**Title :** **An Emotional Recommender System for music** **by** ***Vincenzo Moscato, Antonio Picariello and Giancarlo Sperl´ı***

**Abstract—**Nowadays, Recommender Systems have become essential to users for finding “what they need” within large collections of items. Meanwhile, recent studies have demonstrated as user personality can effectively provide a more valuable information to significantly improve recommenders’ performance, especially considering behavioural data captured from social network logs. In this work, we describe a novel music recommendation technique based on the identification of personality traits, moods and emotions of a single user, starting from solid psychological observations recognized by the analysis of user behavior within a social environment. In particular, users personality and mood have been embedded within a content-based filtering approach to obtain more accurate and dynamic results. Several experiments are then reported to show effectiveness of user personality and mood recognition recommendation, thus encouraging research in this direction.

**Conclusions**: A personality-based recommender system has been discussed and analyzed, using the Big Five psychological model and considering both user profile and mood for a content-based strategy. As shown by the obtained experimental results, our work takes an enormous advantage of these two kinds of information to support in a very effective manner browsing of audio collections with respect to classical rating-based recommendation approaches. Future work will be devoted to improve our strategy also in presence of a poor musical chronology. In addition, we plan to extend our experiments using different OSNs to better capture user personality and to compare our results with commercial techniques as those exploited by Spotify and Amazon music.

**What the Researchers Proposed: A Personality-Driven Music Recommender**

The researchers built a music recommendation system that first understands your core personality from social media and then tracks your changing mood based on the music you listen to.

**Three-Step Process**: The system works in three main stages:

* **Personality Recognition:** It figures out your baseline personality.
* **Mood Detection:** It tracks your current mood by analyzing the songs you've recently heard.
* **Recommendation:** It suggests new music that matches your current mood.

**How Personality is Determined:**

* The system analyzes a user's behavior on social networks to understand their personality.
* It uses AI to process your status updates, "likes", and photos to score you on the "Big Five" personality traits (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism). This score serves as your starting emotional state.

**How Mood is Tracked and Updated:**

* Your mood is not static; it changes based on the music you listen to.
* To understand a song's emotion, the system converts its audio into a visual representation called a Mel-Spectrogram.
* It then uses a Convolutional Neural Network (CNN) to analyze this image and rate the song's Valence (positive vs. negative emotion) and Arousal (calm vs. energetic).
* Your current mood is continuously updated based on the emotional content of the songs you've recently played.

**The Recommendation:** The system recommends songs that have a similar emotional profile (Valence and Arousal) to your current, updated mood. ***When tested with 50 users, this method was shown to be significantly more effective than traditional recommendation techniques.***

**Future Scope:** Based on their results, the researchers have clear plans to expand and improve their system.

* **Help New Users:** They plan to improve the system for users who have a "poor musical chronology," meaning very little listening history for the system to analyze.
* **Use More Social Networks:** To get a more accurate and complete picture of a user's personality, they will extend their experiments to include data from different social media platforms.
* **Compare with Commercial Systems:** They intend to benchmark their system's performance against major commercial platforms like Spotify and Amazon Music.