$D^{C}UAI$

Depression Classifier under Artificial Intelligence

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Abstract:

With the rising trend of depression among youngsters and working professionals, the issue of mental health has taken a serious hit. The reasons for depression among such people is quite straight-forward and is caused due to peer pressure, heavy work-load, lack of social life and overlooking the interests and hobbies to focus more on work. Even though the trend of depression is rising among people, many people avoid psychologist. This has prompted the Team Karma to develop a Depression Classifier under Artificial Intelligence Domain where we can collect various inputs from the user and later classify them using Machine Learning algorithm to see whether the parameters provided by the user are signing him off for a depression or suicidal tendencies.

Introduction:

In $D^{C}UAI$ Project, we have implemented two interfaces: A Python Chatbot and an online Application Form where the user gives his input and is stored into a CSV File which is later processed by our algorithms. For depression classification, the algorithms that we have implemented are the Scikit-Learn and LightGBM which helps us to classify whether the user is suffering from depression or whether he has suicidal tendencies. The purpose of the Python chatbot is to provide leisure to the user and also ask him targeted questions like asking him/her about his/her friends, or whether is the user suffering from any suicidal tendencies.

Interfaces:

A. Python Chatbot:

This is an interesting implementation of a Python Chatbot using Tkinter Module where we have added all the functionalities of a standard Chatbot and can perform various activities such as:

- Password Generation
- Get a Random Fact
- Lock/Shutdown the Computer
- Opening various Computer Applications
- Fetching Weather Reports
- Playing Music/Movies
- Performing Google Searches and getting Wikipedia content

Besides these, on general conservation, the Chatbot will ask some targeted questions related to general issues on depression which will help the Chatbot to draw some inputs from the user which can be inputted on a TXT File and can later be analyzed via Natural Language Processing (a Jupyter Notebook which contains the analysis of the User Data has been shown as a reference.

B. Machine Learning Processing

To take the User-input we have developed a Google Form which contains various questions on the issues of depression and anxiety which the user might experience in day-to-day life. This data is taken and stored in a CSV File which can be processed by a Machine Learning Model. The various algorithms that are being implemented here are the Scikit-Learn, LightBGM and Pickle with Pandas being used for segment the CSV File. The CSV File is inputted to the Pandas Dataframe where it is processed and unique columns and column values are taken for processing.

A LabelEncoder is used to normalize labels and the Data is split into a 3:1 Ratio for the Training Dataset and Testing Dataset (75% data is sent to Training while 25% data is sent to Testing). Using an LGBM Classifier, a Model Fit is created which is stored into a Pickle File where the objects are serialized into disks. Using the testing data, the final prediction is generated and a model accuracy of more than 84% accuracy is generated.

Conclusion:

During the Hackathon Hack4Day-2019, we have successfully implemented a Chatbot and a Machine Learning Model where data generated from the user input can be processed by Machine Learning algorithms and the final output can be generated with an accuracy of 84% achieved. We would like to thank DSC-SIST for organizing this awesome event which allowed us to learn many new technologies and frameworks which allowed us to get a better insight into new things that change and shape our world.