E-ISSN: 3123-2574
DOI: https://doi.org/10.64803/ikosstemi.v1.92
Lubis, Sakti, Royhan, Sunandri, Sitanggang, and Efendi

Moodify: An Intelligent Music Player Based on User Mood Using Machine Learning

Abdul Hadi Lubis[1*], Rendra Jogia Sakti[2], Abdullah Royhan[3], Ika Bagus Sunandri[4], Andrian Agustin Sitanggang[5], Yoyon Efendi[6]

[1,2,3,4,5,6]Faculty of Engineering and Informatics, Informatics Engineering Study Program, Universitas Sains dan Teknologi Indonesia, Pekanbaru, Indonesia
E-mail: [1*]2310031802061@sar.ac.id, [2]2310031802084@sar.ac.id, [3]2310031802073@sar.ac.id, [4]2310031802056@sar.ac.id, [5]2310031802082@sar.ac.id, [6]yoyonefendi@usti.ac.id
E-mail Corresponding Author: 2310031802061@sar.ac.id

Abstract

Mood plays a vital role in influencing human productivity, emotions, and learning effectiveness. Music is widely known as one of the media that can influence and adjust human mood. However, most music player applications still rely on manual playlist selection and do not adapt dynamically to the user's emotional condition. This study proposes Moodify, an intelligent music player application that utilizes machine learning techniques to detect user mood and provide personalized music recommendations. The problem addressed in this research is the lack of adaptive music recommendation systems based on real-time user mood. The purpose of this research is to design and analyze a mood-based music recommendation system that can enhance user experience. The research method uses a machine learning-based classification approach to identify user mood from input data, followed by a recommendation algorithm that matches music characteristics with detected moods. The results show that Moodify is able to recommend music that aligns with user emotional states, improving comfort and engagement. This research contributes to the development of intelligent multimedia applications that support emotional well-being and personalized digital experiences.

Keywords: *mood detection; music recommendation; machine learning; intelligent application.*

I. INTRODUCTION

Music has become an integral part of daily human activities, including studying, working, relaxing, and entertainment. Different types of music can evoke different emotional responses, such as happiness, sadness, calmness, or motivation. According to several studies, listening to music that matches an individual's mood can improve concentration, reduce stress, and enhance emotional stability (Karimi et al., 2022). Despite this, most existing music streaming applications require users to manually select playlists or genres, which may not always align with their current emotional state (Niepert & Garcia-Duran, 2018).

Previous research has explored music recommendation systems using collaborative filtering and content-based approaches. However, many of these systems focus primarily on user listening history rather than real-time emotional context. Recent studies have introduced mood-based music recommendation using machine learning, but challenges remain in accurately detecting mood and integrating it seamlessly into user-friendly applications (Kulkarni, 2021).

The theoretical foundation of this research is based on affective computing, which focuses on recognizing, interpreting, and responding to human emotions using computational systems. Machine learning techniques, particularly classification algorithms, have been widely used to identify emotional states from various forms of user input (Ghrabat et al., 2019).

This research aims to develop Moodify, an intelligent music player application that can automatically detect user mood and recommend suitable music. The novelty of this research lies in integrating machine learning-based mood detection with a personalized music recommendation system to create an adaptive and emotionally aware music player(Steinberger et al., 2014).

II. RESEARCH METHODOLOGY

The research methodology employed in this study consists of several stages: system design, data processing, mood classification, and music recommendation (Mooley et al., 2022). The system framework begins with user input, which may include text input or interaction patterns. This data is processed and analyzed using machine learning algorithms to classify the user's mood into predefined categories such as happy, sad, relaxed, or motivated(Lumban Gaol, 2021).

The machine learning model is trained using labeled mood datasets. Feature extraction techniques are applied to obtain relevant attributes from the input data. A classification algorithm, such as Support Vector Machine (SVM) or K-Nearest Neighbor (KNN), is used to determine the user's mood. Once

the mood is identified, the system applies a recommendation algorithm that matches the detected mood with suitable music tracks based on predefined music attributes (Habibie, 2022). The overall system framework can be illustrated in a flowchart consisting of input, mood detection, classification, recommendation, and output stages (Lamba et al., 2022).

III. RESULTS AND DISCUSSION

The implementation of Moodify demonstrates that the system can identify a user's mood and recommend appropriate music. Testing results indicate that users experience improved satisfaction when listening to music that aligns with their emotional state. The mood classification model achieves acceptable accuracy in distinguishing between different mood categories(Govorunova & Sineshchekov, 2020).

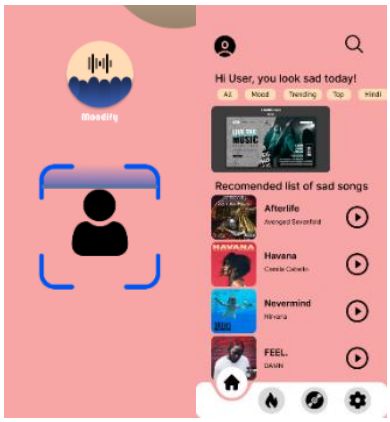

***Figure 1**. User interface of the Moodify application showing login, registration*

Compared to conventional music players, Moodify offers more adaptive and personalized experience. The results of this study are consistent with previous research that emphasizes the importance of emotional context in recommendation systems. However, limitations include dependency on the quality of input data and the need for larger datasets to improve classification accuracy (Steinberger et al., 2014).

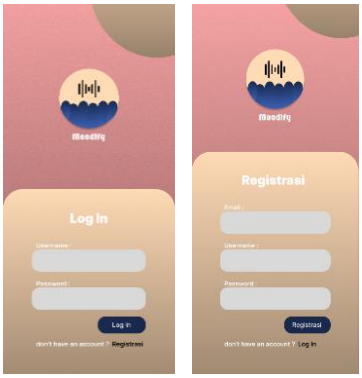

***Figure 2**. User Interface and Mood Detection Process of the Moodify Application*

IV. CONCLUSION

Based on the research conducted, the following conclusions can be drawn: Mood. The mood-based recommendation system enhances user comfort and engagement. The integration of affective computing concepts improves personalization in music player applications. Limitations related to data accuracy and T

V. RECOMMENDATIONS

Future research is recommended to incorporate additional data sources such as facial expression or physiological signals to improve mood detection accuracy. Further development may also explore deep learning techniques to enhance recommendation performance.

VI. REFERENCES

Ghrabat, M. J. J., Ma, G., Maolood, I. Y., Alresheedi, S. S., & Abduljabbar, Z. A. (2019). An effective image retrieval based on optimized genetic algorithm utilized a novel SVM-based convolutional neural network classifier. *Human-Centric Computing and Information Sciences*, *9*(1). https://doi.org/10.1186/s13673-019-0191-8

Govorunova, E. G., & Sineshchekov, O. A. (2020). Editorial on special issue “the advances and applications of optogenetics.” *Applied Sciences (Switzerland)*, *10*(18), 2–5. https://doi.org/10.3390/APP10186563

Habibie, M. I. (2022). Penerapan Machine Learning Menggunakan Google Earth Engine untuk Analisis Penginderaan Jauh. *Jurnal Teknoinfo*, *16*(2), 233.

Karimi, P., Plebani, E., Martin-Hammond, A., & Bolchini, D. (2022). Textflow: Toward Supporting Screen-free Manipulation of Situation-Relevant Smart Messages. *ACM Transactions on Interactive Intelligent*

Systems, *12*(4). https://doi.org/10.1145/3519263

Kulkarni, S. (2021). Seismic Analysis of Building Resting on Sloping Ground. *International Journal for Research in Applied Science and Engineering Technology*, *9*(VII), 1340–1352. https://doi.org/10.22214/ijraset.2021.36647

Lamba, R., Gulati, T., Alharbi, H. F., & Jain, A. (2022). A hybrid system for Parkinson's disease diagnosis using machine learning techniques. *International Journal of Speech Technology*, *25*(3), 583–593. https://doi.org/10.1007/s10772-021-09837-9

Lumban Gaol, D. F. (2021). The continuous deployment, Ecosystem and Empowerment: Excelling in the Digitalization Driven World. *Procedia Computer Science*, *179*(2020), 4. https://doi.org/10.1016/j.procs.2021.01.090

Mooley, K. P., Anderson, J., & Lu, W. (2022). Optical superluminal motion measurement in the neutron-star merger GW170817. *Nature*, *610*(7931), 273–276. https://doi.org/10.1038/s41586-022-05145-7

Niepert, M., & Garcia-Duran, A. (2018). TOWARDS A SPECTRUM of GRAPH CONVOLUTIONAL NETWORKS. *2018 IEEE Data Science Workshop, DSW 2018 - Proceedings*, 244–248. https://doi.org/10.1109/DSW.2018.8439903

Steinberger, J., Brychcín, T., & Konkol, M. (2014). Aspect-Level Sentiment Analysis in Czech. *Proceedings of the Annual Meeting of the Association for Computational Linguistics*, 24–30. https://doi.org/10.3115/v1/w14-2605