iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** XI **Month of publication:** November 2023

DOI: https://doi.org/10.22214/ijraset.2023.56540

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue XI Nov 2023- Available at www.ijraset.com

Weather Tunes: A Weather Based Music Recommendation System

Prof. S. L. Tambe[1], Abhinandan Jain[2], Gauresh Khope[3], Pulkit Dadheech[4], Piyush Nagdeote[5]
[1]*Professor,* [2, 3, 4, 5]*Students, Department of Computer Engineering, SKN Sinhgad Institute of Technology and Science, Kusgaon(BK), Lonavala, Pune*

Abstract: ***Weather Tunes is a weather-based music recommendation system. This innovative weather-based music player harmonizes with the ever-changing weather, enriching user's listening experiences through dynamic, weather inspired melodies. WeatherTunes aims to seamlessly integrate weather data with artificial intelligence to curate personalized playlists tailored to evoke emotions and suit the atmospheric conditions in real time. The core concept of WeatherTunes revolves around capturing weather data from reliable sources, such as meteorological APIs, to interpret atmospheric conditions such as temperature, humidity, precipitation, and atmospheric pressure. These parameters are then translated into specific emotional indices that form the foundation of the music selection process. Upon launching the WeatherTunes application, users are presented with a visually captivating interface that displays the current weather alongside the associated emotion or mood. Users can adjust the settings to customize their music experience further.***

Keywords: WeatherTunes, Weather-Based, music recommendation system, AI, Personalised playlists, Atmospheric conditions, emotional indices, mood.

I. INTRODUCTION

In recent years, the convergence of technology and music has led to the development of innovative approaches aimed at transforming the way we engage with and experience music. One such groundbreaking initiative is the WeatherTunes, a pioneering weather-based music recommendation system that seamlessly integrates atmospheric conditions with personalized musical experiences. By harnessing real-time weather data and leveraging sophisticated algorithms, WeatherTunes has redefined the landscape of music curation, offering users a unique and dynamic fusion of weather patterns and emotive melodies.

In an era characterized by the relentless amalgamation of technology and human experiences, the groundbreaking fusion of meteorological data and harmonious tunes has given rise to the avant-garde marvel known as WeatherTunes. At its core, WeatherTunes is not just another music recommendation system; it represents an unprecedented synergy of atmospheric dynamics and the ethereal power of music, orchestrating a seamless marriage between the ephemeral moods of weather and the timeless allure of melody.

Through its innovative orchestration, WeatherTunes exquisitely synchronizes the capricious rhythms of weather parameters - temperature, humidity, precipitation, and atmospheric pressure - with an array of bespoke emotional indices, facilitating a personalized musical journey that transcends the boundaries of conventional playlist curation. By virtue of its intricate integration of cutting-edge meteorological APIs and the unparalleled prowess of artificial intelligence, WeatherTunes crafts bespoke soundscapes that not only mirror but also actively evoke the very essence of the prevailing atmospheric conditions.

This comprehensive review embarks on an exploration of the multifaceted intricacies that define the WeatherTunes phenomenon, delving deep into the nuances of its interpretative methodologies, its intricately woven interface that captivates the senses, and the profound customizability that empowers users to navigate and sculpt their sonic landscapes. Through a meticulous dissection of its technological underpinnings and the psychological resonance it engenders, this review offers an illuminating glimpse into the revolutionary paradigm shift that WeatherTunes heralds, forging a new frontier in the realm of bespoke musical experiences.

II. LITERATURE REVIEW

The ClimaSound project is dedicated to collecting and analysing environmental data, presenting personalized song recommendations based on real-time weather conditions. It aims to bridge the gap between music and weather data, emphasizing the impact of environmental factors on daily life. By integrating weather stations and air quality monitoring systems, the project ensures the systematic gathering of crucial information for both weather forecasting and air quality assessment.

©IJRASET: All Rights are Reserved

The methodology involves data collection through hardware sensors, storage in a database, data analysis using data mining techniques, and the development of a user interface for music preferences and weather-based playlists. Implementation requires proficiency in hardware setup, data collection, data analysis, software development, and UI design, utilizing tools such as Python, Arduino, Raspberry Pi, SQL databases, data mining libraries, and music player APIs. The ClimaSound website, built using HTML, CSS, JavaScript, and React.js, aims to provide a user-friendly experience, offering real-time weather data, air quality monitoring, and personalized music recommendations. While the project has the potential to benefit various sectors, challenges related to data privacy, security, and data accuracy must be considered for its successful execution.[1]

The text discusses the integration of music and technology through music recommendation systems, addressing the challenges in organizing the vast array of musical content available on the internet. It emphasizes the importance of user profiling and item modelling in these systems, highlighting the roles of demographic information and various types of metadata. The paper surveys different music recommendation techniques, including collaborative filtering, content-based, emotion-based, and context-based models, while discussing their strengths and limitations. It advocates for the development of hybrid models to enhance system performance and suggests the need for a more comprehensive understanding of users' psychological and physiological responses to music. The text concludes by emphasizing the importance of user-centric design and interdisciplinary research for the advancement of music recommendation systems.[2]

The text highlights the significance of music recommendation systems, emphasizing their implementation using Python and Flask. It explores the role of NumPy and Pandas in data manipulation and reviews various recommendation techniques, including collaborative and content-based filtering. The paper proposes the use of Lambda functions for fetching song recommendations and emphasizes the importance of Data Mining (DM) techniques for classification. It aims to identify crucial variables affecting music performance prediction models through feature selection algorithms. The research emphasizes the need for user-centric music recommendation systems and interdisciplinary research, aiming to build bridges between isolated research in different disciplines. [3]

The text underscores the importance of retaining users on music streaming platforms through personalized song recommendations. It explores the implementation of an Artificial Neural Network (ANN) model and KNN Regression algorithm for comparing songs based on their similarities, highlighting the relevance of both collaborative and content-based filtering approaches in music recommendation systems. Additionally, it delves into the utilization of various datasets, including the Million Song dataset, the Musixmatch dataset, and the Lastfm dataset, emphasizing the fusion of these datasets within a MySQL database for effective song similarity modelling. The system, equipped with 2215 songs, enables real-time song recommendations, playlist creation, and artist-based suggestions for an enhanced user experience. [4]

The paper proposes a music recommendation system integrating facial expression analysis and collaborative filtering, demonstrating accurate emotion prediction and personalized music recommendations. The methodology involves data collection, deep learning-based emotion detection, and collaborative filtering for tailored recommendations. Results showcase the system's effectiveness, with an F1 score of 0.85. The modular design enhances user satisfaction, offering precise recommendations based on emotional states. The study suggests future enhancements through user feedback and contextual information incorporation for further accuracy. [5]

The paper presents a study on music recommendation systems using the Million Song Dataset from Kaggle. Several algorithms were implemented and evaluated, including a popularity-based model, collaborative filtering models, SVD model, and KNN model. Results indicate the success of the memory-based collaborative filtering algorithm, followed by the SVD model, while the KNN model performed poorly due to data scarcity. Precision was prioritized over recall in the evaluation metrics, emphasizing the importance of accurate recommendations for a positive user experience..[6]

III.CONCLUSION

In conclusion, the study focused on developing an effective music recommendation system, using the Million Song Dataset provided by Kaggle, to understand user preferences and provide personalized song recommendations. Throughout the research, the team implemented various algorithms and evaluated their performance, with a primary emphasis on memory-based collaborative filtering, SVD, KNN, and popularity-based models.

Among the models tested, the memory-based collaborative filtering algorithm yielded the most promising results, indicating its efficacy in capturing user preferences and delivering accurate song recommendations. The collaborative filtering approach, based on similarities between users and items, proved to be a robust method for predicting user tastes, particularly when considering the collective preferences of multiple users. The study underscored the importance of precision in recommendations, as inaccurate suggestions can potentially diminish user experience, leading to dissatisfaction and reduced engagement with the platform.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

Although the SVD model demonstrated considerable potential in inferring latent factors that influence users' listening histories, its performance was hindered by data sparsity, preventing the objective functions from reaching a global optimum. Furthermore, the KNN model exhibited subpar results, notably underperforming even the popularity-based model. The study attributed this outcome to the significant lack of information available, underscoring the challenges posed by sparse data sets and the impact on the model's performance.

In terms of evaluation metrics, precision was highlighted as a critical measure, reflecting the team's commitment to delivering accurate recommendations that align with users' music preferences. The emphasis on precision aimed to mitigate potential instances of false positives, which can significantly affect users' overall experience and satisfaction with the music recommendation system.

The fifth article detailed the development of a College Enquiry Chatbot, focusing on the practical advantages of using such systems to assist students and provide quick access to relevant information. It acknowledged potential challenges like response times under high user demand, but it also recognized the broader applications of chatbots in educational institutions and beyond.

Overall, the findings emphasized the significance of employing robust and comprehensive algorithms, particularly memory-based collaborative filtering, in developing efficient and reliable music recommendation systems. The study highlighted the critical role of algorithm performance and data availability in achieving successful recommendations, ultimately contributing to an enhanced user experience and increased user retention for music service providers

REFERENCES

[1] ClimaSound: A weather-based song recommendation system with air quality monitoring by Mayur Hiwale, Rohit Chilholker, Ankeet Upadhyay, Siddharaj Yadav, Dr. Latika Desai in n2023. https://ijcrt.org/papers/IJCRT23A5385.pdf

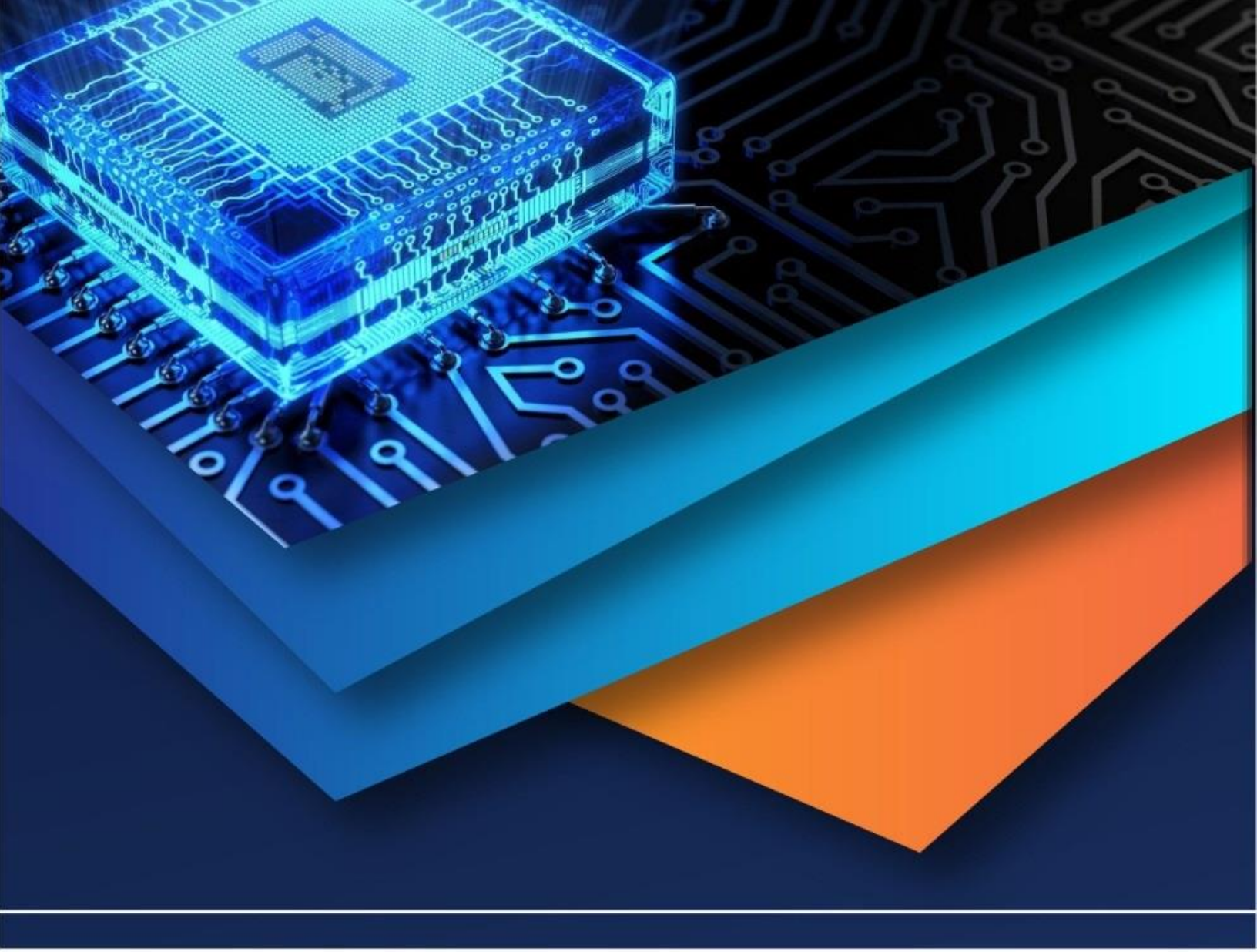
[2] A Survey of Music Recommendation Systems and Future Perspectives by Yading Song, Simon Dixon, and Marcus Pearce in 2008. https://www.researchgate.net/publication/277714802_A_Survey_of_Music_Recommendation_Systems_and_Future_Perspectives

[3] Music Recommendation System Using Machine Learning by Varsha Verma, Ninad Marathe, Parth Sanghavi, Dr. Prashant Nitnaware. in 2021. https://ijsrcseit.com/CSEIT217615

[4] Music Recommendation System by Smt. Namitha S J in July 2019. https://www.ijert.org/research/music-recommendation-system-IJERTV8IS070267.pdf

[5] Music Recommendation using Facial Expression by Divyansh Shukla, Surya Pratap Singh, Sneha Saurbh, ajay kumar https://www.researchgate.net/publication/371005899

[6] Shefali Garg, Fangyan SUN. “Music Recommender System”, Journal of Indian Institute of Technology, Kanpur, 2014 https://cse.iitk.ac.in/users/cs365/2014/_submissions/shefalig/project/report.pdf



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)