Student behavioural Analysis

Summary:

We are **predicting the behaviour of the student using NLP and machine learning using deep learning**. We attempt to predict the behaviour and hence the mental state of the student by giving them a **scenario based questionnaire** and taking their answers in the form of text. This **text is then analyzed using NLP**. A set of keywords which determine the mental state and behaviour of the student is detected. The **behaviour of the student is then classified using supervised machine learning algorithm**. Once this is done, it can be **further analyzed and used for no. of applications** like emotional difficulty tackling, changes in class management strategies, comparison with students of other institutions, satisfaction of the student with the curriculum and the overall image of the institution in their mind.

What we have implemented till today:

- We prepared a **questionnaire** for the students which we are sharing with them on Google Forms.
- The questionnaire consists of a variety of questions ranging from questions which ask the student about his/her perspective about the institute to questions regarding academic related pressure, stress or depression.
- We used a **dataset** from kaggle and customized it according to our usage. The dataset consists of **2 columns : 1)sentences(content) and 2)Emotion (labels)**
- We have used **6 emotions** initially to classify every sentence into one of them.
- We built an **emotion classifier based on LSTM recurrent neural network with Attention mechanism using Keras library** and trained the model using the above dataset.
- We used a **90-10 split** for training and testing.
- We trained the model with an **accuracy of around 88%**.
- The model **classifies every sentence of the test data into 1 of the 6 emotions.**
- We **tested the model on some random samples of the dataset and also visualized the same.**

What we plan to implement by tomorrow:

- We will take **real responses** from the students on google forms and record the responses in the spreadsheet. We will club the responses to individual questions into a full text file.
- We will then **convert it into a csv file and load this data**.
- The **data will be then split into sentences** and these **sentences will be then fed into the model for classification**.
- Using the emotions assigned to individual sentences, we'll build an algorithm to get an **aggregate emotion score of the entire document** (the entire document is the clubbed responses of one student).

- These **emotion scores will be plotted in the form of a bar graph** (score assigned to each emotion versus the 6 emotions) and **will give the idea of the mixed emotions of the student** and what he/she feels more.
- This will be the **overall behavioural analysis of the student in terms of his/her satisfaction with the institution or college**.
- **Another thing** we plan to implement is **dropout prediction**(in case the negative emotion scores are too high, the chances of dropping out may increase) in the form of **probability or percentage of chances of the student to drop out of the college.**
- We will also work on the front end part to make a **simple UI** for the same(if we get time).