor of viewing life with 'a same eye' and subduing senses has been rightly identified.
12	5	Greater is the travail of those whose mind is fixed on the Unmanifest; for it is hard for embodied mortals to gain the UnmanifestedGoal.	The metaphor of 'greater travail for those fixing their minds' and 'the hard path for the mortal gaining the unmanifest' has been rightly identified.	Yet hazardous and slow is the path to the Unrevealed, difficult for physical creatures to tread.	There are no metaphors in the translation and this has rightly been identified by the language model.	But they who thus fix their attention on the Absolute and Impersonal encounter greater hardships, for it is difficult for those who possess a body to realise Me as without one.	The metaphor of 'fixing attention and encountering greater hardships' has been rightly identified.
12	6	But those who casting all their actions on Me, making Me their all in all, worship Me with the meditation of undivided devotion,	The metaphor of 'casting all actions on Me and making me' has been rightly identified.	But they for whom I am the supreme goal, who do all work renouncing self for me and meditate on me with single-hearted devotion,	The metaphor of 'they for whom I am the goal' has been rightly identified.	Verily, those who surrender their actions to Me, who muse on Me, worship Me and meditate on Me alone, with no thought save of Me,	The metaphor so 'surrendering actions to Me' and 'musing on Me' have been rightly identified.
12	7	Of such, whose thoughts are centered on Me, O Arjuna, I become before long the Deliverer from the ocean of this world of death.	The metaphors of 'thoughts centered on Me' and 'ocean of this world of death' are rightly identified.	these I will swiftly rescue from the fragments cycle of birth and death, for their consciousness has entered into me.	The metaphors of 'swift rescue from fragments cycle of birth and death' and 'consciousness entering into me' have been rightly identified.	O Arjuna! I rescue them from the ocean of life and death, for their minds are fixed on Me.	The metaphors of 'ocean of life and death' and 'minds fixed' are rightly identified.

TABLE 4. List of metaphors in verses from Chapter 12 of selected Bhagavad Gita translations (Gandhi, Easwaren, Swami). We highlight the metaphors detected in blue.

Ch.	Ver.	Gandhi	Expert Review	Easwaran	Expert Review	Swami	Expert Review
12	8	On Me set your mind, on Me rest your conviction; thus without doubt shall you remain only in Me hereafter.	The metaphors of 'setting the mind' and 'resting conviction' have been rightly identified.	Still your mind in me, still your intellect in me, and without doubt you will be united with me forever.	There are no metaphors in the translation and this has rightly been identified by the language model.	Then let your mind cling only to Me, let your intellect abide in Me; and without doubt you shall live hereafter in Me alone.	The metaphors of 'mind clinging on' and 'intellect abiding' in Me has been rightly identified.
12	9	If you can not set your mind steadily on Me, then by the method of constant practice seek to win Me, O Arjuna.	The metaphors of 'setting mind steadily' and 'constant practice seeking to win Me' are rightly identified	If you cannot still your mind in me, learn to do so through the regular practice of meditation.	There are no metaphors in the translation and this has rightly been identified by the language model.	But if you can not fix your mind firmly on Me, then, My beloved friend, try to do so by constant practice.	The metaphor of 'fixing your mind firmly on Me' has been rightly identified.
12	10	If you are also unequal to this method of constant practice, concentrate on service for Me; even thus serving Me you shall attain perfection.	The metaphors of 'you are unequal to this method of constant practice' and 'serving me you shall attain perfection' are rightly identified as metaphors	If you lack the will for such self-discipline, engage yourself in my work, for selfless service can lead you at last to complete fulfilment.	The singular word 'lead' has been wrongly picked up as metaphor.	And if you are not strong enough to practise concentration, then devote yourself to My service, do all your acts for My sake, and you shall still attain the goal.	The words 'strong', 'attain' and 'goal' are wrongly picked up as metaphors.
12	11	If you are unable even to do this, then dedicating all to Me, with mind controlled, abandon the fruit of action.	The metaphors of 'dedicating all to Me with mind controlled' and abandoning the fruit of action have been rightly identified.	If you are unable to do even this, surrender yourself to me, disciplining yourself and renouncing the results of all your actions.	The singular word 'renouncing' has been wrongly identified as a metaphor.	And if you are too weak even for this, then seek refuge in union with Me, and with perfect self-control renounce the fruit of your action.	The metaphorical context of the words 'seek refuge in' and 'fruit' has been rightly identified whereas 'weak' doesn't not convey any metaphorical context.
12	12	Better is knowledge than practice, better than knowledge is concentration, better than concentration is renunciation of the fruit of all action, from which directly issues peace.	The metaphors of 'fruit of all action' and 'directly issues' are rightly identified.	Better indeed is knowledge than mechanical practice. Better than knowledge is meditation. But better still is surrender of attachment to results, because there follows immediate peace.	The metaphors of 'surrender attachment to results' and 'there follows' have been rightly identified.	Knowledge is superiorto blind action, meditation to mere knowledge, renunciation of the fruit of action to meditation, and where there is renunciation peace will follow.	The metaphors of 'to blind action', 'fruit of action','where there is renunciation' and 'peace will follow' have all been rightly identified.
12	13	Who has ill-will towards none, who is friendly and compassionate, who has shed all thought of ~mine' or ~I', who regards pain and pleasure alike, who is long-suffering;	The metaphors of 'has shed all thought' and 'regards pain and pleasure' are rightly identified whereas 'towards' has been wrongly picked up	That one I love who is incapable of ill will, who is friendly and compassionate. Living beyond the reach of I and mine and of pleasure and pain,	The metaphors of the 'compassionate' devotee who is beloved of the Divine and 'beyond the reach of I and mine' are rightly identified.	He who is incapable of hatred towards any being, who is kind and compassionate, free from selfishness, without pride, equable in pleasure and in pain, and forgiving,	The metaphors of 'incapable of hatred towards any being', 'free from selfishness' and 'equable in pleasure' are rightly identified.

did not use capitalization for the pronoun, it was not detected by the LLM.

We further present selected verses from the Sermon on the Mount in Tables 6 and 7. In the case of the Sermon on

TABLE 5. List of metaphors in verses from Chapter 12 of selected Bhagavad Gita translations (Gandhi, Easwaren, Swami). We highlight the metaphors detected in blue.

Chapter	Verse	Gandhi	Expert Review	Easwaran	Expert Review	Swami	Expert Review
12	14	Who is ever content, gifted with yoga, self-restrained, of firm conviction, who has dedicated his mind and reason to Me, that devotee (bhakta) of Mine is dear to Me.	The metaphors of 'self-restrained, 'firm conviction' 'dedicated his mind' and 'dear to Me' (divine) are rightly identified.	patient, contented, self-controlled, firm in faith, with all their heart and all their mind given to me with such as these I am in love.	The metaphors of devotee who is 'firm in faith' and 'mind given to me' are rightly identified.	Always contented, self-centred, self-controlled, resolute, with mind and reason dedicated to Me, such a devotee of Mine is My beloved.	The metaphors of 'mind and reason dedicated to Me' and 'devotee of Mine is My beloved' are rightly identified.
12	15	Who gives no trouble to the world, to whom the world causes no trouble, who is free from exultation, resentment, fear and vexation, that man is dear to Me.	The metaphors of 'gives no trouble to the world' and 'who is free from exultation' are rightly identified.	Not agitating the world or by it agitated, they stand above the sway of elation, competition, and fear: that one is my beloved.	The metaphor of 'standing above the sway' has been rightly identified.	He who does not harm the world, and whom the world cannot harm, who is not carried away by any impulse of joy, anger or fear, such a one is My beloved.	The metaphor of 'impulse of joy' has been rightly identified
12	16	Who expects nothing, who is pure, resourceful, unconcerned, untroubled, who indulges in no undertakings," that devotee of Mine is dear to Me.	The metaphor of the devotee who is dear to Me (divine) is rightly identified.	They are detached, pure, efficient, impartial, never anxious, selfless in all their undertakings; they are my devotees, very dear to me.	The metaphor of a devotee being detached has been rightly identified.	He who expects nothing, who is pure, watchful, indifferent, unruffled, and who renounces all initiative, such a one is My beloved.	The metaphor of the devotee being 'pure' and 'unruffled' have been rightly identified.
12	17	Who rejoices not, neither frets nor grieves, who covets not, who abandons both good and ill, that devotee of Mine is dear to Me.	The metaphors of 'who abandons both good and ill', 'the devotee who is dear to Me' (divine) are rightly identified.	That one is dear to me who runs not after the pleasant or away from the painful, grieves not, lusts not, but lets things come and go as they happen.	The metaphor of letting things 'come and go' has been rightly identified.	He who is beyond joy and hate, who neither laments nor desires, to whom good and evil fortunes are the same, such a one is My beloved.	The metaphor of the one who is 'beyond joy and hate' and 'to whom good and fortunes' are rightly identified.
12	18	Who is same to foe and friend, who regards alike respect and disrespect, cold and heat, pleasure and pain, who is free from attachment;	The metaphors of 'regards alike respect and disrespect' and 'free from attachment' are rightly identified.	That devotee who looks upon friend and foe with equal regard, who is not buoyed up by praise nor cast down by blame, alike in heat and cold, pleasure and pain, free from selfish attachments,	The metaphors of 'Cast down by' and free from 'selfish attachments' are rightly identified.	He to whom friend and foe are alike, who welcomes equally honour and dishonour, heat and cold, pleasure and pain, who is enamoured of nothing,	The metaphor of 'welcoming equally honour and dishonour' is rightly identified.
12	19	Who weighs in equal scale blame and praise, who is silent, content with whatever his lot, who owns no home, who is of steady mind,"that devotee of Mine is dear to Me.	The metaphors of 'weighs in equal scale' has been rightly identified, 'his lot' and dear to Me(divine) have been rightly identified.	the same in honor and dishonor, quiet, ever full, in harmony everywhere, firm in faith such a one is dear to me.	The metaphor of the one who is same in honor and dishonor, 'ever full in harmony', 'firm in faith', 'dear to me (divine)' have been rightly identified.	Who is indifferent to praise and censure, who enjoys silence, who is contented with every fate, who has no fixed abode, who is steadfast in mind, and filled with devotion, such a one is My beloved.	The metaphors of who has 'no fixed abode' and 'filled with devotion' are rightly identified.
12	20	They who follow this essence of dharma, as I have told it, with faith, keeping Me as their goal, those devotees are exceeding dear to Me.	The metaphors of "following this essence", keeping Me as the goal and those devotees who are dear to Me (divine) are rightly identified.	Those who meditate upon this immortal dharma as I have declared it, full of faith and seeking me as life's supreme goal, are truly my devotees, and my love for them is very great.	The metaphors of 'meditating upon immortal', 'full of faith', 'seeking me as life's supreme goal' and 'my love is great' are rightly identified.	Verily those who love the spiritual wisdom as I have taught, whose faith never fails, and who concentrate their whole nature on Me, they indeed are My most beloved.	The metaphors of 'faith never fails', concentrate 'whole nature' are rightly identified.

TABLE 6. List of some verses from two chapters of Sermon on the Mount - with and without metaphors. We highlight the metaphors detected in blue.

Chapter	Verse	King James Version	Expert Review	New International Version	Expert Review	New Revised Standard Version	Expert Review
5	2	and he opened his mouth and taught them saying	There are no metaphors in the translation and this has rightly been identified by the language model.	and he began to teach them. He said	There are no metaphors in the translation and this has rightly been identified by the language model.	then he began to speak and taught them saying	There are no metaphors in the translation and this has rightly been identified by the language model.
5	6	blessed are they which do hunger and thirst after righteousness for they shall be filled.	The metaphor of the blessed people being 'filled' has been rightly identified by the language model.	blessed are those who hunger and thirst for righteousness for they will be filled.	The metaphor of the blessed people being 'filled' has been rightly identified by the language model.	blessed are those who hunger and thirst for righteousness for they will be filled.	The metaphor of the blessed people being 'filled' has been rightly identified by the language model.
5	9	blessed are the peacemakers for they shall be called the children of god.	There are no metaphors in the translation and this has rightly been identified by the language model.	blessed are the peacemakers for they will be called children of god.	There are no metaphors in the translation and this has rightly been identified by the language model.	blessed are the peacemakers for they will be called children of God.	There are no metaphors in the translation and this has rightly been identified by the language model.
5	12	rejoice and be exceeding glad for great is your reward in heaven for so persecuted they the prophets which were before you.	The metaphor of the great reward in heaven has been rightly identified by the language model.	rejoice and be glad because great is your reward in heaven for in the same way they persecuted the prophets who were before you.	The metaphors of the great reward in heaven and the same persecution of he prophets has been identified by the language model.	rejoice and be glad for your reward is great in heaven for in the same way they persecuted the prophets who were before you.	The metaphors of the great reward in heaven and the same persecution of he prophets has been identified by the language model.
6	12	and forgive us our debts as we forgive our debtors.	There are no metaphors in the translation and this has rightly been identified by the language model.	and forgive us our debts as we also have forgiven our debtors.	There are no metaphors in the translation and this has rightly been identified by the language model.	and forgive us our debts as we also have forgiven our debtors.	There are no metaphors in the translation and this has rightly been identified by the language model.
6	13	and lead us not into temptation but deliver us from evil for your is the kingdom and the power and the glory for ever. amen.	The metaphors of people being led into temptation and being delivered from evil and the kingdom of power have been rightly identified.	and lead us not into temptation but deliver us from the evil one.	The metaphors of people being led into temptation and being delivered from evil are rightly identified.	and do not bring us to the time of trial but rescue us from the evil one.	The metaphors of people being led into temptation and being delivered from evil are rightly identified.
6	27	which of you by taking worry can add one hour to his life	The metaphor of worry being a commodity that can neither be taken or add time to life has been rightly identified.	can any one of you by worrying add a single hour to your life	The metaphor of adding an hour to life has been rightly identified.	and can any of you by worrying add a single hour to your span of life	The metaphors of adding to life's span have been rightly identified.
6	21	for where your treasure is there will your heart be also.	There are no metaphors in the translation and this has rightly been identified by the language model.	for where your treasure is there your heart will be also.	There are no metaphors in the translation and this has rightly been identified by the language model.	for where your treasure is there your heart will be also.	There are no metaphors in the translation and this has rightly been identified by the language model.

TABLE 7. List of some verses from last chapter of Sermon on the Mount - with and without metaphors. We highlight the metaphors detected in blue.

Chapter	Verse	King James Version	Expert Review	New International Version	Expert Review	New Revised Standard Version	Expert Review
7	1	judge not that you be not judged.	There are no metaphors in the translation and this has rightly been identified by the language model.	do not judge or you too will be judged.	There are no metaphors in the translation and this has rightly been identified by the language model.	do not judge so that you may not be judged.	There are no metaphors in the translation and this has rightly been identified by the language model.
7	14	because narrow is the gate and narrow is the way which leads to life and few there be that find it.	The metaphor of the gate, and way leading to life has been rightly identified. But the word 'find' has been wrongly highlighting in the metaphors.	but small is the gate and narrow the road that leads to life and only a few find it.	The metaphor of the road that leads to life has been rightly identified.	for the gate is narrow and the road is hard that leads to life and there are few who find it.	The metaphor of the road that leads to life has been rightly identified.
7	18	a good tree cannot bring forth evil fruit neither can a corrupt tree bring forth good fruit.	The metaphor of good tree being evil fruit and corrupt tree bearing good fruit has been rightly identified.	a good tree cannot bear bad fruit and a bad tree cannot bear good fruit.	The metaphor of good tree being evil fruit and corrupt tree bearing good fruit have not been picked up. However, only the word 'bear' has been highlighted twice.	a good tree cannot bear bad fruit nor can a bad tree bear good fruit.	The metaphor of the good tree being evil fruit and the corrupt tree bearing good fruit have not been picked up. However, only the words 'bear' have been highlighted twice.
7	20	wherefore by their fruits you shall know them.	There are no metaphors in the translation and this has rightly been identified by the language model.	thus by their fruit you will recognize them.	There are no metaphors in the translation and this has rightly been identified by the language model.	thus you will know them by their fruits.	There are no metaphors in the translation and this has rightly been identified by the language model.

the Mount, in 3 out of 36 instances; i.e. 7.14 (King James Version), 7.18 (New International Version, New Revised Version), the words were wrongly picked up as metaphors. We note the reasons why the metaphor detection is incorrect in the review section of Tables 6 and 7.

In Table 7, Verse 14, in the King James version, the word 'find' has been wrongly identified as a metaphor whereas the metaphor of the gate and way leading to life has been rightly detected. In the translations where there were no metaphors, the language model rightly detected the absence of metaphors. For instance, in Table 6, Chapter 5, Verse 9, the LLM rightly identified that there were no metaphors in the King James version, New International and New Revised Standard version. In most of the cases, the metaphors of all three translations were rightly identified. For example, in Table 6, Chapter 6 verse 13, the LLM correctly identified the additional metaphor 'kingdom of power' in the King James Version, whereas the metaphors of people being led into temptation and being delivered from evil have been identified in all the three Bible translations.

V. DISCUSSION

In summary, our results reveal that the selected translations of the Bhagavad Gita and the Sermon of the Mount have similar word counts across the different chapters. In the Sermon of the Mount, we found that the verb metaphors are significantly lower in numbers when compared to the conventional metaphors. However, the trend is similar across the chapters. In the case of the Bhagavad Gita, we also find a significantly lower number of verb metaphors and fluctuations in the number of metaphors, i.e. including verb metaphors. Our qualitative analysis shows that in the chapters where the conventional metaphor and verb metaphor vastly differ, the conversation is largely about metaphysical concepts and the number of shloka's (verses) is also more (Chapters 2, 11, and 18). In the chapters where they are similar, the conversation is direct with both less number of shloka and also less usage of imagery (Chapters 1, 12, and 15).

We note that metaphors are commonly used to substitute complex concepts with straightforward ones that bear similar ideas but are not applicable. Since metaphors are ubiquitous

TABLE 8. Translation of Bhagavad Gita - Chapter 11 Verse 32. Metaphors detected highlighted in blue.

Chapter	Verse	Gandhi	Expert Review	Easwaran	Expert Review	Swami	Expert Review
11	32	Doom am I, full-ripe, dealing death to the worlds, engaged in devouring mankind. Even without slaying them not one of the warriors, ranged for battle against you, shall survive.	The metaphors 'full-ripe, dealing' have been detected well. It is not clear why 'ranged' has been detected as a metaphor. We note that 'death' has been used to describe the original world 'kaal'.	I am time, the destroyer of all; I have come to consume the world. Even without your participation, all the warriors gathered here will die.	The term 'destroyer' can be seen as a metaphor along with the term 'consume'. We note that 'time' has been used to describe the original world 'kaal'.	I have shown myself to you as the Destroyer who lays waste the world and whose purpose is destruction. In spite of your efforts, all these warriors gathered for battle shall not escape death.	The term 'shown' and 'lays' can be seen as metaphors in this context, along with the term 'escape'. We note that 'waste' has been used to describe the original world 'kaal'.

in spoken and written language, their detection is crucial to many natural language processing tasks, including sentiment analysis and language comprehension. The writings in philosophical, religious and theological literature are considered metaphorical, leaving room for interpretation, which has created diverse cultural and religious groups. In language translation, metaphors create a translation challenge due to linguistic and cultural differences. This issue has been addressed using a variety of translation techniques, such as deletion, paraphrasing, and substitution (converting one metaphor into another). Metaphor detection is a challenge not only for LLMs but also for human experts, particularly when dealing with translated languages and texts with philosophical, theological and spiritual foundations, such as the Sermon on the Mount and the Bhagavad Gita.

In terms of the limitations, in both the Bhagavad Gita and Sermon on the Mount, our qualitative analyses showed that some of the words were wrongly identified as metaphors by the language model, and some of the metaphors were wrongly missed. In some cases, the model picked only one word, leaving room for ambiguity regarding the metaphorical context. We note that our application faces the challenges of language models in low-resource languages since the Bhagavad Gita was originally translated from Sanskrit. Moreover, in both cases, we are dealing with translated texts, it is natural that the metaphors and related literary devices cannot be fully captured in relations, which also lose their rhyme and rhythm.

In the case of the Bhagavad Gita, we note that the term 'gita' refers to a song and the text has been remembered through singing in an oral tradition of dissemination of knowledge in ancient India. The metaphors are commonly used to refer to deep philosophical concepts in Hinduism, such as the philosophy of Dharma, Karma, and the practice of meditation. We note that the Bhagavad Gita had prominent translations in the West, but has also been misquoted. The phrase, "Now I become Death, the destroyer of worlds." – Oppenheimer's Infamous Quote based on Bhagavad Gita's Chapter 11 -Verse 32 [105] is based on translations that translated the Sanskrit term kaal as death. This has been challenged by scholars such as Devdutt Pattanaik[3] and others after the release of the Christopher Nolan's film about the life of Oppenheimer.[4] We note that Oppenheimer was also well versed with Sanskrit and it could be that the phrase was his translation or interpretation, since as shown in Table 8, none of the translations exactly mates his phrase. Note that Eashwaren translated kaal as 'time' from a philosophical viewpoint, death and time are parts of the same coin. Gandhi translated kaal as 'death', and Swami translated it as 'waste'. In terms of the metaphors detected, we can see that in general, the LLM has well detected the metaphors, but it has not been able to detect 'time', 'death' and 'waste' which can be seen as metaphors, which has created much controversy in media and also tried to malign the teachings of Bhagavad Gita as if it is a text that defended the Hiroshima and Nagasaki bombing.

We note that we can also utilize automated translations of the Bhagavad Gita by Google Translate, and earlier studies show that they retained sentiment and semantic features when compared to human expert translations [25]. Furthermore, qualitative analysis needs to focus on not only one but several human experts, which can be done in future work. We also note that we only provided qualitative analysis on selected chapters and verses. In future work, the rest of the metaphors detected need to be qualitatively analyzed and more advanced LLM models can be utilized.

Future work can extend our framework to philosophical and spiritual texts in other religions such as Buddhism, Taoism and Sufism. Furthermore, our framework can also incorporate sentiment and semantic analysis [24], [60] along with topic modelling [59], and hence a pre-trained language model for Hinduism can be released. Although there has been some progress in using LLMs for sentiment analysis [60], more

[3]https://economictimes.indiatimes.com/news/new-updates/devdutt-pattanaik-claims-bhagavad-gita-quote-in-oppenheimer-was-misinterpreted/articleshow/102011803.cms?from=mdr

[4]https://theconversation.com/oppenheimer-often-used-sanskrit-verses-and-the-bhagavad-gita-was-special-for-him-but-not-in-the-way-christopher-nolans-film-depicts-it-211253

research needs to be done when it comes to analyses of the Holy Bible. Our study only focused on three chapters of the Holy Bible, and it can be extended to the entire text. We also note that a wide range of texts have been written about interpreting prominent religious and philosophical texts, such as the Bhagavad Gita and the Sermon on the Mount. Hence, in future work, we can develop multimodal LLMs to have a better understanding of the verses, given the original text, translation and interpretation from various scholars.

VI. CONCLUSION AND FUTURE DIRECTIONS

In this paper, we presented a framework that employs pre-trained LLMs for metaphor detection in translations of selected religious texts. The pre-trained model was refined using a labelled metaphor dataset that includes conventional metaphors and verb metaphors. Our results show that the LLM framework can identify complex metaphors in multiple translations of the Bhagavad Gita and Sermon on the Mount. After qualitative analysis (expert review), we found that the metaphors detected have a fair consistency among translations, although the vocabulary differs amongst them. Our study can play an important role in addressing the challenges in metaphor detection in religious and philosophical texts, and help in the development of tools that automate the analysis of large corpora of texts in a wide range of fields.

DATA AND CODE

Github repository for code and data.[5]

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