



NOVEL ADVANCED PREDICTION METHODS ON STUDENTS UNIVERSITY BY USING MACHINE LEARNING SYSTEMS

Dr. A.S.K.RATNAM¹, B. VENKAIAH CHOWDARY², D. DURGA RANI³, I. ANUSHA⁴

¹Professor, Department of CSE, *MALINENI LAKSHMAIAH WOMEN'S ENGINEERING COLLEGE*, Guntur
- Prathipadu Rd, Pulladigunta, Andhra Pradesh , India.

^{2,3,4}Assistant Professor, Department of CSE, *MALINENI LAKSHMAIAH WOMEN'S ENGINEERING
COLLEGE*, Guntur - Prathipadu Rd, Pulladigunta, Andhra Pradesh , India.

ABSTRACT:

Machine Learning is a field of computer science that makes the computer learns itself without any help from external programs. These machine learning techniques can be used to predict the output for certain inputs. There are two approaches for machine learning techniques one is supervised learning and the other one is unsupervised learning. In unsupervised learning, K-means and Hierarchical clustering are being used and in supervised; Naive Bayes and Decision Trees are used. Nowadays evaluating the student performance of any organization is going to play a vital role to train the students. All of the above algorithms were combined and used for student evaluation used for the recruiting process. Here the performance of K L University students is evaluated by applying all the above algorithms.

Keywords: *K means, naive bayes, learning techniques, machine learning.*

1. INTRODUCTION:

Student's academic performance is a crucial part of an academic institution. This is considered as one of the important measures for many superior universities. Some researchers stated that the student's academic performance can be measured through learning assessment and co-curriculum activities. Though, the majority

of researchers have mentioned that the student's past performances, achievements, and grades can play a vital role to predict the student's success rate. Predominantly, most of the higher-level institutions use grade as the main measure to assess student's performance. In addition, course structure, assignment marks, final exam scores, and extracurricular activities will affect the student's academic performance. The

student's academic program can be well planned during their sophomore period of studies in an institution to analyze the performance of students. At present, machine learning algorithms are most popular to evaluate student's academic performance that has been extensively applied in the education sector. Mining the educational data used to predict the student's academic performance (Brijesh Kumar Baradwaj, Saurabh Pal, 2011). As a result, it would help the educators/faculty to improve the teaching approach in a constructive way. In addition, the teacher could observe student's achievements also. Nawal Ali Yassein et al. (2017) used classification and clustering techniques to predict student's academic performance for KSA (Kingdom of Saudi Arabia). In this research, the features which affect the student's academic performance is analyzed to predict the student's academic performance. The practical work and assignments given by the course instructor is the main factor for the student's success rate in the academic performance. They identified that student attendance in class is the most important factor than the final exam and the mid-exam grades. Md. Hedayetul Islam Shovon and Mahfuza Haque (2012) used the

decision tree method to predict student's academic performance and data clustering method to predict General Point Average (GPA) that helps the instructor to improve the student's academic performance.

OBJECTIVE:

Machine Learning is all about designing and developing algorithms through which computers can predict behaviors based on the given data. It is a branch of artificial intelligence. Nowadays in the area of education, there is a significant growth in using these algorithms. These machine learning algorithms mainly focus on pattern recognition and decision making. From the given input data first patterns are recognized, rules are generated. According to that rules, the behavior is predicted and decision making is done. In normal traditional programming, the data and program are given as input to the computer to get the output, which was different from machine learning. Mainly Machine Learning algorithms are classified into three types. They are supervised learning Unsupervised Learning Reinforcement Learning Here, Supervised and Unsupervised Learning were discussed.

2. LITERATURE SURVEY:

1) Automatic X-ray Image Classification System. AUTHORS: Parul Kalra,, C. M. A. K. Zeelan Basha

In recent days, computer-aided fracture detection systems have played a role in aiding both orthopaedician and a radiologist by providing accurate and fast results. In order to detect the fracture automatically, classification of X-ray images should be automated and it becomes the initial step. Therefore, an attempt has been made and a system is presented in this paper, which involves five image processing steps namely, denoising using high boost filter, enhancement using adaptive histogram equalization, statistical feature extraction, and classification using artificial neural network. To classify the given input X-ray images into the categories head, neck, skull, foot, palm, and spine, the probabilistic neural network, back propagation neural network, and support vector machine classifiers are employed in classifying X-ray images. The results ascertain an overall accuracy of 92.3% in classifying X-ray images and the presented system can be used as an effective tool for X-ray image classification.

2 ONLINE DIAGNOSIS OF X-RAY IMAGE USING FLDA IMAGE PROCESSING ALGORITHM

AUTHORS: RJ Bolton, SAI NIVEDITA.

The process of X-ray imaging technique for analysis of fracture and other bone related malfunctioning is getting more tedious on faulty procedures and improper place of imaging than the required places. This costs us more time, money and energy to make an X-ray again at the proper place. During the absence of a radiologist, the diagnosis process is delayed. This paper focuses on a technology that overcomes the above mentioned problem and it results in developing a real-time system that determines the type of fracture through analysis, where the input given to the system is a digital X-ray image. The technique used is image processing for analysis of types of fractures depending on the received X-ray images.

3. A Comparative Analysis of Thresholding and Edge Detection Segmentation Techniques. AUTHORS:

Zhang, Xinwei; abHan, Yaocia, WeiXu, WangQilia Edge detection being one of the important aspects of image segmentation comes prior to feature extraction and image



recognition system for analyzing images. It helps in extracting the basic shape of an image, overlooking the minute unnecessary details. In this paper using image segmentation (thresholding and edge detection) techniques different geo satellite images, medical images and architectural images are analyzed. To quantify the consistency of our results error measure is used.

4 An improved edge detection algorithm for X-Ray images based on the statistical range AUTHORS: Timor Kadir, Fergus Gleeson

Edge detection is the prior stage to object recognition and considered as a pillar for image processing tasks. It is a process to detect such locations from images in terms of pixels where their intensity changes abruptly. There are many types of images such as medical images, satellite images, articular images, industrial images, general purpose images etc. X-Ray is a type of medical image in which electronic radiation is passed into the human body to capture images of inner parts for better disease diagnoses by orthopaedics or radiologists. In this research paper, we have proposed an improved method to detect edges from

human being's X-Ray images based on Gaussian filter and statistical range. Gaussian filter is used for image pre-processing and enhancement. Whereas, Statistical range is used to calculate the difference between maximum and minimum pixels from every 3X3 image matrix partition. These two can work to detect edges from X-Ray images. We have also presented a comprehensive comparison of our proposed method with four existing latest methods/algorithms of edge detection. Apart from X-Ray images, experiments have also been conducted on human X-Ray images to detect edges. Further, we have found that our proposed method is superior in terms of MSE, RMSE, PSNR and computation time to detect edges from X-Ray images of human being.

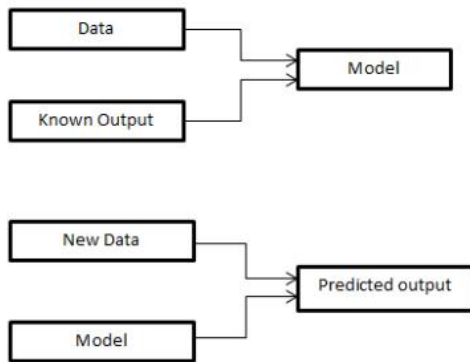
5 Automatic Classification of Cardiac Views in Echocardiography Using Histogram and Statistical Features, Authors: Jiajia Liu, Yudong Ye, Chenlong Shen, Yuming Wang, Robert Erdélyi

Automatic classification cardiac views is the first step to automate wall motion analysis, computer aided disease diagnosis, measurement computation etc. In this paper

a fully automatic classification of cardiac view in echocardiogram is proposed. The system is built based on a machine learning approach which characterizes two features 1) Histogram features and 2) Statistical features. In this system four standard views, parasternal short axis (PSAX), parasternal long axis (PLAX), apical two chamber (A2C) and apical four chamber (A4C) views are classified. Experiments over 200 echocardiogram images show that the proposed method with an accuracy of 87.5% can be effectively used in cardiac view classification 5.9 hours of the CME arrival time, with 54% of the predictions having absolute errors less than 5.9 hours. Comparison with other models reveals that CAT-PUMA has a more accurate prediction for 77% of the events investigated; and can be carried out very fast, i.e. within minutes after providing the necessary input parameters of a CME. A practical guide containing the CAT-PUMA engine and the source code of two examples are available in the Appendix, allowing the community to perform their own applications for prediction using CAT-PUMA.

3. PROPOSED SYSTEM:

In The Proposed system we have implemented both regression and classification algorithms in this method. Given a labeled dataset of 500 students who applied to a graduate program, we will find the machine learning algorithm which will very closely predict the chances of admission. And from these techniques, we will also extract some of the redundant and very important features. This paper also takes an approach to find the relation of the features for evaluating the chances of admission from a graduate school. We will also convert it into a classification problem and similarly evaluate a confusion matrix with the aid of classification algorithms and the dataset. Several Machine Learning techniques have been used here and comparative analysis on results of every approach has been done to formulate a novel approach to predict the probability of admission. Also, many powerful techniques such as Decision tree and naivebyes have also been used to predict the same.



In supervised learning, it takes a set of inputs and known responses to build a model. The model that was built is used for mapping new data to the desired responses or outputs. The supervised learning algorithms also give the probabilities of all the given inputs. There should not be any missing values in the dataset. If there are any missing values, it is not possible to predict the output. The algorithms that belong to this type of learning are Naïve Bayes, Logistic Regression, Decision Trees, Neural Networks.

4. IMPLEMENTATION WITH RESULTS EXPLANATION

Student:

The User can register the first. While registering he required a valid user email and mobile for further communications. Once the user register then admin can activate the customer. Once admin activated

the customer then user can login into our system.

Teacher:

The Teacher can register the first. While registering he required a valid user email and mobile for further communications. Once the Teacher register then admin can activate the Teacher. Once admin activated the Teacher then Teacher can login into our system. Teacher will provide students score and performance details .it will add into datasets.

Admin:

Admin can login with his credentials. Once he login he can activate the users. The activated user only login in our applications. The admin can set the training and testing data for the project dynamically to the code. By clicking decision tree will get accuracy and prediction and also evaluation parameters data. By clicking naive bayies will get results of student performance prediction and evolution parameters

Data Preprocess:

The admin provided data has been stored in the SQLite database. To process our methodology, we need to perform data

cleaning process. By using panda's data frame, we can fill the missing values with its mean type. Once data cleaned the data will be displayed on the browser.

Machine learning:

Based on the split criterion, the cleansed data is split into 60% training and 40% test, then the dataset is subjected to five machine learning classifiers such as, naive bayes, Decision Tree (DT), the accuracy of the classifiers was calculated using the confusion matrix. The classifier which bags up the highest accuracy could be determined as the best classifier. For each algorithm confusion matrix roc curve and accuracy has been calculated and displayed in my results.

5. CONCLUSION:

In this paper, clustering and classification are applied to a dataset of K L University students to evaluate the student's performance and predict whether a student will pass or fail in a technical exam that was conducted as a recruiting process. The results that are obtained are accurate. Some technical subjects like Computer Networks, Operating Systems, C language and Database Management Systems are only considered for classification. In future, this

can be extended with more number of subjects and a large data set.

FURTHER ENHANCEMENT

It is also a classification algorithm and is used for predictions. Naïve Bayes is a simple classifier that uses Bayesian theorem. Let M be the tuple and N be the hypothesis that A belongs to a certain class. Then Bayesian theorem is represented by The predictions are 72% (40+32) accurate. While comparing both algorithms decision predicts more accurately than the naïve Bayes algorithm for this dataset.

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