Failure Prediction using Artificial Neural Networks

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I.   INTRODUCTION

There are many problems students are facing and one of the major concern is either passing or failing a subject so what causes failures? That is where our project comes in. Most of the students nowadays try to cram the night before their exams so does that affect their scores? How about the travel time many students wake up early in the morning just to travel to their own schools and because of this plenty of students try to absorb the topics the teachers discuss but is too sleepy to absorb the said topics. Also another way for students to be affected by travelling is that when traveling is very time consuming for the student especially during rush hours which can lead to severe road congestion affecting the student's studying time. But many students as well are just lazy to study and spend most of their time watching, playing games, listening to music, and other miscellaneous tasks. So what does affect the student's scores in their quizzes and that is what our project is all about trying to understand what causes a student to either pass or fail.

II.   TRAINING DATA

The data that the group will use is based on a paper on students behaviors and attitudes ranging from 0 - 5 on how they think it affects their studies in a daily basis. With 0 as negligible in terms of weight and 5 as the highest factor. A sample of 100 will be used. There will be 9 inputs for the training data. Each input are based on the common area's wherein most students might be affected such as feeling sleepy during class hours and the time allotted for studying is limited. The first input is feeling sleepy during class, this is very common and is a factor since it affects the student's ability to absorb the lessons being discussed, the second input when students only study when there are quizzes, this affects their grade depending on their ability to absorb the topic fast. The third input indicates that students prefer to do other things such as listening to music, watching television, etc. rather than studying. The fourth input indicates the location of the student in this case if they live far the travel time might affect their time to study. The fifth input shows that is the student is constantly disturbed thus affecting their concentration on studying. The sixth input show whether the study strictly follows the time schedule. The seventh input indicates the weight in which the student has time to study at home. The eighth input is feeling hungry during class shows that they have lesser concentration on the discussion due to hunger. The ninth input indicates the location or the environment of the classroom were discussions are being held.

III.   NEURAL NETWORK IMPLEMENTATION

To solve the problem stated above, our group will be using Artificial Neural Networks. Artificial Neural Networks (ANN) are best used in tackling multiple inputs non-linear hypothesis problems such as the problem discussed from the previous sections. Compared to other methods available, ANN method is the best choice because this method works almost similar as how does the human brain function which in turns gives us optimal, accurate, and desirable results.

In implementing the solution, our group will be using MATLAB. The nine inputs stated from the training data (we may also add some bias inputs) will serve as the first layer of the neural network will be processed by the hidden layers in order to determine the main cause for students to fail in their classes. We are expecting to get at least 80% accuracy by using this method.

IV.   RESULTS AND DISCUSSION

V.   CONCLUSION

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