**Student Performance Analysis and Prediction**

*( for the partial fulfillment of* Bachelor of Technology Degree in Computer Science & Engineering )

*Submitted by*

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# CERTIFICATE

This is to certify that the project titled **“Student Performance Analysis and Prediction” submitted** by Mayank Tyagi, Siddhant Mamgain, Vipin Chand Ramola and Arun Rawat of Graphic Era Hill University for the award of the degree of **Bachelor of Technology**, is a bona fide record of the project work done by them under our supervision. The contents of this project in full or in parts have not been submitted to any other Institute or University for the award of any degree or diploma.

### Mr. Amit Gupta

Project Guide (Asst. Prof) GEHU,Dehradun

Place: Dehradun Date: ...................

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# Abstract.

The academic output of the student is normally stored in various formats in the student administration system (files, documents, records, photographs and other formats). These data can be collected for valuable knowledge from the students. However, it is difficult to analyze the increasing amount of data of students through conventional statistical techniques and database management tools. For universities to gather valuable information, a tool is therefore required. This helpful knowledge can be used to predict the success of students. Leistungs analyze learning results is a framework that aims for success in the areas of student interest at various levels and dimensions. The ultimate goal of any educational institution is offering the best educational experience and knowledge to the students. Identifying the students who need extra support and taking the appropriate actions to enhance their performance plays an important role in achieving that goal. In this research, four machine learning techniques have been used to build a classifier that can predict the performance of the students in a computer science subject . The machine learning techniques include Artificial Neural Network, Naïve Bayes, Decision Tree, and Logistic Regression. This research pays extra attention to the effect of using the internet as a learning resource and the effect of the time spent by students on social networks on the students’ performance. These effects introduced by using features that measure whether the student uses the internet for learning and the time spent on the social networks by the students. The models have been compared using the ROC index performance measure and the classification accuracy. In addition, different measures have been computed such as the classification error, precision, recall, and the F measure. The dataset used to build the models is collected based on a survey given to the students and the students’ grade book. To seek maximum accuracy in academic predictions across a range of powerful techniques of data mining. The ANN (fully connected feed forward multilayer ANN) model achieved the best performance that is equal to 0.807 and achieved the best classification accuracy that is equal to 77.04%. In addition, the decision tree model identified five factors as important factors which influence the performance of the students.

**Keywords**—Recommender System, Performance Analysis, Statistical Techniques, Decision Tree