National University of Computer and Emerging Sciences



FYP – Dr.Online

**FAST School of Computing**

Application of ML and DM:

More than 42% medication errors are caused by doctors because experts write the prescription according to their experiences which are quite limited.

Applications of machine learning and data mining can change the available data to valuable information that can be used for recommending appropriate drugs by analyzing symptoms of the disease. In this work, a machine learning approach for multi-disease with drug recommendation is proposed to provide accurate drug recommendations for the patients suffering from various diseases. This approach generates appropriate recommendations for the patients suffering from cardiac, common cold, fever, obesity, optical, and ortho, etc.

We know the limitations:

We are aware of that this recommendation system will not be 100% accurate since we are not specialist to say one medicine can indeed be recommended instead of another, nor can an performance test be conducted at this time. In addition, there is the limitation on data avabliable, for instance, there is no patient information, true diagnosis, cost of medicine, etc.

our model is thought as a basis in the right direction, and with more data, the better the recommendation can become.

Approach:

Supervised machine learning approaches such as Support Vector Machine (SVM), Random Forest, Decision Tree, and K-nearest neighbors were used for generating recommendations for patients. The experimentation and evaluation of the study was carried out on a sample dataset created only for testing purpose and is not obtained from any source (medical practitioner). This experimental evaluation shows that the Random Forest classifier approach yields a very good recommendation accuracy of 96.87% than the other classifiers under comparison. Thus, the proposed approach is considered as a promising tool for reliable recommendations to the patients in the health care industry.

Steps:

1) Data preparation

2) Modeling

3) Evaluation

4) Recommendation

Applied standard Data preparation techniques like checking null values, duplicate rows, removing unnecessary values, and text from rows in this research because Machine learning algorithms can’t work with text straightforwardly

How to accomplish more Accuracy:

After evaluating all the models, the prediction results:

* Perceptron
* LinearSVC
* LGBM
* Random Forest

was added to give combined model predictions. The main intention is to make sure that the recommended top drugs should be classified correctly by all four models. If one model predicts it wrong, then the drug’s overall score will go down.

score of each drug = Predictions \* normalized useful count

The overall score is divided by the total number of drugs per condition to get a mean score, which is the final score