Emotion Based 2D Playlist Persuasion System

Mrs.Aruna Kumari[1], Ms. Swarnabharathi[2], Ms. Nazeera[3], Ms. Varsha[4], Mr. Hemanth[5]

[1,2, 3,4,5]*Department of Computer Science and Engineering/Lingayas Institute of Management and Technology/JNTUK/INDIA*

Abstract-In this paper mainly focused on emotion-based music recommendation system. The project presents text emotion recognition from text signal based on features analysis and NN-classifier. Automatic Text emotion recognition plays an important role in HCI systems for measuring people's emotions (i.e., anger, disgust, fear, happiness, sadness, and surprise). The recognition system involves Text emotion detection, features extraction and selection and finally classification. These features are useful to distinguish the maximum number of samples accurately and the NN classifier based on discriminant analysis is used to classify the six different expressions. The simulated results will be shown that the filter-based feature extraction with used classifier gives much better accuracy with lesser algorithmic complexity than other Text emotion expression recognition approaches. The results indicate about the optimal accuracy for Random Forest are 92.3% respectively.

Keywords: emotion, random forest algorithm, music recommendation, NN classifier, features extraction, Decision tree.

I.INTRODUCTION

Everyday each and every person undergoes lot of troubles and the reliever of all the stress that are encountered is Music. If it is so, the vital part of hearing the song has to be in a facilitated way, that is player able to play the song in accordance to the person's mood. The project proposes such a player and hence named Emotion based music player. Recognizing the human emotions is considered to be a global consistency but depict variability among the humans on the basis of their abilities. The different approaches being the classification of emotions that are existing are depicted as knowledge-based, statistical and hybrid techniques. However there relies several difficulties while retrieving the music information such as querying by singing, genre classification, etc. The most possible implementation is by producing music suggestion that is based on the content. The multiple efforts to detect and describe the feeling, to classify based on features are all wanted to obtain outstanding music recommendation system.

With the advent of modern technology our desires went high and it binds no bounds. In the present era a huge research work is going on in the field of digital image and image processing. The way of progression has been exponential and it is ever increasing. Image Processing is a vast area of research in present day world and its applications are very widespread. Image processing is the field of signal processing where both the input and output signals are images. One of the most important application of Image processing is Facial expression recognition. Our emotion is revealed by the expressions in our text. Facial Expressions plays an important role in interpersonal communication. Facial expression is a non-verbal scientific gesture which gets expressed in our text as per our emotions. Automatic recognition of facial expression plays an important role in artificial intelligence and robotics and thus it is a need of the generation. Some application related to this include Personal identification and Access control, Videophone and Teleconferencing, Forensic application, Human-Computer Interaction, Automated Surveillance, Cosmetology and so on.

The objective of this project is to develop Automatic Expression Recognition System which can take human emotions containing some expression as input and recognize and classify it into seven different expression class.
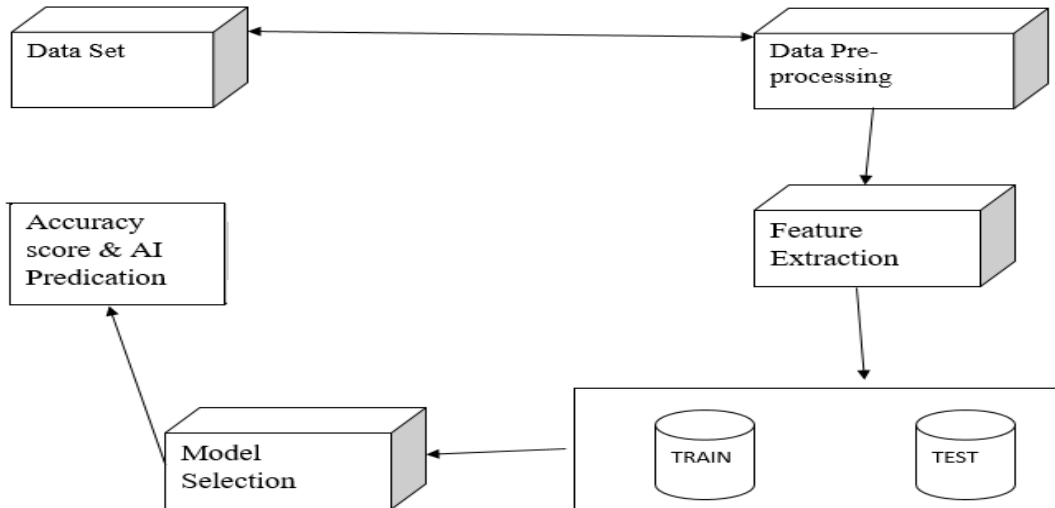
II.SYSTEM ARCHITECTURE

Fig.1

III.EMOTION RECOGNITION TECHNIQUES

In Emotion based music recommendation system supervised machine learning techniques like random forest, support vector machines, decision trees are applied.

1.DECISION TREES ALGORITHM:

Decision Trees (DTs) are a non-parametric supervised learning method used for classification and regression. Decision trees learn from data to approximate a sine curve with a set of if-then-else decision rules. The deeper the tree, the more complex the decision rules and the fitter the model.

Decision tree builds classification or regression models in the form of a tree structure. It breaks down a data set into smaller and smaller subsets while at the same time an associated decision tree is incrementally developed. The final result is a tree with decision nodes and leaf nodes. A decision node has two or more branches. Leaf node represents a classification or decision. The topmost decision node in a tree which corresponds to the best predictor called root node. Decision trees can handle both categorical and numerical data.

2. Support Vector Machine algorithm:

Support Vector Machine (SVM) is a supervised machine learning algorithm used for both classification and regression. Though we say regression problems as well its best suited for classification. The objective of SVM algorithm is to find a hyperplane in an N-dimensional space that distinctly classifies the data points. The dimension of the hyperplane depends upon the number of features. If the number of input features is two, then the hyperplane is just a line. If the number of input features is three, then the hyperplane becomes a 2-D plane. It becomes difficult to imagine when the number of features exceeds three.

3. Random Forest algorithm:

Random forest is a supervised machine learning algorithm based on ensemble learning. Ensemble learning is an algorithm where the predictions are derived by assembling or bagging different models or similar model multiple times. The random forest algorithm works in a similar way and uses multiple algorithm i.e multiple decision trees, resulting in a forest of trees, hence the name "Random Forest". The random forest algorithm can be used for both regression and classification tasks.

Advantages of using random forest:

The random forest algorithm is not biased and depends on multiple trees where each tree is trained separately based on the data, therefore biasedness is reduced overall. It's a very stable algorithm. Even if a new data point is introduced in the dataset, it doesn't affect the overall algorithm rather affect the only a single tree. It works well when one has both categorical and numerical features.

4. AdaBoost:

Adaboost, shortened for Adaptive Boosting, is an machine learning approach that is conceptually easy to understand, but less easy to grasp mathematically. Part of the reason owes to equations and formulas not being broken down into simple terms with basic math as demonstration of the equations. This essay intends to do just that with Adaboost, with newcomers into data science as the primary target audience. The idea is to set weights to both classifiers and data points (samples) in a way that forces classifiers to concentrate on observations that are difficult to correctly classify. This process is done sequentially in that the two weights are adjusted at each step as iterations of the algorithm proceed. This is why Adaboost is referred to as a sequential ensemble method — ensemble referring to a type of learning that combines several models to improve the final predictive performance.
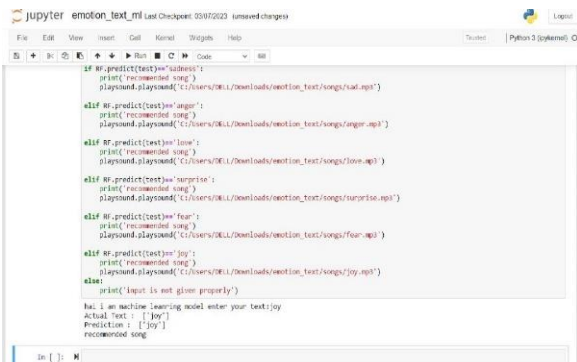
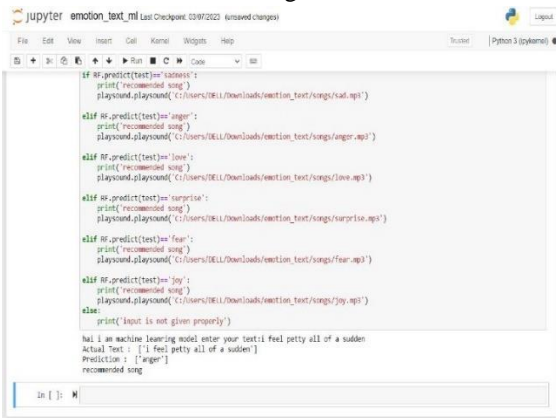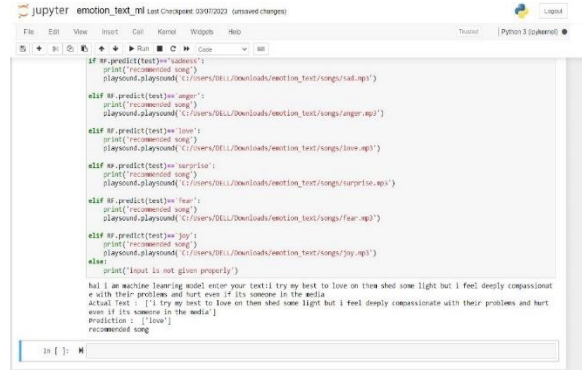## I.   RESULTS

Fig.2

Fig.3

Fig.4

II.   CONCLUSION

In this analysis It can be concluded that a reliable, secure, fast and an efficient Text Emotions has been developed replacing a manual and unreliable system. This text detection and recognition system will save , reduce the amount of work done by the administration and replace the stationery material currently in use with already existent electronic equipment.

There is no need for specialized hardware for installing the system as it only uses a computer. The system can also be used in permission based systems and secure access authentication (restricted facilities) for access management, home video surveillance systems for personal security or law enforcement. The major threat to the system is Spoofing.

In this proposed system, random forest outperforms the remaining algorithms.

The proposed paper evaluates that the random forest, Decision tree and support vector machine algorithm will perform better with a larger number of training data, but speed during testing and application will suffer. Application of more pre-processing techniques would also help. The SVM algorithm still suffers from the imbalanced dataset problem and requires more pre-processing to give better results at the results shown by SVM is great but it could have been better if more pre-processing have been done on the data.so, in proposed work we balanced the imbalanced data with up-sampling technique during pre-processing.

REFERENCES

[1] Neel Kumar P. Patel,2019, AI and Web-Based Humanlike Interactive University Chatbot (UNIBOT), Proceedings of the Third International Conference on

Electronics Communication and Aerospace Technology [ICECA 2019] IEEE Conference

[2] Ai Thanh Ho, Ilusca L. L. Menezes, Yousra Tagmouti, E-MRS: Emotion-based Movie Recommender System.

[3] J. B. Schafer, D. Frankowski, J. Herlocker, and S. Sen, "Collaborative filtering recommender systems," The Adaptive Web: Methods and Strategies of Web Personalization, pp. 291-324,2007.

[4] M. J. Pazzani and D. Billsus, "Contentbased recommendation systems," TheAdaptive Web: Methods and Strategies ofWeb Personalization, pp. 325-341, 2007.

[5] E. J. Humphrey, J. P. Bello, and Y. LeCun, "Moving beyond feature design: deep architectures and automatic feature learning inmusic informatics," in Proc. 13th Int"l Conf. Music Info.Retrieval, pp. 403- 408, October2012.

[6] S. Chang, A. Abdul, J. Chen and H. Liao, "A personalized music recommendation system using convolutional neural networks approach," 2018 IEEE International Conference on Applied System Invention (ICASI),2018,pp.47-49,doi: 10.1109/ICASI.2018.8394293.

[7] E. SHAKIROVA, "COLLABORATIVE FILTERING FOR MUSIC RECOMMENDER SYSTEM," 2017 IEEE CONFERENCE OF RUSSIAN YOUNG RESEARCHERS IN ELECTRICAL AND ELECTRONIC ENGINEERING (EICONRUS), 2017, PP. 548-550, DOI: 10.1109/EICONRUS.2017.7910613.

[8] K. S. Naveenkumar, R. Vinayakumar and K. P. Soman, "Amrita-CENSentiDB 1: Improved Twitter Dataset for Sentimental Analysis and Application of Deep learning," 2019 10th International Conference on Computing, Communication and Networking Technologies (ICCCNT), Kanpur, India, 2019, pp. 1-5, doi: 10.1109/ICCCNT45670.2019.8944758.

[9]"Emotion based Music Recommendation System", H.Immanuel James, J.James Anto Arnold, J.Maria Masilla Ruban, M.Tamilarasan, R.Saranya, International Research Journal of Engineering and Technology(IRJET), Volume:06 Issue:03—Mar 2019

[10] T Tulasi Sasidhar, Premjith B, Soman K P, "Emotion Detection in Hinglish(Hindi+English) Code-Mixed Social Media Text", Procedia Computer Science, Volume 171,2020,Pages 1346-1352,ISSN 1877-0509,

https://doi.org/10.1016/j.procs.2020.04.144.

[11] S. Srinivasan et al., "Deep Convolutional Neural Network Based Image Spam Classification," 2020 6th Conference on Data Science and Machine Learning Applications (CDMA), Riyadh, Saudi Arabia, 2020, pp. 112-117, doi: 10.1109/CDMA47397.2020.00025.

[12] Thara, S., and S. Sidharth. "Aspect based sentiment classication: Svd features."; In 2017 International Conference on Advances in Computing, Communications and Informatics(ICACCI), pp. 2370-2374. IEEE, 2017.

[13] Tutorial: Quickstart — TextBlob 0.16.0 documentation https://textblob. readth Anjali, T., T. R. Krishnaprasad, and P. Jayakumar.; ANovel Sentimentedocs.io/en/dev/quickstart. Html #sentiment-analysis

[14] Classification of Product Reviews using Levenshtein Distance.; In 2020 International Conference on Communication and Signal Processing (ICCSP), pp. 0507-0511. IEEE, 2020.

[15]Raut,Nitisha,\\\"FacialEmotionRecognition Using Machine Learning\\\" (2018). Master\\\'s Projects. 632. https://doi.org/10.31979/etd.w5fs-s8wd

[16] Hemanth P,Adarsh ,Aswani C.B, Ajith P, Veena A Kumar, "EMO PLAYER: Emotion Based Music Player", International Research Journal of Engineering and Technology (IRJET), vol. 5, no. 4, April 2018, pp. 4822-87.

[17] F. Abdat, C. Maaoui and A. Pruski, "Human-computer interaction using emotion recognition from facial expression", 2011 UKSim 5th European Symposium on Computer Modelling and Simulation.

[18]https://ieeexplore.ieee.org/abstract/document/616 5309/