

# SUPERVISED LEARNING MODELS FOR STUDENT PERFORMANCE

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## ABSTRACT:

Towards automation to do mundane tasks and the expectations for students already equipped with good programming skills is on the rise. In parallel, there have been a rising number of students who find it difficult to attain the skills necessary in order to get the dream IT job they desire. The aim of this project is to bridge the gap between the employer and the future employee of the company by the use of SPAS at college level. Student performance analysis system (SPAS) is an online web application system which enables students to know prior hand if their level of skills for the placement is enough to get placed or not, given the necessary inputs. SPAS have an intelligent learning algorithm which utilizes a rich database, analyses the records of previous students' traits and develops a model for further prediction. The performance evaluation of students by SPAS is by the cumulative predictor algorithm involving generation of several random forest trees on the available data. SPAS learn and create its model reaching higher accuracy with increasing data availability.

**Keywords:**Automation,Mundane,Expectations,Attain,Skills,Cumulative

## 1. INTRODUCTION :

Educational data mining (EDM) is an emerging discipline, concerned with developing methods for exploring the unique types of data that come from educational settings, and using those methods to better understand students, and the settings which they learn in. There are several data regarding

the students which stay unused with untapped potential of data mining which could revolution is the field of education. Since the ultimate aim of an educational institution is to create a pool of skilled professionals to take on the society to a next upgraded level, they need to create an environment for their students to grow in every vertical by giving them right exposure and training. Most of the educational institutions, maintain huge databases of students and the information keeps on increasing with time, but there is no action taken to gain knowledge from it. DM has the suitable techniques in mining the data to discover new information and knowledge about students. DM provides various methods for analysis which include classification, clustering, and association rules. Classification, one of the prediction algorithms, classifies the data (constructs a pattern) based on the training set and uses the pattern to classify a new data (testing set). IHL faces a major challenge in order to improve and manage the organization to be more efficient in managing students' activities. To achieve this target, DM is considered as the one of most suitable technique in giving additional insights to the IHL community to help them make better decisions in educational activities. The IHL make use of WEKA tool in order to build a model and predict the SAP in order for the professors to provide the students with individual attention. In SAP system, the classification method is selected to be applied on the students' data. This system makes use of one among the three selected classification algorithms; decision tree (DT), Naïve Bayes' (NB), and rule-based (RB). The best technique is used to develop a predictive model for SAP. The patterns obtained is used to predict the first semester of the first year in two Bachelor of Computer Science (BCS) courses; Bachelor of Computer Science with specialization in Software Development (BCSSD) and Science with specialization in Network Security (BCSNS) at the Faculty of Informatics and Computing (FIC), University Sultan Zainal Abidin (UniSZA), Terengganu, Malaysia. This pattern will be used to improve the SAP and to overcome the issues of low grades obtained by students. In our proposed system, student performance analysis system (SPAS) provides.

## **2. LITERATURE SURVEY :**

Literature survey is the most important step in software development process. Before developing the tool, it is necessary to determine the time factor, economy and company strength. Once these things are satisfied, ten next steps are to determine which operating system and language can be used for developing the tool. Once the programmers start building the tool the programmers need lot of external support. This support can be obtained from senior programmers, from book or from websites. Before building the system, the above consideration is taken into account for developing the proposed system.

### 3. EXISTING SYSTEM :

The data contains the students' demographics, previous academic records, and family background information. DT, NB, and RB classification techniques are applied to the students' data in order to produce the best SAP prediction model. The experiment result shows the RB is a best model among the other techniques by receiving the highest accuracy value of 71.3%. The extracted knowledge from prediction model will be used to identify and profile the student to determine the students' level of success in the first semester. This project acts as the basis of SPAS and gives a clear idea regarding the parameters involved in predicting students' performance.

### 4. PROPOSED STRUCTURE :

In this paper, we have introduced new algorithm called cumulative predictor to predict student performance beforehand so they can know whether they are fit for IT dream job or not. We have built cumulative predictor algorithm on top of decision tree (J48) algorithm and in this algorithm author has put cumulative predictor model generation in loop so the algorithm can choose best accuracy model with less error rate. In paper code we can see that the decision tree is in loop to get the best model. From the selected algorithm, we can see that the cumulative predictor is getting built with decision tree in for loop and selecting model with best accuracy.

### 5. SYSTEM ARCHITECTURE :

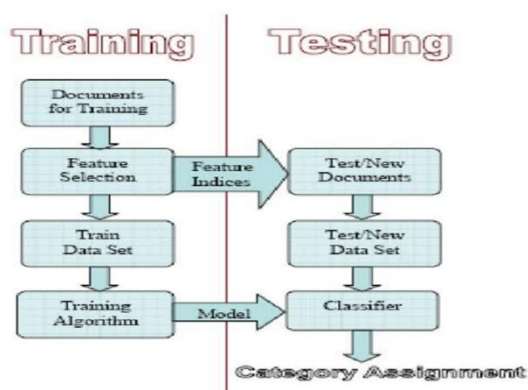


Figure no:1 System Architecture

### 6. RESULT :

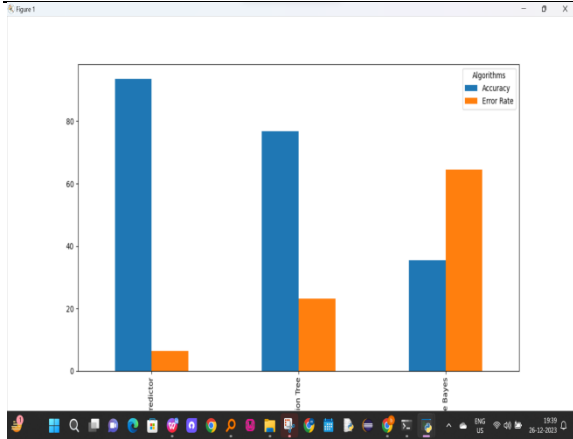


Figure no:2 All algorithms accuracy and error rate graph



Figure no:3 Student academic performance status results

## 7. CONCLUSION :

Predicting students' performance is mostly useful to help the educators and learners improving their learning and teaching process. This paper has reviewed previous studies on predicting students' performance with various analytical methods. Most of the researchers have used cumulative grade point average (CGPA) and internal assessment as data sets. While for prediction techniques, the classification method is frequently used in educational data mining area. Under the classification techniques, Neural Network and Decision Tree are the two methods highly used by the researchers for predicting students' performance. In conclusion, the meta-analysis on predicting students' performance has motivated us to carry out further research to be applied in our environment. It will help the educational system to monitor the students' performance in a systematic way. For improving the prediction find out enhanced prediction model by reviewing and compared the many existing techniques (final). This paper

has presented an exhaustive survey of research works on Educational data mining. For the specific context of evolving networks, the DyNetx library provides specialized functionalities for handling temporal and dynamic network data. Jupyter Notebook, an interactive computing environment, can enhance the exploration, experimentation, and presentation of research findings. By leveraging these software tools and libraries, researchers can conduct in-depth analysis, develop and evaluate link prediction models, and gain insights into the information propagation processes in evolving networks. The combination of Python's flexibility, the richness of available libraries, and the powerful tools for data manipulation and analysis provide a solid foundation for conducting innovative research in link prediction and evolving networks.

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