UE20CS302 – Machine Intelligence

Mini Project

Music Recommender System

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Problem Statement

Music plays a significant part in one's life. It is known to uplift mood of a person. Many users have a playlists so large that they are unable to decide, what to play thus benefiting them by suggesting a song based on mood is an essential attribute. Our unique approach aims to at least classify the playlist into two major categories.
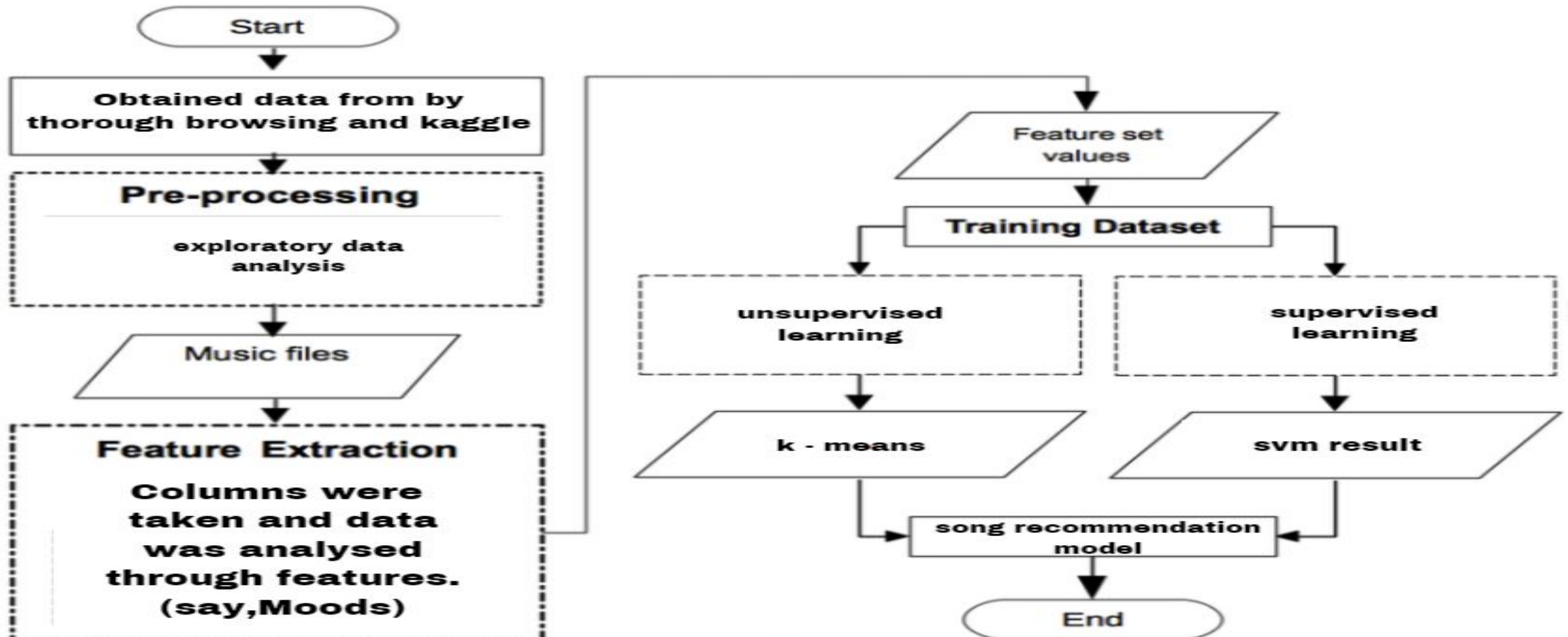
Application and Uses

Applications :
-   Spotify's personalized mood and genre categories.
-   YouTube's personalized playlist recommendations.
-   Song identifiers like shazam takes mood classification in consideration.

Uses :
-   Widely used by the above applications, to recommend more personalized content (audio/video) for the user.

Literature Survey

Title of the paper	Year of Publication	Journal/Conference Name	Advantages	Limitations
Music Recommender System Based on Genre using Convolutional Recurrent Neural Networks	2019	ICCSCI	Music recommender system should consider the music genre information history to increase the quality of music recommendations.	Add other music features in order to improve the accuracy of the recommender system,tempo gram.
Efficient music recommender system using context graph and particle swarm	2017	Springer Science+Business Media	Thus,we were able to recommend pieces of music to the user based on the analysis of contextual information	As the future work is a concern we are planning to design recommender system which should include less runtime with more context factors
Collaborative Filtering for Music Recommender System	2017	IEEE	Reviewed collaborative filtering methods and evaluation metrics to estimate effectiveness of recommender systems.	Plan to vary different parameters such as similarity measure, scoring function to improve the effectiveness of recommender systems.

Literature Survey

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An Emotional Recommender System for music	2021	IEEE Intelligent Systems Journal	Combined Content & Collaborative filtering	Capture user personality and compare results with commercial techniques
An emotion-aware music recommender system: bridging the user's interaction and music recommendation	2021	Multimedia Applications Journal	Suggest music based on users' keystrokes and mouse click patterns	users' emotions are not labeled uses only collaborative filtering
Music Genre Classification and Recommendation by Using Machine Learning Techniques	2018	2018 Innovations in Intelligent Systems and Applications Conference (ASYU)	Using acoustic features Extracted by digital signal processing methods and convolutional neural networks	Not considering user's music profile

Literature Survey

Title of the paper	Year of Publication	Journal/Conference Name	Advantages	Limitations
An Item-Based Music Recommender System Using Music Content Similarity	2016	Asian Conference on Intelligent Information and Database Systems	Calculates the item similarities based on the music low level features fused with info of ratings	Comparison in terms on unpredicted items
EMOTION BASED MUSIC RECOMMENDATION SYSTEM	2019	International Research Journal of Engineering and Technology Journal	Uses face recognition	Hasn't included all the emotions
Improving Context-Aware Music Recommender Systems: Beyond the Prefiltering Approach	2017	ICMR '17: Proceedings of the 2017 ACM on International Conference on Multimedia Retrieval	contextual modelling approach -no filtering in input or output data of the system.	Evaluate higher order factorization machines

Proposed Approach

The songs are classified into happy, sad, calm and energetic based on features from spotify API. The models were applied to the classified song dataset namely Support Vector Machine, K - Nearest Neighbour algorithm (Supervised Learning Models) . It was shown that svm proved to be better of the two.

K-means Clustering for Unsupervised Machine Learning is used due to the shape of the data and to create 2 playlists separating Relaxed tracks from Energetic tracks (K=2). One of the tracks (cluster) was taken to implement the final song recommendation model using linear regression .

Thank
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