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HYBRID APPROACH FOR CLASSIFICATION OF MULTILABEL MEDICAL DATA USING CLASSIFICATION APPROACH

(Machine Learning Based Approach)

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ABSTRACT

Medical data has been analyzed by medicos for better understanding of reports and information driven through various tests. There are chances to use machine learning to generate results based on certain criteria added with the help of human intelligence. The main aim of this research is to classify data for such further analysis. Exploratory data analysis (EDA) is performed for different set of data to focus on important features to get maximum insights from a data set. The use of analytics in healthcare improves care by facilitating preventive care and EDA is a vital step while analyzing data. In this paper, the important factors are studies and the missing factors are predicted using K-means algorithm. The research proposes to use EDA along with machine learning techniques for classification of results. The result will generate categories that identifies words of medical terminolog based on theirrelations.

INTRODUCTION

The main objective of this research to proposing an algorithm that is to classify data for further analysis medical . Exploratory data analysis (EDA) is performed for different set of data to focus on important features to get maximum insights from a data set. The use of analytics in healthcare improves care by facilitating preventive care and EDA is a vital step while analyzing data. In this paper, the important factors are studies and the missing factors are predicted using K-means algorithm. The research proposes to use EDA along with machine learning techniques for classification of results. The result will generate categories that identifies words of medical terminology based on their relations.This research algorithm is works on important factors are studies and than the missing factors are we predicted using K-means algorithm. our research proposes to use EDA along with machine learning techniques and we are using here machine learning for classification of results generated by system. here result will generate categories that used to identifies words of medical terminology based on their relations

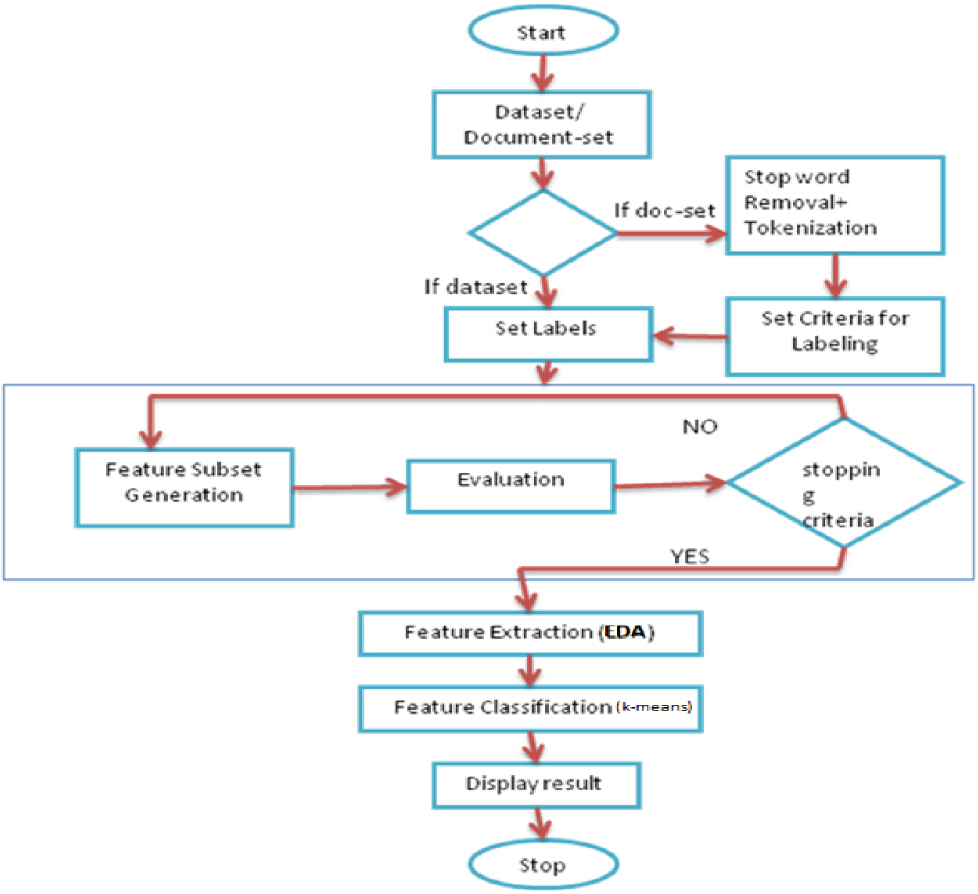
There are multiple types of documents which we use in our everyday work. The data is categorized in different types based on the values stored. In this research the categorization of Multi-label data between weakly labeled data and fully labelled data. The labels of training examples are incomplete, which commonly occurs in real applications in image classification are denoted as weakly labelled data. The classification accuracy need to be increased in order to check properly categorized data.

A motivation behind this research works we generating an algorithm for classification of multilabel medical data using Classification approach.and result will generate categories that identifies words of medical terminology based on their relations genatered according algorithm.

SYSTEM DESIGN AND IMPLEMENTATION

This diagram represent model of proposed algorithm. firstly dataset /documentation set is given if data set is ok than labeling is set accordingly based on criteria for labeling. After that feature subset is generated than we evaluate that subset. If it is based on criteria than feature extraction is done using EDA and if criteria is not on that it reprocess for feature generation and reevalution .After successful feature extraction next we are going to done feature classification using k-means and after classification of medical labeling final result id display.

Architectural Overview



This diagram represent model of proposed algorithm. firstly dataset /documentation set is given if data set is ok than labeling is set accordingly based on criteria for labeling. After that feature subset is generated than we evaluate that subset. If it is based on criteria than feature extraction is done using EDA and if criteria is not on that it reprocess for feature generation and reevalution .After successful feature extraction next we are going to done feature classification using k-means and after classification of medical labeling final result id display.

PROPOSED STEPS:

STEP1: Start the process

STEP 2: That We need to input one the document we can process

STEP 3: Data set medical term that has all the possible medical words and meaning.

STEP 4: That Document-set will be process first NLP(natural language process)

STEP 5: First process we be done for removing all the common english word.

STEP 6: At a same time the process of data labeling will be done over dataset

STEP 7: The token generated and the label of medical dataset will be put combine merge matrix.

STEP 8:Each feature match with label evolution up to all the label are process

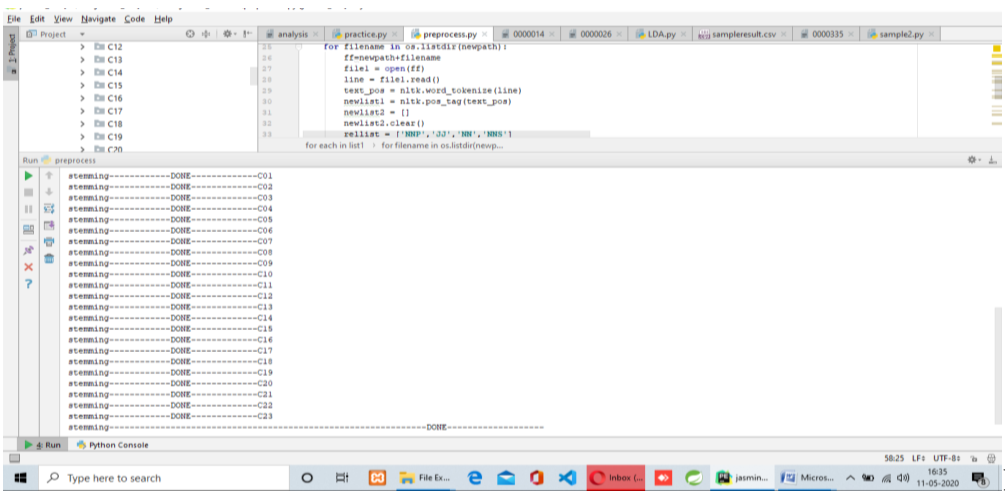
STEP 9: Feature Extraction process each for matching criteria for the document word.

STEP10: After this process will used in K-means algorithm

STEP11:Display Result

RESULT AND EVALUTION

Implementation



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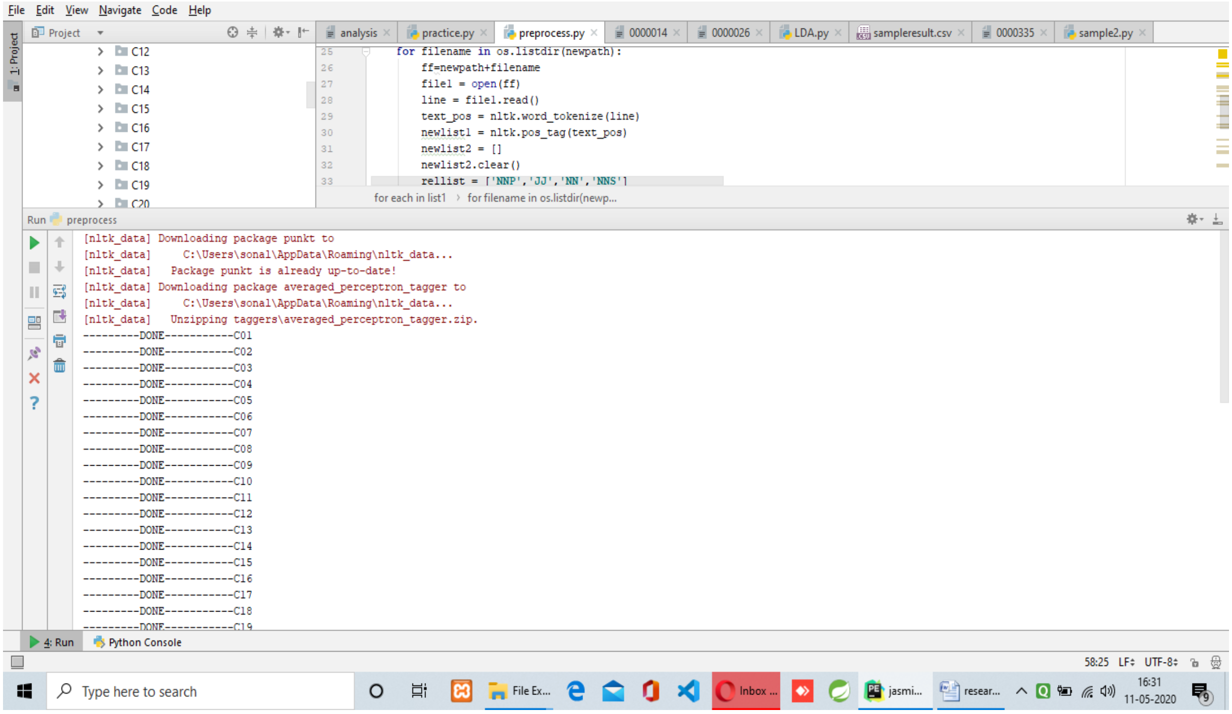
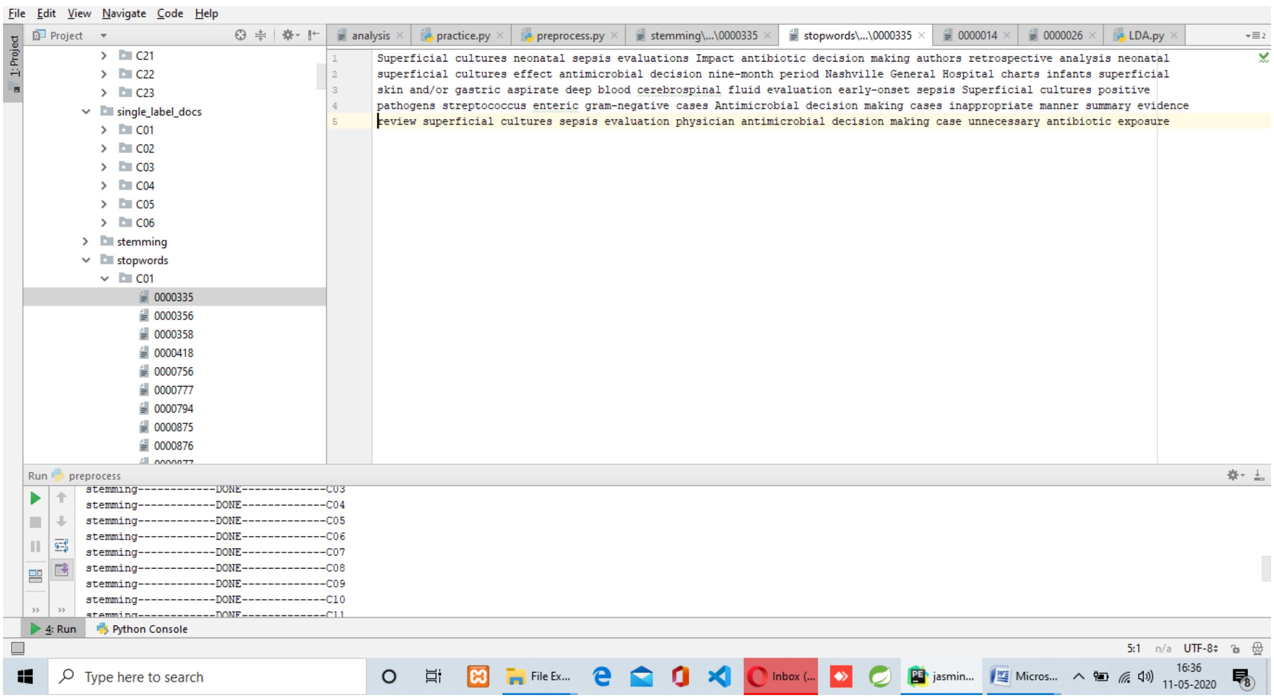
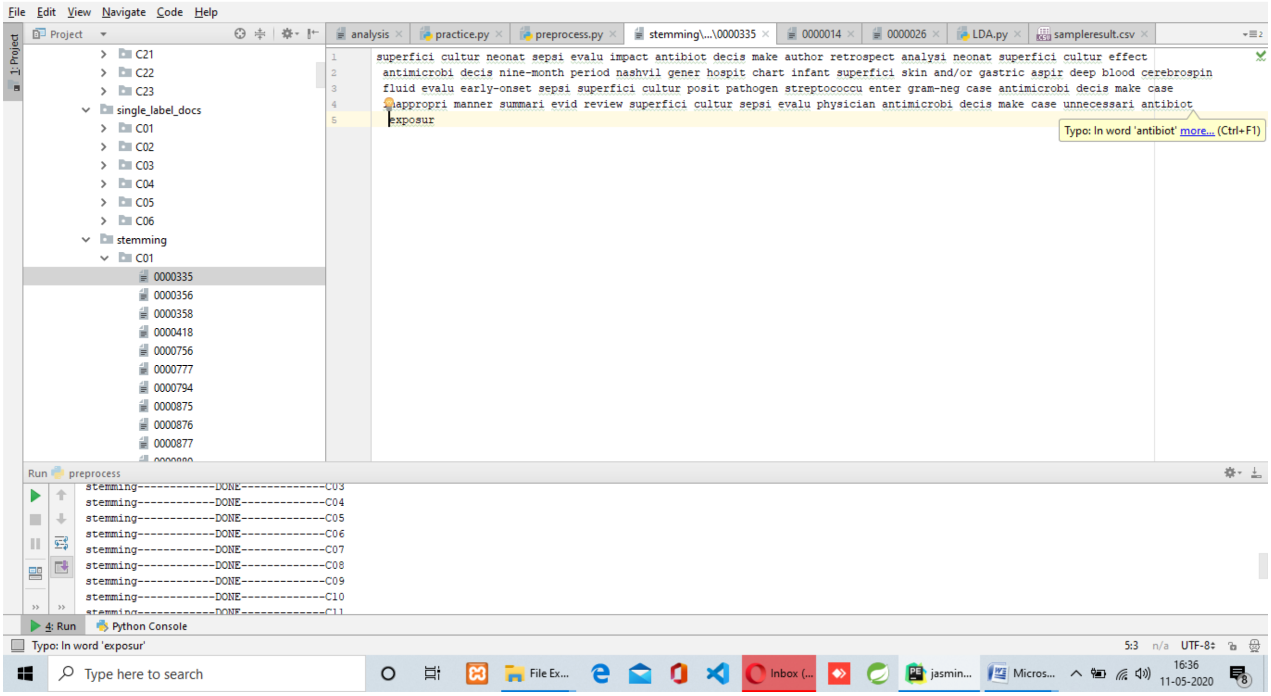
Reading docs



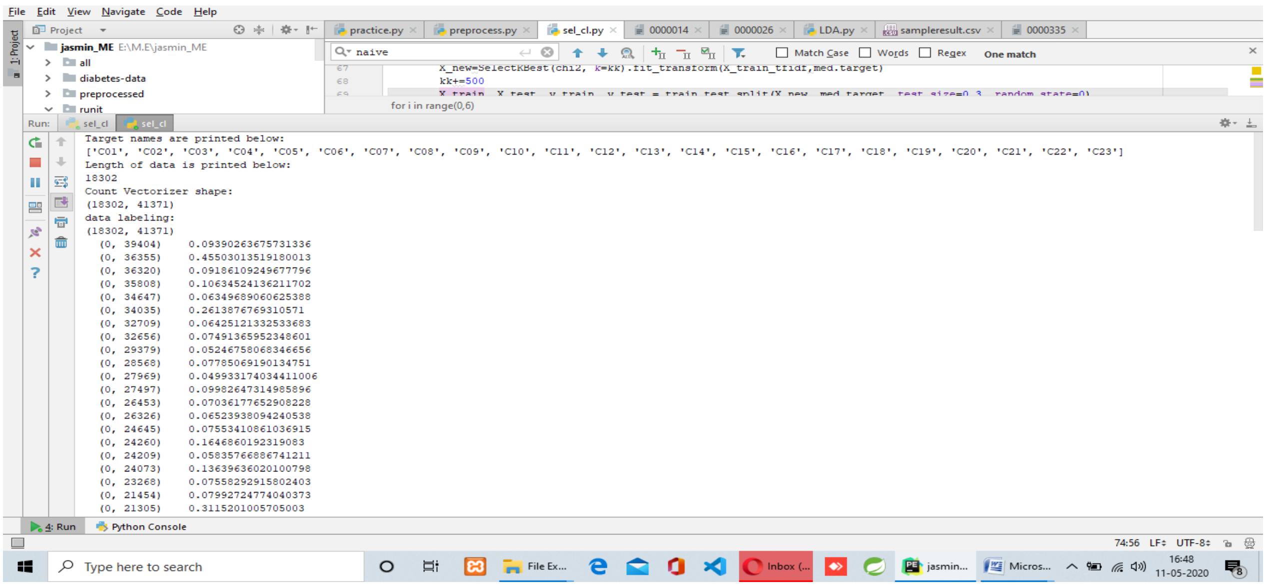
preprocessing the documents



Document after stopping process



Document after stemming process



Results after labeling and training process

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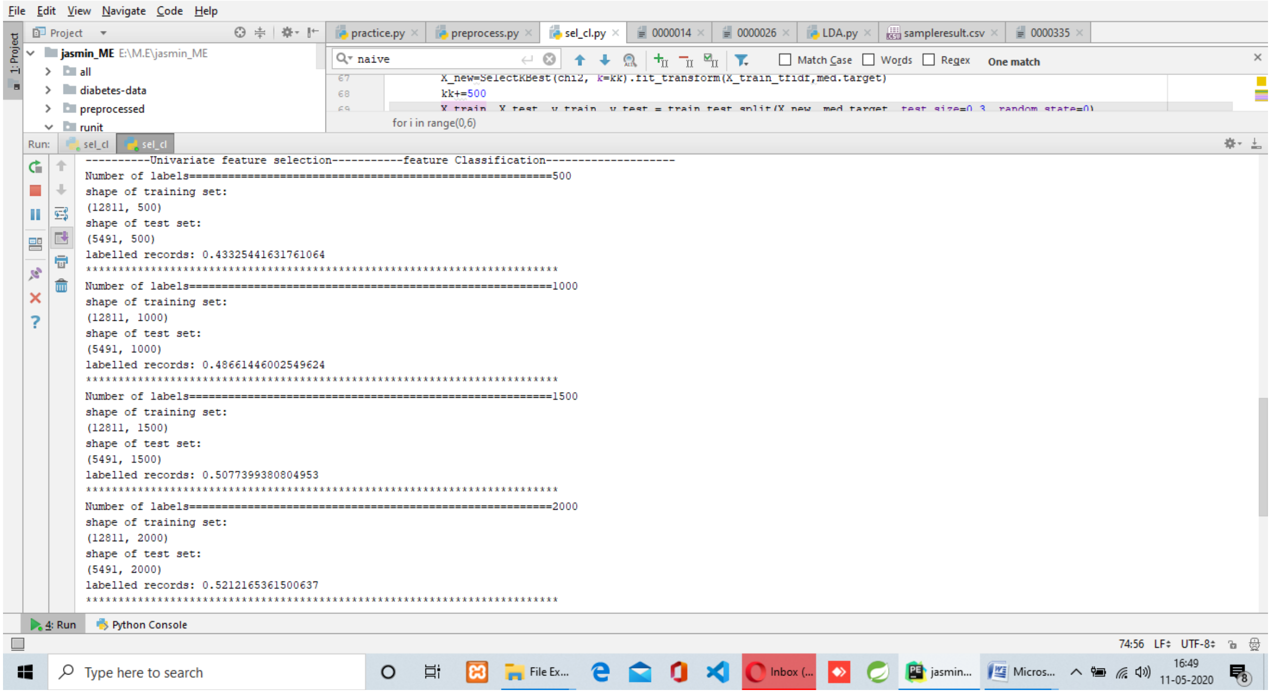
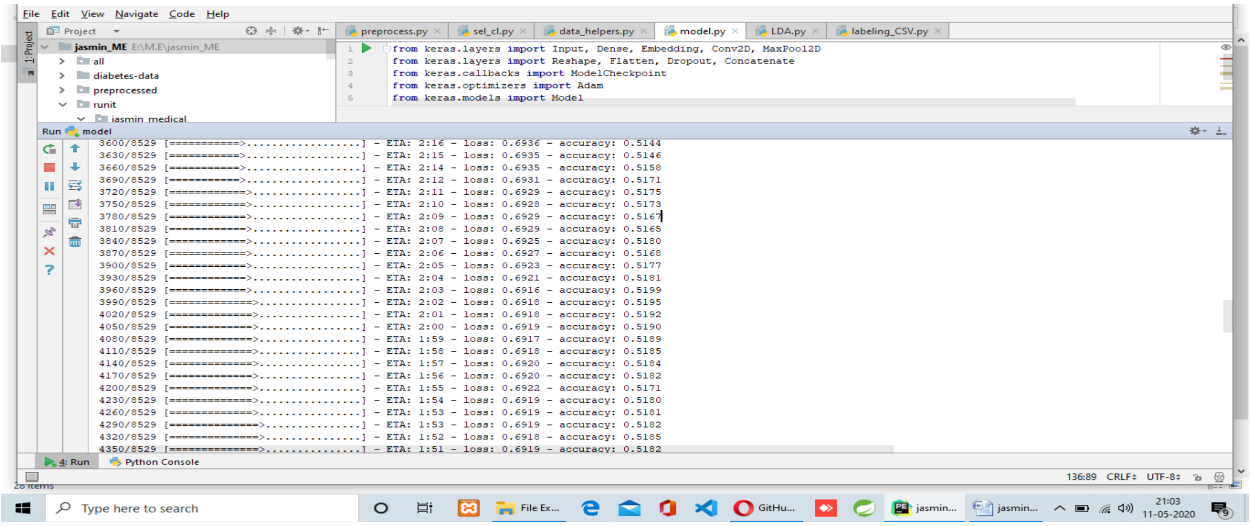
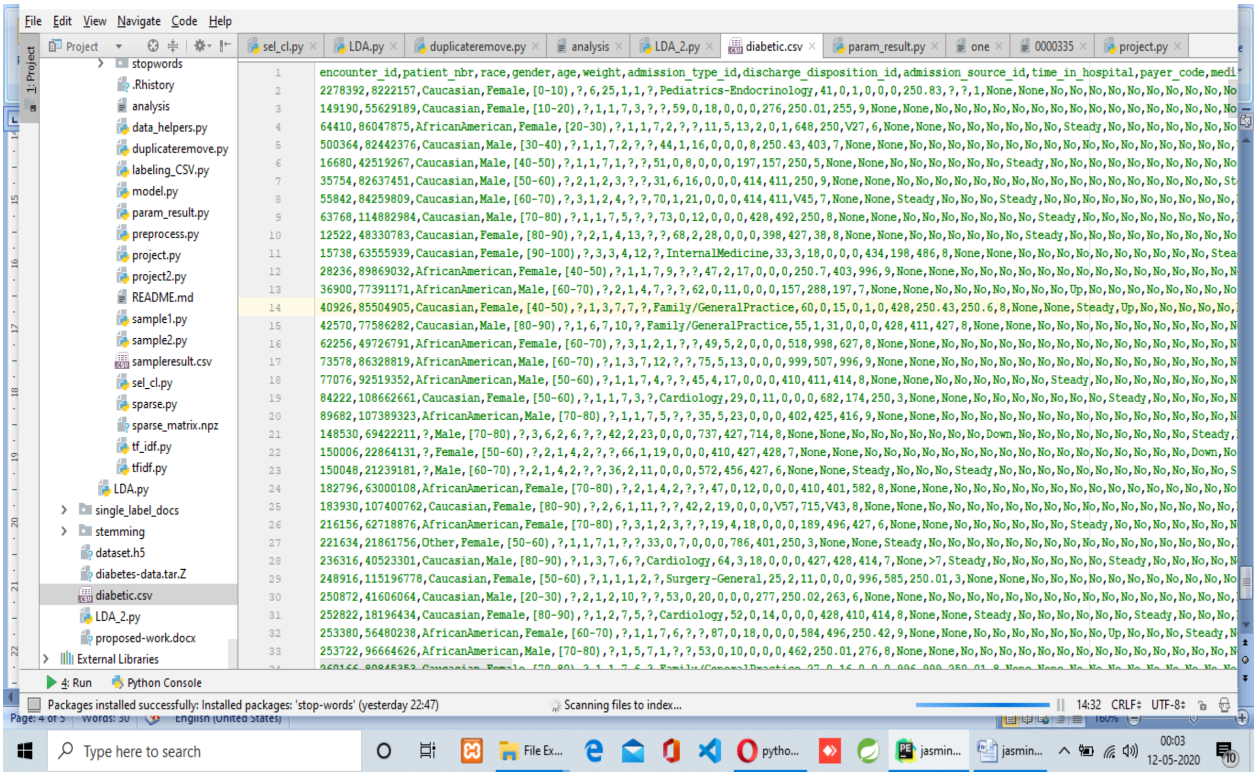


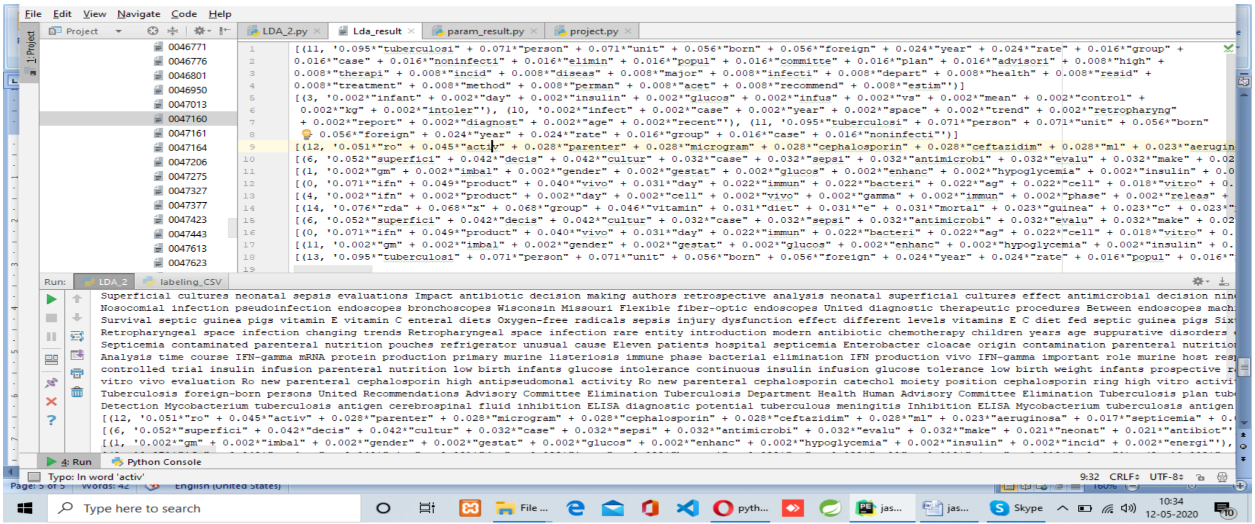
Training and testing set segregation



Training of csv data for labeling



Csv file for diabetic patient records



Results after LDA

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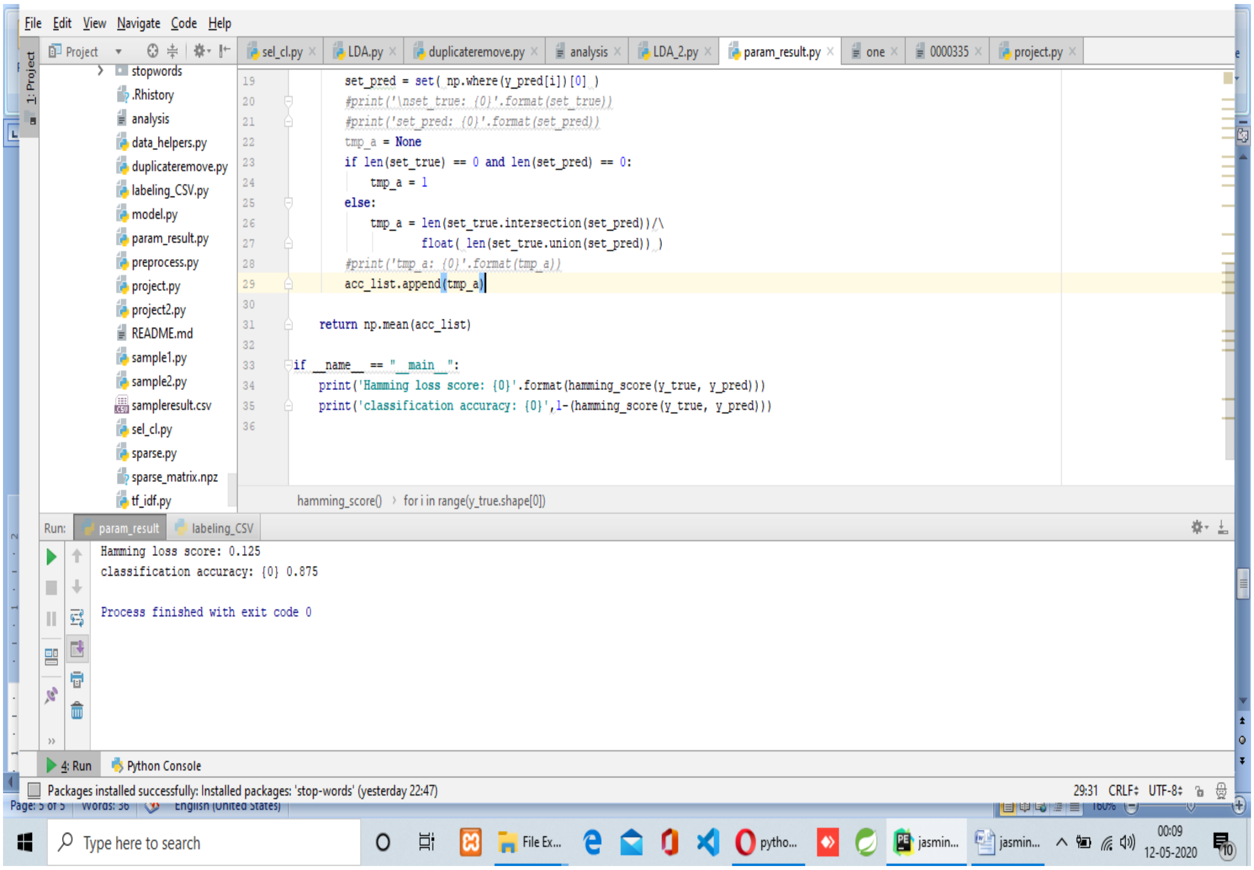

Hamming loss and classification accuracy results

RESULTS

	BR (Binary Relevance) Classifier				
Dataset	ML(multi label) Accuracy	Precision	Recall	F1-Measure	Avg Accuracy
Clinical	0.8325	0.8691	0.8868	0.8758	0.7586
medical	0.7511	0.819	0.8405	0.8278	0.6942
Plants	0.7553	0.8756	0.759	0.8098	0.7203
Virus	0.8583	0.9012	0.8857	0.8928	0.8114
Yeast	0.5079	0.7091	0.5896	0.6417	0.1593

Binary Relevance Classifier output

	ML (multi-label) KNN Classifier				
Dataset	**ML(multi label) Accuracy**	**Precision**	**Recall**	**F1-Measure**	**Avg Accuracy**
clinical	0.7389	0.8632	0.7383	0.7952	0.6647
medical	0.7157	0.8422	0.7379	0.7837	0.6738
plants	0.7492	0.853	0.7442	0.794	0.7079
virus	0.7853	0.9058	0.7978	0.8367	0.7336
yeast	0.5186	0.7285	0.5889	0.6488	0.192

KNN Classifier Output

	Proposed Approach			
Dataset	**Precision**	**Recall**	**F1-measure**	**Accuracy**
Clinical	0.885	0.7456	0.801	0.8053
medical	0.864	0.7843	0.7965	0.875
Plants	0.8263	0.7866	0.801	0.7248
Virus	0.9124	0.8279	0.8475	0.7698
Yeast	0.756	0.6024	0.7088	0.5477

Accuracy with Precision, Recall F1-measure

Proposed Approach		
Dataset	**Hamming Loss**	**Accuracy**
clinical	0.114	0.8053
medical	0.125	0.875
Plants	0.148	0.7248
Virus	0.085	0.7698
Yeast	0.035	0.5477

Accuracy Outcomes with Hamming Loss

Comparison of Base Paper kNNClassifier Precision Results WithBase Paper		
Dataset	**Base paper**	**Proposed Approach**
clinical	0.8632	0.885
medical	0.8422	0.864
Plants	0.853	0.8263
Virus	0.9058	0.9124
Yeast	0.7285	0.756

Comparison of Base Paper kNN Classifier Precision Results With Base Paper

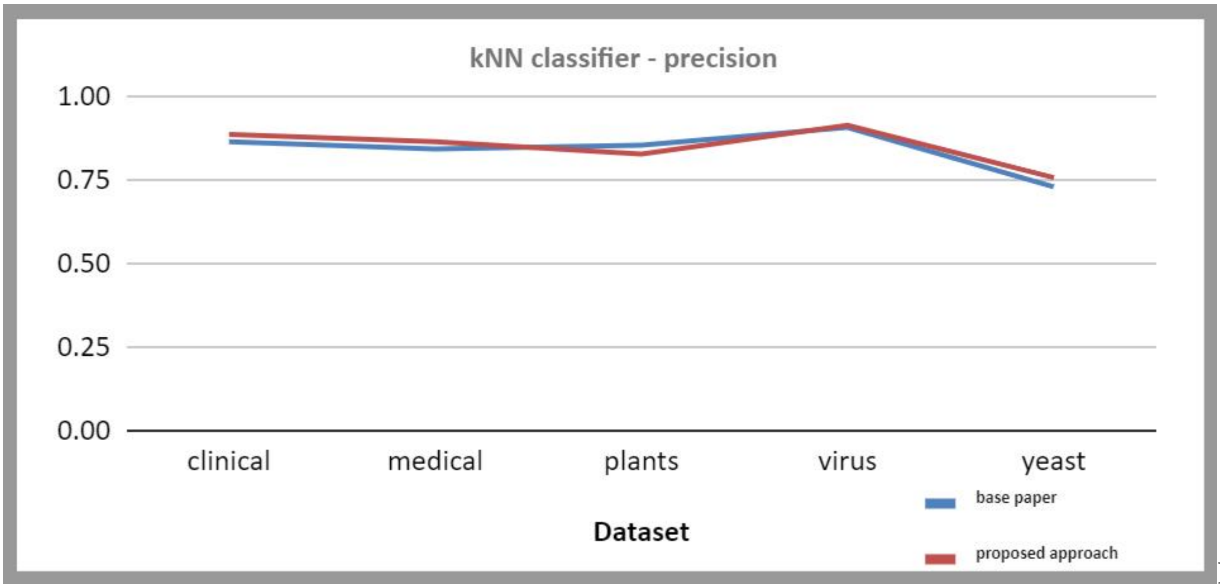

Fig6

Precision Graph

CONCLUSION

Here firstly we done classification of data for analysis. Then Exploratory data analysis (EDA) is used to performed for different set of data to focus on important features to get maximum insights from a data set. here The use of analytics in healthcare improves care by facilitating preventive care and EDA is a vital step while analyzing data. than the important factors are studies and the missing factors are predicted by using K-means algorithm. here, our research proposes to use EDA along with machine learning techniques for classification of results. The result will used to generate categories that contains identifies words of medical terminology based on their relations.

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