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A Review on the use of Machine Learning Techniques in Music Recommendation System for Healthcare Management

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Abstract— **Music is one of the most effective therapies for ailments and pushes patients to heal quickly. By making the patient mentally fit and assisting them in overcoming the ailment, music invokes the patient's thinking emotionally. This survey provides a study of various machine learning techniques and its types utilized in recommendation of music for healthcare management. The machine learning types include supervised, unsupervised techniques and their sub –categories are discussed. The research shows that music therapy improves people's quality of life while progressively diminishing the effects of sickness on the human body Music therapy through a good recommendation system acts as an effective remedy to eliminate the emotional and psychological health issues of individuals. The classification accuracy is considered as a key parameter to define the effectiveness of music recommendation systems. In this survey, machine learning techniques acts as a tool to recommend music for health care management of patients.**

Keywords—Disease Diagnosis, Healthcare Management, Machine learning, Music Recommendation System, Music Therapy

I. INTRODUCTION

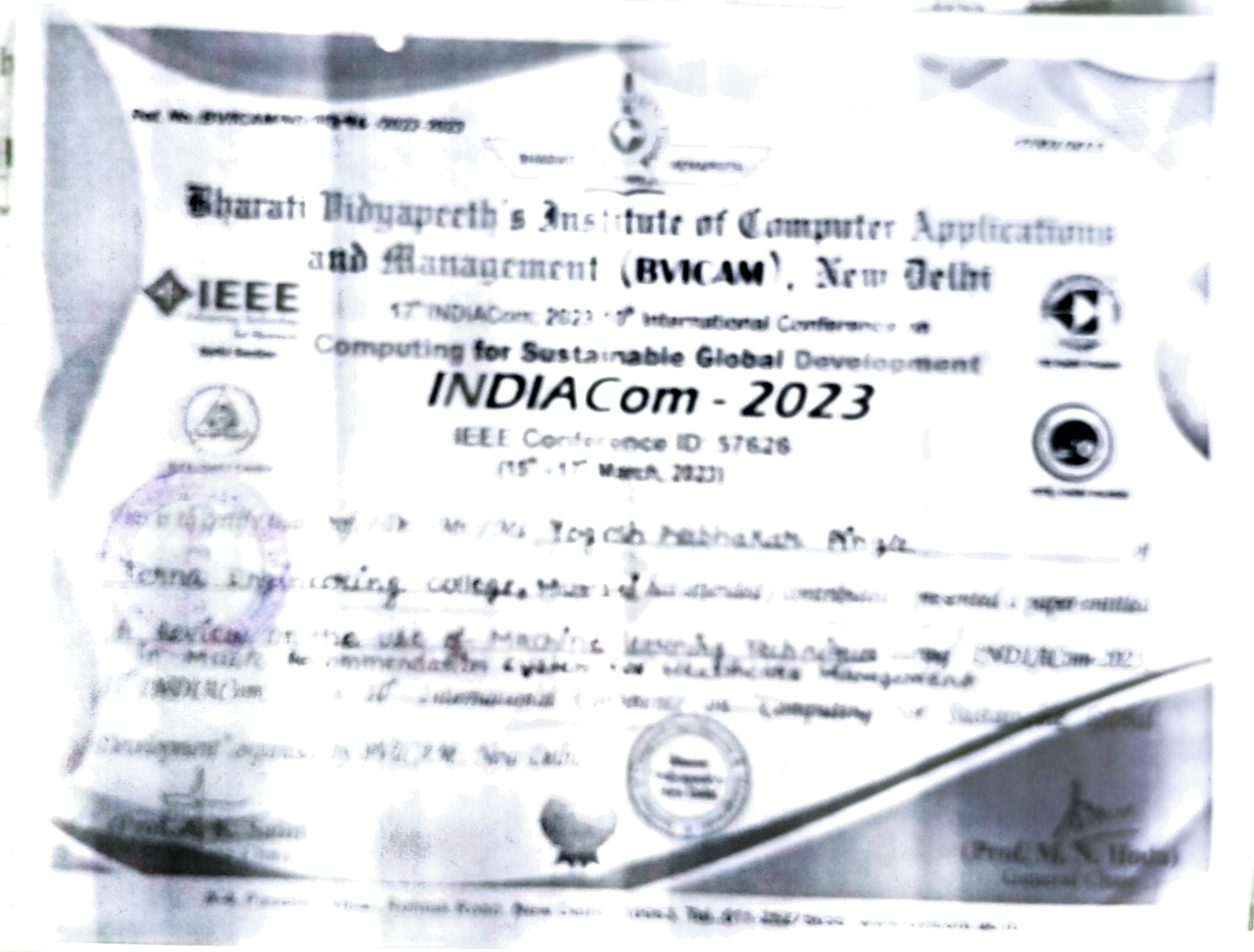
Music is considered one of the universal languages which help to bring out the emotions of people from all over the world [1]. Music helps to maintain the control of mind and attention, it also helps in strengthening our mind and makes us psychologically fit [1]. It is experimentally proved that listening to music makes our respiratory rate and heart rate normal and helps to lower the stress level [1]. Music therapy experimentally proved in reducing the patient's stress level, and depression and improve the quality of sleep. Music recommendation systems utilize music stimuli which make increases gamma waves in the brain to improve memory function and the patient's psychological signs. In consequence, the physiological signs measured on the skin are very useful in analyzing the emotional effects of music [2]. The intelligent background music system is designed and built at the same time using an innovative fusion of IoT and deep learning methods (a branch of machine learning). An intelligently designed background music system has presented outstanding outcomes in data processing for communication systems. [3].

How individuals locate and listen to music is evolving as a result of continuing research in the fields of music information retrieval (MIR) and music emotion recognition (MER). The practice of merging data from MIR and MER has been growing, utilizing different music elements and annotations along with mining data or machine learning techniques [4]. Additionally, Human Activity Recognition uses an inertial sensor for a recommendation system which helps in understanding human behaviors and medical health care systems [5]. The prediction of appropriate music recommendation system for the healthcare is a challenging one because it may vary for person to person according to the mindset of the patient. This study analyzes various works on music recommendation system. This work acts as a tool to helps the future researchers dealing with music recommender systems. The results of the survey provide music recommendation systems in healthcare management using various machine learning techniques.

This research is organized as follows: The taxonomy of the music recommendation system is presented in Section 2. The literature on music recommendation systems is presented in Section 3. The Comparative analysis is presented in Section 4. Section 5 presents the conclusion of this survey paper.

II. BACKGROUND

Music has the ability to evoke different emotions of the people. This survey is employed with machine learning techniques, since machine learning techniques are useful for extracting the features effectively and helps to improve the classification accuracy of the music recommendation system [1]. The collection of data is known as a dataset that is used as input for the whole process of recommending music based on the patient's emotions. The dataset is transferred to the procedure of preprocessing to remove the unwanted spaces, avoid noises and increase the efficiency of the music recommendation system. Figure 1 emotion recognition based on patient emotion [6]. It is necessary to perform the Feature extraction process after the completion of preprocessing to extract the music types such as melody, classical, etc., based on the emotions of the patient. Then the data is transferred to feature selection to decrease the space and time complexity of the discussed model and to enhance the results of classification. A classification process is used to detect emotions such as happiness, sadness, anger, fear, etc. The various classification algorithms used to improve the accuracy rate and recognition rate in the developed music recommendation system. After finding the emotion of the patient the data collection is started to serve the



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