-Research Article-

Navigating the Sands of Emotion: A Sentiment and Subjectivity Analysis of Dune (2021) Characters

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Abstract

This study presents an in-depth examination of the emotional landscape and subjective depth within the screenplay of the 2021 film adaptation of "Dune." Utilizing TextBlob for sentiment analysis, including word clouds, we quantitatively assess the polarity and subjectivity scores associated with key characters in the narrative. Our findings reveal significant insights into character development, narrative engagement, and the emotional dynamics that underpin the film's storytelling. The analysis highlights the varied emotional experiences of characters such as Stilgar, who exhibits high positive sentiment and subjectivity, contrasting with antagonists like the Baron, who is characterized by negative sentiment. This paper underscores the utility of sentiment analysis in understanding and critiquing cinematic narratives, offering a novel perspective on film appreciation that focuses on emotional and subjective experiences.

Keywords: *Sentiment Analysis, Subjectivity, Dune 2021, Film Analysis, Character Development*

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-Araştırma Makalesi-

Duygu Kumlarında Gezinmek: Dune (2021) Karakterlerinin Duygu ve Öznellik Analizi

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Özet

Bu çalışma, "Dune"un 2021 yapımı film uyarlamasının senaryosundaki duygusal manzaranın ve öznel derinliğin derinlemesine incelenmesini sunmaktadır. Kelime bulutları da dahil olmak üzere duygu analizi için TextBlob'u kullanarak anlatıdaki anahtar karakterlerle ilişkili kutupluluk ve öznellik puanları niceliksel olarak değerlendirilmiştir. Bulgularımız karakter gelişimi, anlatı katılımı ve filmin hikâye anlatımının temelini oluşturan duygusal dinamikler hakkında önemli bilgiler ortaya koymaktadır. Analiz, Stilgar gibi yüksek düzeyde olumlu duygu ve öznellik sergileyen karakterlerin çeşitli duygusal deneyimlerini vurgularken, Baron gibi olumsuz duygularla karakterize edilen düşmanlarla tezat oluşturmaktadır. Bu makale, duygusal ve öznel deneyimlere odaklanan film incelemesine yeni bir bakış açısı sunarak, sinematik anlatıların anlaşılmasında ve eleştirilmesinde duygu analizinin faydasını vurgulamaktadır.

Anahtar Kelimeler: *Duygu Analizi, Öznellik, Dune 2021, Film Analizi, Karakter Gelişimi*

1. Introduction

Within the mammoth canvas of narrative cinematic tales, the script is essentially a blueprint but also a soul connecting dialogues, plot lines, and character development within the textual fabric (Ivyer et al., 2017). It serves as a multifaceted tapestry of emotions, embodying the film's tone and guiding its emotional journey (Yang & Qin, 2024). The 2021 adaptation of Frank Herbert's "Dune" is no exception, presenting a complex interplay of sentiments that mirrors the duality of its desert planet, Arrakis. Here, the script's "sentimental weight" acts as a cornerstone, sculpting the narrative's emotional landscape and fostering a resonant connection with the audience. Films, by their nature, are a dynamic showcase of emotional shifts—from joy to sorrow (Tan, 2008), tranquility to fury—each carefully crafted to enrich the storytelling canvas (Mariani & Ciancia, 2019). Certain genres, like the adventure at the heart of "Dune," often carry a pronounced emotional 'weight', necessitating a script that not only harbors these sentiments but also empowers actors to embody them convincingly.

In a time when audiences demand more than just the pleasure in a film (Hanich et al., 2014), desiring experiences that bring forth a plurality of emotions (Mancuso et al., 2023), it is an absolutely compelling challenge for a film's screenplay writer to design the intended emotional landscape for the film. This study aims to explore into the scripts of "Dune (2021)" to dissect the emotions portrayed, encompassing the full range from positive to negative, and the neutral in-between, each quantified by sentiment scores. Sentiment, here, transcends mere intuition; it encapsulates our reactions, judgments, and the subjective experience of emotions in relation to the narrative's unfoldment. Unlike the quantifiable, emotions dwell in the field of personal interpretation, yet through the lens of sentiment analysis, we attempt to navigate these subjective waters. Utilizing methodologies such as web scraping for data acquisition, meticulous data cleaning, exploratory data analysis (EDA), and leveraging the TextBlob module, this study seeks to map out the sentiment and subjectivity scores of "Dune (2021)" characters. Through this analytical journey, we aim to unveil how the screenplay's emotional design not only shapes the characters' journeys but also aligns with the audience's emotional engagement, providing a deeper understanding of the film's impact beyond the sands of Arrakis.

2. Theoretical Framework: Embracing Conceptual and Philosophical Dimensions in Sentiment Analysis

The study of sentiment and subjectivity in cinematic narratives, while grounded in empirical methodologies, also engages deeply with philosophical questions about the nature of emotion and the role of subjectivity in human experience. This exploration is not merely technical but also intrinsically tied to broader conceptual issues in philosophy of mind and aesthetics.

2.1. Philosophical Underpinnings of Emotion and Subjectivity

Emotions, from a philosophical standpoint, are complex phenomena that straddle the line between subjective experience and objective expression. As Solomon (2007) argues in his seminal work on the philosophy of emotions, emotions are not just passive experiences but are shaped by our judgments and perceptions, making them a rich area for analysis in any narrative form, including film. This perspective aligns with our use of sentiment analysis tools to decode the emotional texture of "Dune (2021)", where emotions are seen as narrative devices that reflect broader existential themes.

Philosophically, emotions can be viewed as cognitive evaluations or judgments that inform individuals about their personal engagements with the world (Nussbaum, 2003). Emotions thus play a crucial role in how individuals interpret their experiences and interactions. In the context of film, emotions are not only elements experienced by characters but also

serve as cues that guide audience interpretation and engagement. Emotions, in this light, are narrative strategies employed by filmmakers to evoke certain responses from the audience, thereby shaping the viewing experience in profound ways. The way emotions are portrayed and evoked in film can also be analyzed through the lens of phenomenology, particularly in how viewers experience a film's emotional and narrative structures. Heidegger's concepts of 'being-in-the-world' and 'mood' elucidate how a film's emotional texture influences a viewer's world experience, suggesting that films do more than tell stories; they create worlds and moods that immerse the viewer (Heidegger, 1962). In "Dune (2021)", for instance, the emotional portrayals of characters like Paul and Jessica are not merely personal but shape the film's existential themes, such as destiny and survival.

The subjectivity inherent in emotional experience also points to the interpretative nature of sentiments in narrative forms. Ricoeur's theory of narrative identity (Ricoeur, 1992) provides a useful framework for understanding how individuals (and audiences) construct identities through the stories they tell and hear, including cinematic narratives. This aligns with our sentiment analysis approach, which seeks to understand how the subjective interpretations of "Dune" characters' emotions contribute to the audience's overall narrative experience. Incorporating sentiment analysis into this philosophical discussion allows us to bridge the gap between abstract philosophical concepts and tangible analytical practices. By quantifying emotions in the film "Dune (2021)", we not only capture the emotional arcs of characters but also offer insights into how these emotions reflect broader philosophical questions about human nature, existential struggles, and the human condition. This methodological approach provides a structured way to examine how film as a medium can explore and express complex philosophical ideas.

2.2. Emotion as a Narrative Device

In cinematic storytelling, emotions are not merely by-products of narrative events but are central to the narrative structure itself. Plantinga (2009) in his exploration of the affective power of films, suggests that emotions are used strategically by filmmakers to create empathy, drive the plot, and enhance the thematic depth. In "Dune (2021)", the polarity and subjectivity scores of characters are indicative not only of their psychological landscapes but also of their philosophical and existential conflicts, mirroring the harsh, dualistic nature of Arrakis itself.

The strategic use of emotion serves as a conduit for audience engagement, establishing a deep, empathetic connection between viewers and characters. According to Smith (2022), cinematic emotion acts as an invitation for viewers to enter the psychological world of the characters, enhancing the immersive experience of the narrative. This process is evident in "Dune (2021)", where the emotional arcs of characters like Paul Atreides and Lady Jessica are intricately designed to align viewers with their struggles and triumphs, facilitating a deeper emotional and cognitive involvement in their journey. The deployment of emotion in film also critically supports thematic exploration and resonance. Gross (1998) posits that emotions in film are pivotal in conveying complex themes such as morality, identity, and existential angst. "Dune (2021)" utilizes the emotional landscape of its characters to reflect larger themes of destiny, power, and survival, weaving these into the very fabric of the narrative. The emotional tone set by each character's experiences significantly shapes the thematic interpretation of the film, making the emotional design a vital element of the storytelling.

Moreover, the emotional depth of characters adds a layer of psychological realism that enriches the narrative. Tan (2013) argues that emotional realism can enhance the believability of characters, making their decisions and reactions within the narrative more relatable and understandable. The complex polarity and subjectivity scores found in "Dune (2021)" reflect a sophisticated portrayal of emotions that align with the realistic psychological profiles of the characters, such as Paul's transformation from a young noble to a messianic figure, marked

by a mixture of fear, duty, and destiny. Furthermore, the use of emotions can mirror and reinforce the narrative structure itself. In "Dune (2021)", the harsh, desert landscape of Arrakis is paralleled by the intense emotional states experienced by the characters, from the desolation and fear faced by the Fremen to the cold ambition of the Harkonnens. This mirroring effect not only deepens the narrative but also aligns the audience's emotional responses with the unfolding story, as noted by Carroll (2001), who highlights how emotional cues in a narrative can guide audience expectations and reactions, effectively shaping the narrative pace and tension.

2.3. Subjectivity and the Viewer's Experience

The concept of subjectivity in film analysis also ties into phenomenological philosophy, which emphasizes the importance of personal experience in understanding reality. As Merleau-Ponty (2013) discusses, art and film act as conduits for exploring these subjective realities, allowing viewers to experience the world through the perspectives of different characters. By quantifying subjectivity scores, our study bridges the gap between the subjective emotional experiences of the characters and the viewer's engagement with these experiences.

Phenomenology, as it applies to film, offers a unique lens through which to examine how viewers perceive and interact with cinematic narratives. It posits that each viewer's experience is shaped by their individual histories, biases, and sensory perceptions, making the act of watching a film a deeply personal event. This philosophical framework suggests that films do not exist as isolated artifacts but are dynamically interpreted by audiences who bring their own subjective experiences to bear on their understanding of the narrative (Sobchack, 1992). In "Dune (2021)", for example, the stark landscapes and intense character dilemmas invite viewers to project their inner fears, aspirations, and conflicts onto the characters, engaging with the film not just as observers but as participants in its unfolding drama. The subjective nature of film viewing is critical in how emotions are processed and internalized by the audience. Film theorists like Plantinga (1999) argue that emotional responses to film are guided by the viewer's personal empathetic capacities and their subjective alignment with characters' goals, motivations, and conflicts. This subjective engagement is what makes cinema a powerful medium for emotional and moral reflection. By analyzing subjectivity scores in "Dune (2021)", we quantify this alignment and its variance among viewers, illustrating how different aspects of the film resonate more strongly with different audience segments.

Quantifying subjectivity in film analysis challenges traditional notions of objectivity in media studies. It forces scholars to reconsider the role of the viewer in constructing meaning, as outlined by Hansen (2000), who emphasizes that meaning in film is co-created by filmmakers and audiences through a complex interplay of presentation and perception. Our methodology acknowledges this interaction, using sentiment and subjectivity analysis to map out not just what the film presents, but how it might be perceived differently by diverse viewers. The integration of phenomenological theory with empirical sentiment analysis tools, like TextBlob, allows us to operationalize these complex theoretical concepts. By assigning numerical values to the degrees of subjectivity expressed in the film's dialogue and narrative structures, we provide a concrete way to analyze and discuss abstract philosophical ideas about perception and experience in film. This approach not only deepens our understanding of the film's impact but also enhances our ability to discuss and compare subjective experiences in a structured, quantifiable format.

3.4. The Role of Sentiment Analysis in Philosophical Inquiry

Moreover, the application of sentiment analysis in this context raises philosophical questions about the quantification of emotion and subjectivity. Nussbaum (2003) questions the reduction of complex human emotions to quantifiable metrics, a critique that is vital to our

methodological reflection. While our analysis provides numerical insights into the emotional dynamics of "Dune (2021)", it also acknowledges the limits of such quantification in capturing the full depth of human emotional experience.

The practice of quantifying emotions introduces several ethical and philosophical considerations. Emotions are deeply personal and inherently subjective; thus, their quantification might oversimplify or misrepresent the richness of human emotional life. This is a significant concern in philosophical circles, as noted by scholars like Bennett and Hacker (2022), who argue that emotions are not entities that can be isolated and measured but are rather aspects of a person's complex lived experience. This critique is especially relevant in the context of analyzing artistic expressions such as film, where emotional subtleties play a critical role in narrative and thematic development. To address these concerns, it's crucial to complement quantitative analysis with qualitative interpretations. Doing so allows for a more holistic approach to understanding emotions in film, balancing the precision of numerical data with the depth of contextual analysis. Ricoeur's theory of text interpretation (Ricoeur, 1976) supports this integrative approach, suggesting that texts (and by extension, films) harbor multiple layers of meaning that quantitative methods alone cannot fully uncover. By integrating sentiment analysis with detailed filmic and narrative analysis, researchers can more accurately capture the nuances of emotional expression and its impact on the audience.

The philosophical implications of treating emotions as data extend beyond methodology to questions about the nature of reality and human experience. According to phenomenological perspectives, particularly those of Husserl and Heidegger, reducing lived experiences to data points can alienate individuals from their authentic experiences (Heidegger, 1962). In the context of film, this might mean that the emotional nuances that contribute to a film's existential and aesthetic value are overlooked or distorted. Therefore, our study acknowledges the need to remain sensitive to these philosophical considerations, ensuring that our sentiment analysis respects the integrity of the emotional experiences conveyed in "Dune (2021)". Looking forward, the intersection of sentiment analysis and philosophical inquiry invites continuous dialogue between technologists and philosophers. As machine learning and AI technologies evolve, they increasingly encroach upon domains traditionally reserved for humanistic inquiry, necessitating a reevaluation of the methodologies employed. Engaging with these philosophical questions can lead to more refined and ethically aware practices in film studies and beyond, fostering a deeper understanding of how technology can serve to enhance our understanding of complex human phenomena without reducing them to mere numbers.

3. Related Works

The exploration of sentiment analysis within the field of film studies offers a compelling vista for understanding the nuanced tapestry of emotions that films evoke. This analytical domain bridges the technical prowess of Natural Language Processing (NLP) and the interpretative finesse of cinematic narrative analysis (Rong & Li, 2023). Recent endeavors have leveraged sentiment analysis to solve the emotional arcs in movie scripts, elucidating the rhythmic cadence of narrative flow and the emotive impact on audiences (Biro, 2008). The intersection of NLP and sentiment analysis has illuminated the structural dynamics of "effective" cinema, revealing that movies commanding significant audience engagement often subscribe to distinct narrative and emotional patterns (Hobbs, 2020).

Moreover, the conventional binary paradigm of sentiment analysis—categorizing emotions as either positive or negative—has faced scrutiny for its predisposition towards positive sentiment, thereby skewing analytical outcomes (Malatesta & Wilson, 1988). Innovative research has shown that integrating meta-features, such as capitalization, punctuation, and syntactic nuances, enhances the accuracy of sentiment detection, mitigating the positive sentiment bias (Boukes et al., 2020). The toolkit for executing these analyses comprises advanced

NLP utilities including Python libraries like NLTK, BeautifulSoup, pandas, and TextBlob, facilitating a broad spectrum of operations from web scraping and data preprocessing to the intricate tasks of emotion and sentiment quantification (Batrinca & Treleaven, 2015).

Recent studies further expand on this foundation, exploring the role of multimodal sentiment analysis in film, where not only textual, but also audiovisual elements contribute to emotional assessment (Jain & Kumar, 2019). This approach underscores the multidimensional nature of film as a medium where sound and visual cues play critical roles in the conveyance of emotional states. Klinger and Cimiano (2016) discuss the potential of cross-modal sentiment analysis to understand how different modalities interact to shape viewer perception and emotional response.

Additionally, the emergence of machine learning techniques has provided new tools for analyzing film narratives more deeply. Research by Vasilescu et al. (2021) illustrates the use of deep learning models to detect subtle emotional cues that may not be evident through traditional analysis, offering a more granular view of character dynamics and interactions.

The burgeoning relevance of sentiment analysis in dissecting film content has catalyzed the digital scholarly community, exemplified by platforms like Kaggle, to champion research initiatives aimed at refining these analytical models. These efforts underscore the criticality of selecting robust features that accurately capture the sentiment spectrum, accounting for linguistic variances and the complexities of emotional expression (Ahmed et al., 2023). Our study enriches the academic discourse by leveraging sentiment analysis and subjectivity detection tools on the script of "Dune (2021)", aiming to unearth the emotional and narrative essence embedded within its dialogues and character arcs. By focusing on this specific cinematic piece, we aspire to shed light on the intricate emotional landscapes that define the film, contributing to a deeper understanding of its impact on viewers.

4. Methodology

Our methodology is rooted in the nuanced exploration of sentiments, encapsulating attitudes, opinions, and emotional responses elicited by the script of "Dune (2021)." Recognizing sentiments as subjective experiences rather than objective facts, we employ a dual-faceted approach to sentiment analysis: subjectivity/objectivity identification and polarity scoring. This bifurcation enables a comprehensive dissection of the script, illuminating the intricate weave of emotional and narrative textures.

4.1. Subjectivity/Objectivity Identification

In our approach, differentiating between subjective and objective text elements is crucial. Subjective text, laden with personal beliefs and emotional expressions, is analyzed using techniques that can identify bias and personal stances, whereas objective text typically conveys factual information without emotional coloring. This distinction draws on established methodologies in NLP, which have been effectively applied in numerous studies to differentiate subjective from objective content (Wiebe et al., 2005). These techniques include the use of machine learning classifiers trained on labeled datasets of subjective and objective sentences.

4.2. Polarity Scoring

Polarity scoring is the process of determining the emotional valence of text—whether the expressed sentiment is positive, negative, or neutral. For this, we utilize the TextBlob library, a popular Python tool for processing textual data. TextBlob implements algorithms based on the pattern library, which includes a built-in sentiment analyzer (Loria, 2018). It not only scores texts on a scale from -1 (very negative) to +1 (very positive) but also helps in understanding the intensity of emotions conveyed in the dialogue and narrative descriptions.

4.3. Methodological Challenges

The primary challenge in sentiment analysis lies in the contextual nature of language. Words and phrases often derive their meaning from the surrounding text and the broader narrative context. To address this, we apply contextual analysis techniques that account for the varying implications of language use within different scenes and character interactions.

Further refining our methodology involves the integration of lexical-based approaches with machine learning models. Lexical approaches, such as those used in TextBlob, rely on predefined lists of words with associated sentiment values. However, to capture the nuances of the script's language, we also implement machine learning techniques that can contextualize sentiment based on the surrounding text (Pang & Lee, 2008). These models are trained on a corpus of film scripts to adapt to the specific linguistic styles found in cinematic dialogues.

4.4. Data Collection and Analysis

Our analysis is predicated on the comprehensive examination of the "Dune (2021)" movie script. The script was subjected to a meticulous process of data cleaning and preprocessing to remove extraneous elements and ensure the integrity of the textual data for sentiment analysis. Following preprocessing, the TextBlob library was employed to perform both subjectivity/objectivity identification and polarity scoring across the script's entirety. This systematic approach enabled us to chart the emotional and narrative landscape of "Dune (2021)," revealing the emotional depth and complexity of its characters and their journey.

4.5. Data Cleaning and Preprocessing

The integrity of sentiment analysis depends heavily on data quality. Therefore, our methodology includes rigorous data cleaning and preprocessing stages. We employ natural language processing tasks such as tokenization, stop-word removal, and lemmatization to prepare the text for analysis. These steps are essential for reducing noise and improving the accuracy of our sentiment classification (Haddi et al., 2013).

4.5.1. Text Normalization

Following data aggregation, we embarked on text normalization, a process critical for reducing complexity and enhancing the interpretability of the dataset. This involved:

- **Tokenization:** Segmenting the text into individual words (tokens) to facilitate detailed analysis.

- **Lowercasing:** Converting all text to lowercase to ensure uniformity and prevent the same words in different cases from being counted as separate entities.

- **Punctuation Removal:** Stripping punctuation marks, which, while crucial for grammatical structure, do not contribute to sentiment analysis.

- **Numerical Removal:** Eliminating numbers as they hold no emotional value in the context of sentiment analysis.

- **Stop Word Removal:** Filtering out common words (e.g., "the," "is," "and") that offer little to no value in understanding the script's emotional tone.

These steps collectively served to purify the dataset, stripping it of extraneous elements that could obscure or distort the sentiment analysis.

The cleaned and normalized text was then systematically organized to support the subsequent stages of analysis. This entailed structuring the data in a manner that facilitates

efficient processing and analysis, ensuring that each segment of the script could be accurately assessed for emotional content and sentiment polarity.

Adopting a Minimum Viable Product (MVP) approach, we initiated our analysis with a simplified model to establish a baseline understanding of the script's emotional landscape. This iterative process allowed for continuous refinement of our methods and techniques, enabling us to progressively enhance the accuracy and depth of our sentiment analysis.

4.6. Dataset

Our analysis is predicated on the comprehensive examination of the "Dune (2021)" movie script, a critical source for understanding the emotional and narrative arcs within this cinematic masterpiece. To facilitate this exploration, the script was meticulously compiled into a dataset that serves as the foundation for our sentiment and subjectivity analysis.

4.6.1. Data Collection

The collection process began with the retrieval of the "Dune (2021)" script. Given the absence of a central repository for movie scripts of such specificity and recency, we resorted to publicly available resources that provide legal access to film scripts. Our dataset comprises the complete script of "Dune (2021)," encompassing all dialogues, scene descriptions, and character interactions that are crucial for a nuanced analysis.

The script was obtained in a text (.txt) format, ensuring ease of processing and analysis. This format allows for straightforward application of natural language processing (NLP) techniques and ensures that the integrity of the script's content is preserved. The "Dune (2021)" script dataset is a substantial corpus, totaling approximately 138 pages and encompassing 25,940 words. This volume of text provides a rich tapestry of linguistic and emotional information, reflecting the intricate narrative and the depth of character development that defines the film. The dataset is comprehensive, including every piece of dialogue and descriptive text, thereby offering a complete view of the film's script.

Upon collection, the script underwent a rigorous preprocessing regimen to ensure its suitability for sentiment and subjectivity analysis. This included text normalization procedures such as tokenization, lowercasing, punctuation removal, numerical removal, and stop word elimination. These steps were critical for transforming the raw script into a clean, analyzable dataset devoid of extraneous or irrelevant elements. In handling the dataset, we adhered strictly to ethical guidelines, ensuring that our use of the "Dune (2021)" script was compliant with copyright laws and respectful of intellectual property rights. The script was used solely for academic and research purposes, with a focus on sentiment and subjectivity analysis rather than distribution or commercial exploitation.

5. Results and Discussion

Our exploratory data analysis (EDA) commenced with the identification of the most frequently mentioned words within the "Dune (2021)" script, revealing the characters and themes that dominate the narrative. Utilizing the WordCloud library in Python, we visualized these predominant terms to better understand their significance in the script's emotional and narrative landscape.

5.1. Word Cloud Analysis

The word cloud (table 1), generated from the "Dune (2021)" script prominently features the names "Paul," "Jessica," and "Leto," which were mentioned 337, 156, and 119 times, respectively. This finding underscores the central role these characters play in the narrative,

highlighting Paul's journey as the protagonist, supported by the pivotal presences of Jessica, his mother, and Leto, his father. Other significant words include "one," "eyes," and "Fremen," with frequencies of 83, 76, and 64 times, respectively. These terms reflect key elements of the story, such as the focus on the "one" who is prophesied, the importance of "eyes" in depicting the spice's influence and the Fremen's characteristics, and the "Fremen" themselves, who are central to the plot and Paul's transformation.

This visualization not only illustrates which characters and themes are most prevalent but also aids in understanding the script's focus and emotional depth. The frequent mentions of "mother" and terms related to vision ("eyes") suggest themes of guidance, protection, and foresight, which are crucial to the unfolding of the narrative and the development of Paul's character.

Table 1: Word Frequency for Dune (2021)

Word	Frequency
Paul	337
Jessica	156
Leto	119
one	83
eyes	76
Gurney	76
mother	69
back	66
Fremen	64

Figure 1: Word Cloud for Dune I

5.2. Discussion on Character Focus

The dominance of certain names and terms in the word cloud provides a clear indication of the script's character focus. Paul's journey, his lineage, and his interactions with the Fremen are evidently central to the narrative, mirroring the thematic concerns of destiny, heritage, and belonging. The emphasis on "eyes" and the spiritual and physical "vision" it implies, ties deeply with the lore of Dune, where sight and perception are not just literal but also metaphorical, reflecting the characters' insight and foresight.

The analysis also reveals the script's nuanced approach to building its world and characters. The balance between character-driven dialogue and thematic expressions indicates a script that is rich in emotional depth and narrative complexity. This supports the premise that the "Dune (2021)" movie script, through its focused character mentions and thematic vocabulary, weaves a dense tapestry of emotional and narrative elements that are pivotal to the story's impact.

In the analytical exploration of the "Dune (2021)" script, a focused examination of the ten most frequently occurring words unveils a nuanced understanding of the narrative's pacing and emphasis. Through the calculated metric of Words Per Minute (WPM), the script's focal points become quantitatively evident. The protagonist "Paul" emerges as the most dominant presence within the dialogue, averaging a WPM score of 2.17, thereby underscoring his pivotal role in the narrative. Following "Paul," the characters "Jessica" and "Leto" hold significant narrative weight with WPM scores of 1.01 and 0.77, respectively, reflecting their integral roles in shaping the story's direction and emotional depth (table 2).

Table 2: Word Per Minute for Dune (2021)

Word	Frequency	WPM
Paul	337	2.17
Jessica	156	1.01
Leto	119	0.77
one	83	0.54
eyes	76	0.49
Gurney	76	0.49
mother	69	0.45
back	66	0.43
Fremen	64	0.41

Furthermore, thematic elements and plot devices, represented by words such as "one," "eyes," and "Fremen," with WPM scores of 0.54, 0.49, and 0.41 respectively, highlight the script's thematic concerns and world-building elements. The recurrence of these words at measured intervals accentuates the script's thematic richness and character-driven narrative, offering insights into the storytelling techniques employed to engage the audience. The quantified prominence of these terms within the script's dialogue and descriptive passages, as illustrated by their WPM scores, reinforces the centrality of these characters and themes to the film's narrative architecture. This analysis not only sheds light on the narrative focus and pacing of "Dune (2021)" but also contributes to a deeper understanding of how language serves as a conduit for thematic expression and character development within cinematic storytelling.
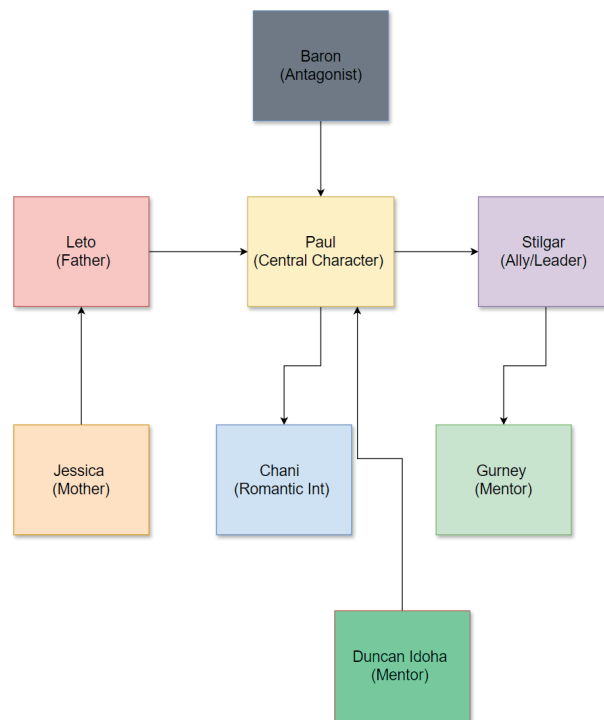
Figure 2: Visual Character Map of Relationships in "Dune (2021)"

Figure 2 illustrates the central and supporting characters in "Dune (2021)" and their interrelationships. The central character, Paul, is connected to key figures such as Jessica (Mother), Leto (Father), Chani (Romantic Interest), Duncan Idaho (Mentor/Protector), Baron (Antagonist), Stilgar (Ally/Leader of Fremen), and Gurney (Mentor/Warrior). Each connection is labeled to describe the nature of the relationship, enhancing the visual understanding of the narrative's emotional and relational dynamics. In the comprehensive sentiment and subjectivity analysis of the "Dune (2021)" movie script, we observe a nuanced narrative landscape articulated through the lens of emotional neutrality and balanced subjectivity. The polarity score (figure 3), slightly positive at approximately 0.048, indicates that the script maintains a subtle lean towards positive sentiment, suggesting an underlying optimistic tone amidst its complex thematic and emotional fabric. This minimal positive tilt underscores the script's delicate handling of its narrative elements, ensuring that no single emotional tone overwhelms the storytelling.

Simultaneously, the subjectivity score of approximately 0.467 reflects a carefully crafted balance between objective description and subjective interpretation. This indicates that while the script explores into the personal experiences and emotional journeys of its characters, it equally prioritizes a grounded representation of events and settings. The balance in subjectivity points to the scriptwriters' adept skill in weaving a narrative that invites audience empathy and engagement without compromising the story's realism and universality.

This analysis, illustrated in the accompanying figure, underscores the script's nuanced approach to emotional expression and narrative exposition. It highlights the script's ability to navigate the complex emotional terrain of its characters while maintaining a coherent and compelling narrative structure. The sentiment and subjectivity scores together paint a picture of a script that is both emotionally resonant and thoughtfully constructed, contributing to the depth and richness of the cinematic experience offered by "Dune (2021)."
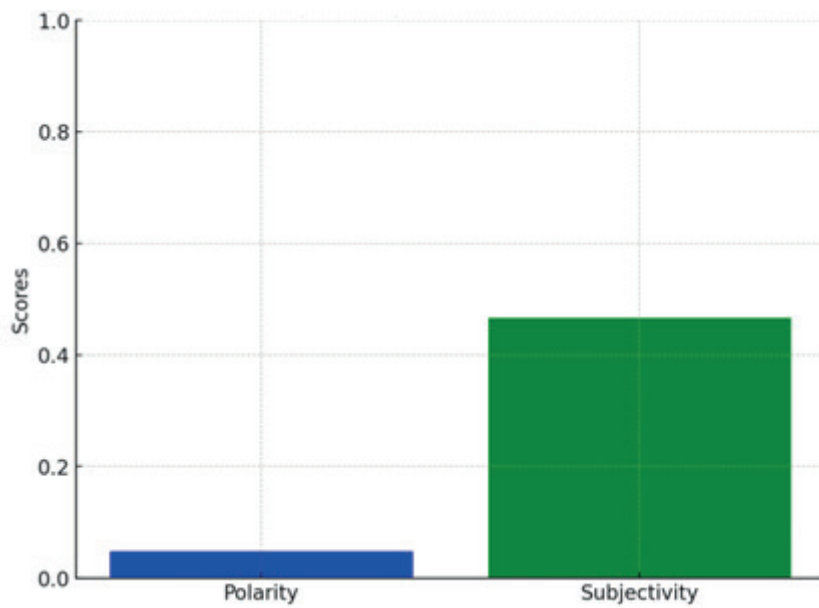
Figure 3: Sentiment and Subjectivity scores of the Dune (2021) Script

The sentiment analysis of the dialogues and mentions of key characters within the "Dune (2021)" movie script offers insightful revelations about the emotional and subjective landscapes navigated by these individuals. As depicted in Table 3, the character Stilgar exhibits the highest positivity in terms of polarity (0.224) and the greatest depth of subjectivity (0.602), indicating a narrative rich in personal perspective and emotional nuance. Contrastingly, the Baron's portrayal is markedly negative (polarity of -0.1189), aligning with his antagonistic role, and is coupled with a high level of subjectivity (0.493), suggesting a complex character depicted through a deeply personal lens (figure 4).

Figure 4: Character Pictures Corresponding to Sentiment Analysis Results (Dune, 2021)

Paul and Leto, central figures in the narrative, show slight negative and positive polarities, respectively, with Paul at -0.0099 and Leto at 0.0165, revealing a balanced portrayal of their emotional experiences. Their subjectivity scores, close to the median (0.414 for Paul and 0.499 for Leto), reflect a nuanced blend of objective actions and subjective interpretation. Jessica, Chani, and Gurney, pivotal characters intertwined with Paul's journey, exhibit a mix of slightly negative and positive sentiments, highlighting the emotional variances that underpin their roles within the storyline.

Duncan Idaho, another key figure, presents a notable negative polarity (-0.0857) with the lowest subjectivity (0.380), suggesting his portrayal is marked by challenging circumstances, yet depicted with relative objectivity. This sentiment analysis underscores the script's intricate balance of character development, emotional depth, and narrative structure, providing a lens through which the film's thematic and emotional layers can be further appreciated.

Table 3: The sentiment analysis results for each character in the "Dune (2021)"

Character	Polarity	Subjectivity
Paul	-0.0099	0.414
Jessica	-0.0355	0.437
Chani	0.0232	0.491
Leto	0.0165	0.499
Duncan (Idaho)	-0.0857	0.380
Baron	-0.1189	0.493
Stilgar	0.2240	0.602
Gurney	-0.0770	0.413

6. Conclusion

In our investigation, "Navigating the Sands of Emotion: A Sentiment and Subjectivity Analysis of Dune (2021) Characters," we delved deep into the emotional and subjective nuances embedded within the script of the 2021 adaptation of "Dune." Our analysis, utilizing TextBlob for sentiment and subjectivity analysis along with exploratory data analysis techniques such as word clouds, unveiled the intricate emotional fabric and the varying degrees of subjectivity associated with each character. This provided a quantifiable measure of the narrative's emotional landscape, capturing the essence of the characters' emotional journeys and the narrative's overarching sentiment.

The findings from our study highlight the subtle interplay of polarity and subjectivity which contributes to the rich tapestry of the "Dune" narrative, enhancing viewer engagement and empathy towards the characters. Characters such as Stilgar, with high positivity and subjectivity scores, exemplify the depth of character development and narrative engagement. Conversely, antagonistic figures such as the Baron, with negative polarity, reflect the complexity and nuance of the film's portrayal of conflict and adversity.

Our research underscores the potential of sentiment analysis to enrich our understanding of cinematic narratives, providing insights into the emotional dynamics that drive character development and audience engagement. Furthermore, our study opens the door for innovative future applications, such as the development of web platforms that leverage sentiment and subjectivity data to provide audiences with a novel lens through which to select and appreciate films based on their emotional and subjective depth.

As the landscape of cinema continues to evolve, the integration of sentiment analysis into the critique and appreciation of films holds promise for enhancing audience experiences, offering a new dimension of engagement that transcends traditional metrics such as box office performance or critical ratings. The script analysis of "Dune (2021)" exemplifies how sentiment and subjectivity metrics can illuminate the emotional and narrative complexities that underpin the success and resonance of cinematic works with audiences worldwide.

6.1. Broader Academic and Practical Implications

The utility of sentiment analysis extends beyond academic inquiry, influencing practical applications in content creation, marketing, and audience segmentation. By integrating sentiment and subjectivity scores into the production and promotion strategies, filmmakers and studios can tailor their approaches to better meet the emotional expectations of diverse audience segments.

6.2. Future Directions in Research and Development

Looking ahead, the integration of advanced machine learning algorithms and artificial intelligence could revolutionize the way sentiment analysis is conducted in film studies. The adoption of deep learning techniques could provide more nuanced interpretations of complex emotional expressions, further enhancing the accuracy and depth of sentiment and subjectivity analysis.

Ultimately, our study not only contributes to the academic discourse by providing empirical evidence of the effectiveness of sentiment analysis in film studies but also suggests a paradigm shift in how films are analyzed, critiqued, and appreciated. As we continue to explore the intersections of technology, emotion, and cinematic storytelling, we pave the way for more sophisticated analytical tools that will redefine our understanding of what it means to experience and interpret film.

Conflict of Interest Statement

The author of the article declared that there is no conflict of interest.

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