iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 7 **Issue:** III **Month of publication:** March 2019

DOI: http://doi.org/10.22214/ijraset.2019.3367

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 7 Issue III, Mar 2019- Available at www.ijraset.com

Music Content Ranking using Affective Information on Social Media

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Abstract: ***It is easy to determine a person's emotion state from their social network presence online. But it is only easy for us humans to correlate these emotions. But in the field of music information retrieval and recommendation, emotion is considered contextual information that is hard to capture, albeit highly influential. In this study, we exploit the user's online presence in twitter to determine his/her state of mind and ultimately provide music suggestions. Particularly, we perform a large-scale study based on data sets containing now playing tweets. We extract affective contextual information from hashtags that are present in social media posts by applying an unsupervised sentiment dictionary approach. Subsequently, we utilize a state-of-the-art network embedding method to learn latent feature representations of users, tracks and hashtags. We find that the suitable ranking method helps in discerning the music preference of the user. For capturing context-specific preferences which is a more complex and personal task, we find that affective information and leveraging hashtags as context information are the best ranking strategies that outperform the other ranking strategies.***

Keywords: Online Presence, **Hashtags, Music Recommendation**

I. INTRODUCTION

The uncomfortable silences, social cohesion and communication, emotion regulation, etc. From an affective computing point of view, it is interesting to investigate the relationship between a user's musical preference and the user's emotional state. There have been many psychological studies on the role of music in emotion regulation. The emotional state of a listener has also been considered as important contextual information in building recommender systems. A possible application is to build a system that monitors people's emotion and predicts how to subliminally impact them by recommending different music pieces However, as the emotional state of a user is hard to capture in a large-scale study, most existing studies are conducted in a laboratory setting. It remains unclear to which extent such findings can be generalized to the real-life usage of music. Seeing the popularity of social micro blogging websites such as oportunities to study real world music listening behavior at scale. Most interestingly for our study, Twitter allows for gathering so-called now playing tweets, which tweets are describing the track a user is currently listening to. One such example tweet is "nowplaying Crazy for You by Adele Happy". In this example, the user not only publishes the music track and artist he/she is listening to, but also adds a hashtag.

II. LITREATURE SURVEY

1) *Paper Title:* Applying Collaborative Filtering Techniques to Movie Search for better Ranking and Browsing
a) *Author:* Seung-Taek Park, David M. Pennock, Dennis DeCoste
b) *Abstract:* By and large web indexes, for example, Google and Yahoo! Inquiry, archive importance for the given question and thing expert are two noteworthy segments of the positioning framework. Notwithstanding, numerous data seek apparatuses in internet business destinations overlook thing specialist in their positioning frameworks. To some extent, this may come from the overall trouble of producing thing experts because of the diverse qualities of archives (or things) between internet business locales and the web. Connections between reports in a web based business webpage regularly speak to relationship as opposed to proposal. For instance, two archives (things) are associated since both are created by a similar organization. We propose another positioning technique, which joins recommender frameworks with data scan apparatuses for better hunt and perusing. Our technique utilizes a communitarian separating calculation to produce individual thing experts for every client and consolidates them with thing vicinities for better positioning. To show our methodology, we construct a model motion picture web crawler called MAD6 (Movies, Actors and Directors; 6 degrees of division).
2) *Paper Title:* Context-Aware Recommender Systems
a) *Author :* Gediminas Adomavicius, Alexander Tuzhilin
b) *Abstract:* The significance of logical data has been perceived by scientists and professionals in numerous orders, including internet business personalization, data recovery, universal and portable figuring, information mining, advertising, and the

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executives. While a significant measure of research has just been performed in the territory of recommender frameworks, most existing methodologies centre around prescribing the most applicable things to clients without considering any extra logical data, for example, time, area, or the organization of other individuals (e.g., for watching motion pictures or eating out). In this section we contend that applicable relevant data does make a difference in recommender frameworks and that it is vital to consider this data while giving suggestions. We examine the general idea of setting and how it very well may be demonstrated in recommender frameworks. Moreover, we present three distinctive algorithmic ideal models – relevant profiteering, post-separating, and demonstrating – for joining logical data into the suggestion procedure, examine the conceivable outcomes of consolidating a few setting mindful proposal strategies into a solitary binding together methodology, and give a contextual investigation of one such joined methodology. At last, we present extra abilities for setting mindful recommenders and examine vital and promising bearings for future research.

3) *Paper Title:* SentiFul: Generating a Reliable Lexicon for Sentiment Analysis

a) *Author:* Alena Neviarouskaya, Helmut Prendinger, Mitsuru Ishizuka

b) *Abstract:* The primary downside of any vocabulary based notion investigation framework is the absence of adaptability. Hence, in this paper, we will portray techniques to naturally create and score another conclusion dictionary, called Senti Ful, and grow it through direct synonymy relations and morphologic adjustments with known lexical units. We propose to recognize four sorts of joins (used to determine new words) contingent upon the job they play with respect to feeling highlights: proliferating, switching, heightening, and debilitating.

4) Paper Title :Improving Aggregate Recommendation Diversity Using Ranking- Based Techniques

a) *Author:* Gediminas Adomavicius, YoungOk Kwon

b) *Abstract:* Recommender frameworks are winding up progressively vital to singular clients and organizations for giving customized suggestions. Nonetheless, while most of calculations proposed in recommender frameworks writing have concentrated on improving suggestion exactness (as exemplified by the ongoing Netflix Prize challenge), other vital parts of proposal quality, for example, the assorted variety of proposals, have regularly been neglected. In this paper, we present and investigate various thing positioning procedures that can create suggestions that have significantly higher total decent variety over all clients while keeping up similar dimensions of proposal exactness. Far reaching observational assessment reliably demonstrates the assorted variety additions of the proposed procedures utilizing a few true evaluating datasets and distinctive rating forecast calculations.

5) Paper Title: Music emotion classification and context-based music recommendation

a) *Author:* Byeong-jun Han & Seungmin Rho & Sanghoon Jun & Eenjun Hwang

b) *Abstract:* Setting based music suggestion is one of quickly developing applications in the coming of omnipresent time and requires multidisciplinary endeavors including low dimension highlight extraction and music grouping, human feeling portrayal and expectation, cosmology based portrayal and proposal, and the foundation of associations among them. In this paper, we contributed in three unmistakable approaches to consider the possibility of setting mindfulness in the music proposal field. Right off the bat, we propose a novel feeling state progress show (ESTM) to display human enthusiastic states and their advances by music. ESTM acts like an extension between client circumstance data alongside his/her feeling and low-level music highlights. With ESTM, we can prescribe the most fitting music to the client for traveling to the ideal enthusiastic state. Also, we present setting based music suggestion (COMUS) cosmology for displaying client's melodic inclinations and setting, and for supporting thinking about the client's ideal feeling and inclinations. The COMUS is music-committed metaphysics in OWL developed by consolidating space explicit classes for music proposal into the Music Ontology, which incorporates circumstance, inclination, and melodic highlights. Thirdly, for mapping low-level highlights to ESTM, we gathered different high-dimensional music include information and connected nonnegative lattice factorization (NMF) for their measurement decrease. We likewise utilized help vector machine (SVM) as enthusiastic state change classifier. We developed a model music proposal framework dependent on these highlights and did different tests to quantify its execution. We report a portion of the test results.

6) Paper Title : One-Class Collaborative Filtering

a) *Author :* Rong Pan, Yunhong Zhou, Bin Cao, Nathan N. Liu, Rajan Lukose, Martin Scholz1, Qiang Yang

b) *Abstract:* Numerous uses of agreeable sifting (CF), like point suggestion and bookmarker proposal, are most normally thought of as one-class helpful separating (OCCF) issues. In these issues, the training learning ordinarily comprise just of twofold information intelligent a client's activity or inaction, similar to page appearance inside the instance of stories thing proposal or page bookmarking in the bookmarking scenario. Usually this kind of information are phenomenally dainty (a little part are

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positive precedents), therefore uncertainty emerges inside the elucidation of the non-positive examples. Negative models and untagged positive precedents are blended along and that we are generally unfit to separate them. For precedent, we will in general can't incredibly quality a client not bookmarking a page to a nonappearance of premium or absence of consciousness of the page. Previous examination tending to this one-class downside exclusively considered it an order task. In this paper, we will in general consider the one-classification disadvantage underneath the CF setting. We propose two systems to handle OCCF.One is predicated on weighted low position guess; the inverse is predicated on negative precedent sampling. The exploratory outcomes demonstrate that our methodologies extensively outgo the baselines.

7) Paper Title: Opinion mining and sentiment analysis

a) *Author:* Bo Pang and Lillian Lee

b) *Abstract:* A vital piece of our data gathering conduct has dependably been to discover what other individuals think. With the developing accessibility and fame of sentiment rich assets, for example, online survey locales and individual sites, new chances and difficulties emerge as individuals currently can, and do, effectively use data innovations to search out and comprehend the conclusions of others. The unexpected ejection of action in the region of supposition mining and conclusion investigation, which manages the computational treatment of assessment, estimation, and subjectivity in content, has in this way happened at any rate to some extent as an immediate reaction to the flood of enthusiasm for new frameworks that manage sentiments as a top of the line object. This overview covers strategies and methodologies that guarantee to legitimately empower supposition arranged data looking for frameworks. Our attention is on techniques that look to address the new difficulties raised by slant mindful applications, when contrasted with those that are as of now present in progressively customary actuality based investigation. We incorporate material on synopsis of evaluative content and on more extensive issues with respect to security, control, and financial effect that the improvement of feeling focused data get to administrations offers ascend to. To encourage future work, a discourse of accessible assets, benchmark datasets, and assessment crusades is additionally given.

8) Paper Title :The functions of music for affect regulation

1) *Author:* Annelies van Goethem, John Sloboda

2) *Abstract:* Melodic encounters are frequently answered to impact feelings (Juslin and Västfjäll, 2008; Sloboda, O'Neill, and Ivaldi, 2001): individuals deliberately and unwittingly use music to change, make, keep up or improve their feelings and states of mind (influence) on a day by day for his or her own benefit (DeNora, 1999; Schramm, 2005).This is known as influence guideline. In any case, existing examination has not in any case addressed questions of anyway music manages affect, particularly past the expressive properties of music (Meyer, 1956).The points of the investigations exhibited here were to research (a) how music capacities to direct effect, (b) which influences it controls, and (c) regardless of whether music listening can be viewed as a fruitful influence guideline gadget. The principle discoveries were:music helps through more extensive have a direction on guideline ways like diversion, considering, and dynamic adapting; music will for example divert someone from the affect or circumstance, or encourage to trust the affect or situation amid a sound way; music assumes a noteworthy job in making satisfaction and unwinding music in general might be a prominent guideline gadget with an assortment of hidden components serving to totally unique strategies. The present paper might be a profitable expansion to the present writing and gives numerous new bits of knowledge into the perform of music for affect guideline in existence. The understanding picked up into that strategies and basic systems are concerned once music is utilized for affect guideline might be utilized for the upside of individuals' enthusiastic welfare.

9) Paper Title: The pleasures of sad music: a systematic review

a) *Author:* Matthew E. Sachs, Antonio Damasio and Assal Habibi

b) *Abstract:* Sadness is commonly observed as a negative feeling, a reaction to troubling and unfriendly circumstances. In a stylish setting, in any case, bitterness is frequently connected with some level of delight, as proposed by the omnipresence and notoriety, since the beginning, of music, plays, movies and works of art with a dismal substance. Here, we centre around the way that music viewed as tragic is frequently experienced as pleasurable. Contrasted with other fine arts, music has an uncommon capacity to bring out a wide scope of sentiments and is particularly flabbergasting when it manages sadness and distress. For what reason is it, at that point, that while human survival relies upon forestalling difficult encounters, mental agony regularly ends up being expressly looked for through music? In this article we think about why and how tragic music can end up pleasurable. We offer an edge work to represent how tuning in to dismal music can prompt positive emotions, battling that this effect things on rectifying a continuous home static irregularity. Trouble evoked by music is discovered pleasurable when it is seen as non-undermining; when it is stylishly satisfying; and when it produces mental advantages, for example, state of mind guideline, and empathic emotions, caused, for instance, by memory of and reflection on past occasions. We additionally

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survey neuron imaging examines identified with music and feeling and spotlight on those that manage pity. Further investigation of the neural systems through which boosts that typically produce bitterness can initiate a positive full of feeling state could help the improvement of compelling the rapies for scatters, for example, despondency, in which the capacity to encounter joy is constricted.

10) *Paper Title:*Twitter Sentiment Analysis: The Good the Bad and the OMG

a) *Author:* Efthymios Kouloumpis, Athens, Greece, TheresaWilson, Baltimore, Johanna Moore

b) *Abstract:* In this paper, we research the utility of etymological highlights for recognizing the assumption of Twitter messages. We assess the value of existing lexical assets just as highlights that catch data about the casual and inventive language utilized in smaller scale blogging. We adopt a managed strategy to the issue, however influence existing hash labels in the Twitter information for structure preparing information.

11) Paper Title: Using Emotional Context from Article for Contextual Music Recommendation

1) *Author:* Chih-Ming Chen, Ming-Feng Tsai, Jen-Yu Liu, Yi-Hsuan Yang

2) *Abstract:* This paper proposes a setting mindful methodology that prescribes music to a client dependent on the client's enthusiastic state anticipated from the article the client composes. We examine the relationship between client produced content and music by utilizing a genuine world dataset with tripartite data gathered from the social blogging site Live Diary. The sound data speaks to different perceptual components of music tuning in, including dance ability, clamor, mode, and rhythm; the enthusiastic content data comprises of sack of-words and three dimensional full of feeling states inside an article: valence, excitement and dominance. To consolidate these elements for music suggestion, a factorization machine-based methodology is taken. Our investigation demonstrates that the passionate setting information take mined from client produced articles will improve the standard of exhortation, correlation with either the helpful separating approach or the substance based methodology.

III. PROPOSED WORK

We propose a system where the contextual data of the user is considered for the recommendation. When a user tweets about his interested music, as hash tag, he also writes about his view. We try to analyze the sentiment of the content pertaining to the user. The sentiment value and the song the user is interested is considered together. The music is ranked based on the users view and their sentiment.

Our ultrasound modem can be implemented on any device that has a speaker (for sending) or a microphone (for receiving) and supports a sample rate of 44.1kHz. Devices then communicate using ultrasound signals in an ad-hoc manner. Our target hardware platform is smartphones, in which these hardware requirements are ubiquitous. However, our modem can also be implemented on mobile payment stations, smart watches, IoT devices, smart home appliances, etc. The user inputs some information; the Hush software converts that information to an audio signal, and transmits it using the device speaker. A second device receives the signal and the Hush software decodes it. The information is then displayed to the user in the appropriate way.

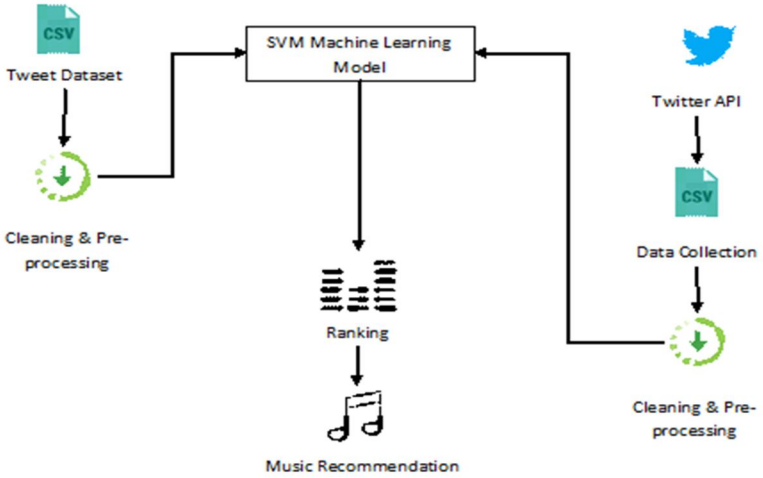

Fig 3.1 Architecture Diagram

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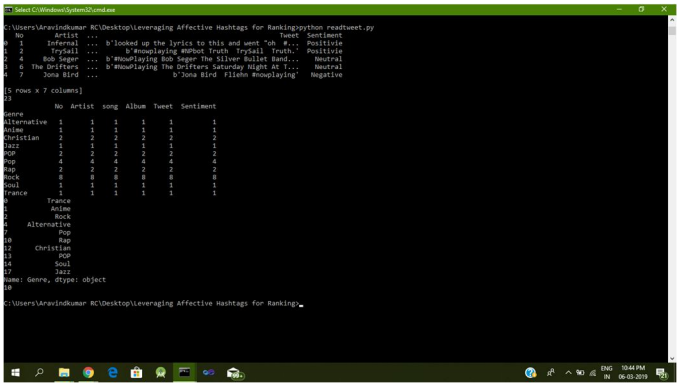
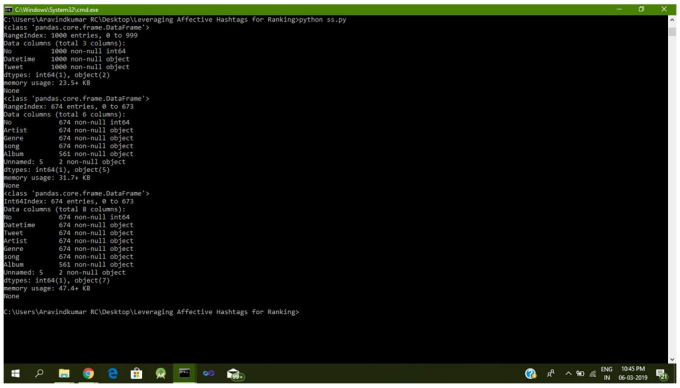
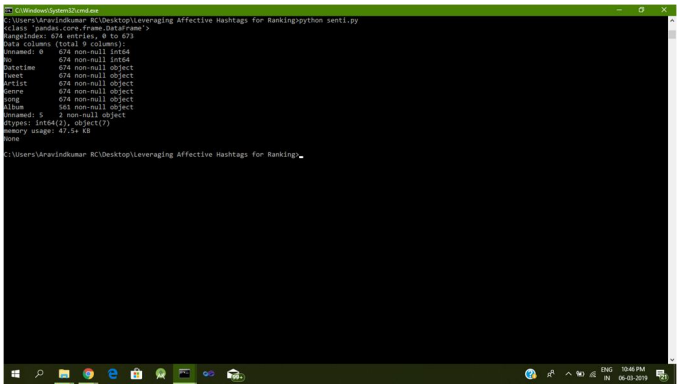
IV. CONCLUSION

We have proposed a new insight into music recommendation through a different approach using a users emotion quanta. What we proposed is based on sentiment scores based on the tracks, users emotion through affective hashtags like #nowplaying and the companion hashtags. Our method is a novel method where we only use latent features from these hashtags. The main process is ranking the tracks that are new to the user and also doing the same for the ones the user has listened to. For random tracks we have found that comparing the latent features of the users and tasks have been successful. This is the general method that we propose. And our hypothesis has been verified. For the latter method we have found that context based ranking, using the results extensively trained from the hashtags is more powerful and accurate. Also we have embedded methods for recommendations according to genre. This widely increases the scalability of the process.

V. SNAPSHOTS







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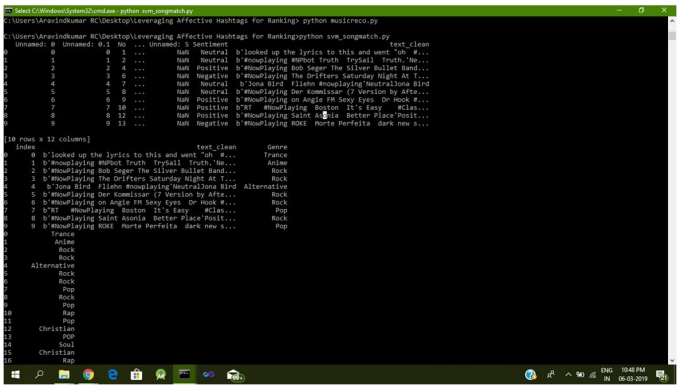

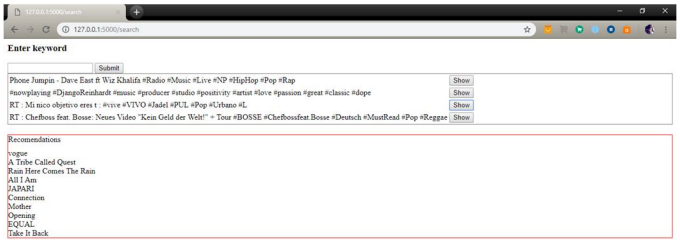

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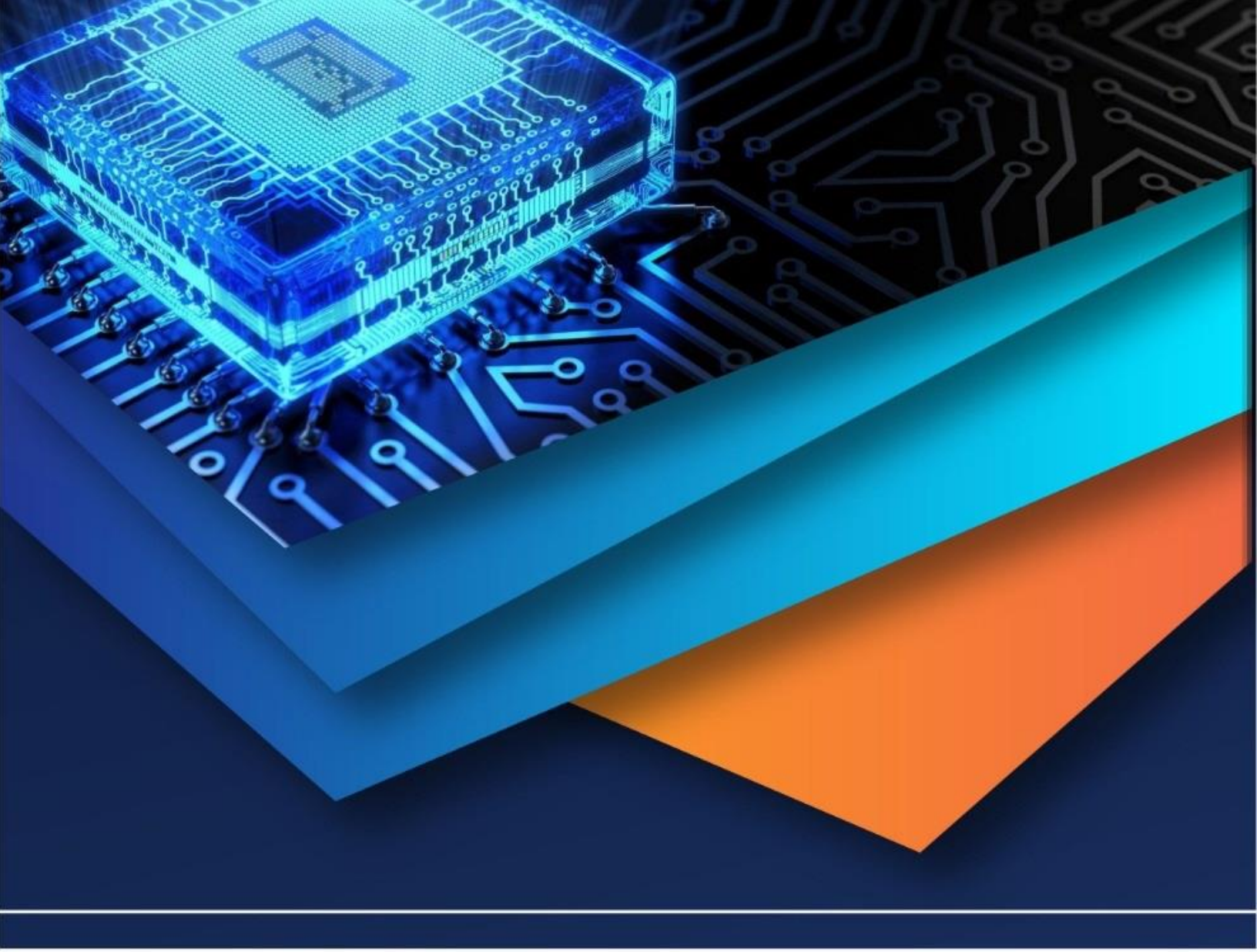

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