
ISSN: 2454-9940
IJASEM
INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT
E-Mail :
editor.ijasem@gmail.com
editor@ijasem.in
www.ijasem.in

INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.in

Vol 10, Issuse.1Feb 2022

Calculating Employee Performance Using Classification Techniques

(GUNTAKANIHARIKA)1(CHEJARLARAJAS)2

Abstract:
Human Resources Management (HRM) has become one of the essential interests of managers and decision makers in almost all types of businesses to adopt plans for correctly discovering highly qualified employees. Accordingly, managements become interested about the performance of these employees. Especially to ensure the appropriate person allocated to the convenient job at the right time. From here, the interest of data mining (DM) role has been growing that its objective is the discovery of knowledge from huge amounts of data. In this paper, DM techniques were utilized to build a classification model for predicting employees' performance using a real dataset collected from the Ministry of Egyptian Civil Aviation (MOCA) through a questionnaire prepared and distributed for 145 employees. Three main DM techniques were used for building the classification model and identifying the most effective factors that positively affect the performance. The techniques are the Decision Tree (DT), Naïve Bayes, and Support Vector Machine (SVM) (SVM). To get a highly accurate model, several experiments were executed based on the previous techniques that are implemented in WEKA tool for enabling decision makers and human resources professionals to predict and enhance the performance of their employees.

Index Terms —Classification, C4.5 (J48), Data Mining, Employees' Performance, HRM, MOCA, Naïve Bayes, SVM.

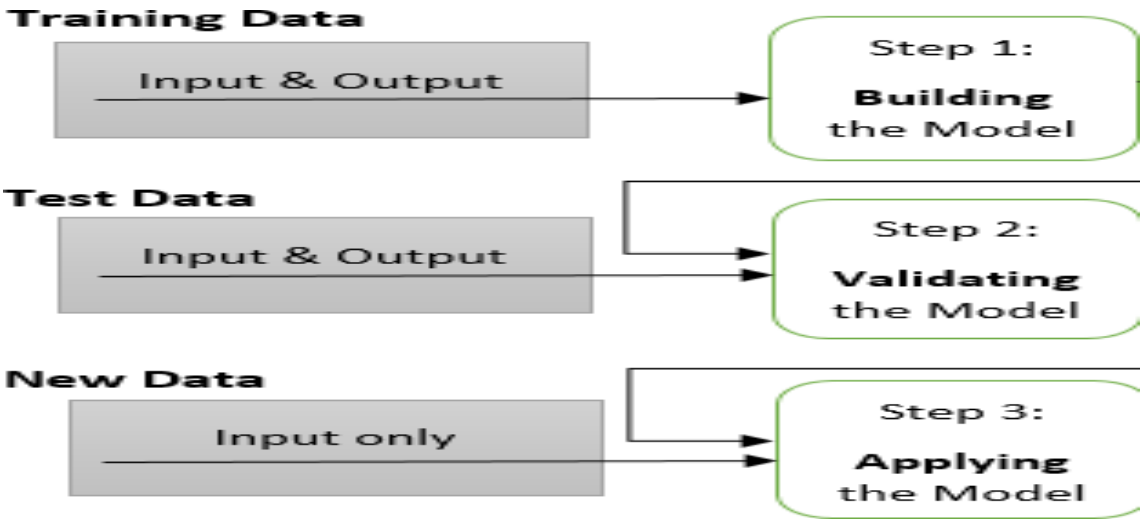
Introduction:

It is HRM's job to determine the company's competitiveness and effectiveness, which will allow it to continue to grow. HRM is referred to as a "people practice" by organizations. As a result, the HRM is tasked with allocating the best personnel to the right jobs at the right time, training and qualifying them, and establishing assessment methods to monitor their performance and an effort to preserve the potential abilities of employees. Human resources professionals no longer have to deal with the vast amounts of data manually, thanks to the rapid improvement and expansion of technology in commercial companies. These data are crucial for decision makers, but sifting through them to get

1PGSCHOLAR,DEPTOFCOMPUTERSCIENCEANDENGINEERING, SREE RAMA ENGINEERING COLLEGE, TIRUPATI,A.P, INDIA. EMAILID:g.niharika66@gmail.com
2ASSISTANTPROFESSOR,DEPTOFCOMPUTERSCIENCEANDENGINEERING, SREE RAMA ENGINEERING COLLEGE, TIRUPATI, A.P, INDIA. EMAILID:chejarla.raja@gmail.com

the most relevant and helpful information is a difficult task. The DM's role begins here. Data Mining (DM) is a phase in the Knowledge Discovery in Database (KDD) process and is now being used and studied extensively. Because of the abundance and diversity of immense amounts of data holding vast amounts of previously undiscovered information, it is seen as a relatively new analytical and predictive tool. The DM methodology may be used to extract knowledge from a variety of sources. Classification, association, and grouping are a some of the DM activities that may be utilized to unearth previously undiscovered information.A large quantity of information is gathered. One of the most often used predictive data management (DM) techniques is classification. In DM and machine learning, classification is a supervised learning strategy since the class level or target class is already known. When it comes to data mining, building classification models from an input dataset is one of the most important jobs. It's normal practice to create models using other approaches, classification may be done using other methods.

categorization methods, and these models may then be used to forecast future data patterns. Predictive models are designed to be able to forecast the unknown values of variables based on the previously known values of other variables that are of interest to the user. In light of this, the following are the primary aims of the current research to assist decision makers in various areas in discovering the potential skills of employees: putting up a database of predictors, Finding out what influences the behavior and performance of workers. Building a prediction model and establishing correlations between the most critical parameters impacting model efficiency by using provided DM categorization approaches. DT, SVM, and Nave Bayes are just a few of the data categorization methods available.among other things. Using the three basic categorization methods already discussed, this study attempts to sort its data. In addition to neural networks, K-Nearest Neighbors (KNN), and



The following is the design for the proposed system:

DM and Machine Learning both use the notion of feature selection as a foundational principle. Whereas, it is a method of identifying filtering removing irrelevant factors from a dataset in order to increase the accuracy of machine learning. Whereas, Using too many variables in a dataset reduces its predictive power. There may be too many characteristics in the data collection; some of them may not be necessary.

not improve the accuracy of the forecast, and so complicate the predictive model. The

model will not function properly if it contains any variables that aren't absolutely required. Automated or manual methods may be used to determine which superfluous variables to remove from a dataset. It is the goal of this paper to identify the most important variables that can improve employee performance prediction accuracy using the various feature selection algorithms that are supported in WEKA, such as the Correlation Attribute Eval algorithm, Gain Ratio Attribute Eval algorithm, Relief Attribute Eval algorithm, and soon.

Algorithm:

In the family of supervised learning algorithms, Decision Trees are a member. Unlike other supervised learning algorithms, decision tree algorithm can be used for solving regression and

There are challenges with categorisation as well. Predicting target variables' class or value by inferring decision rules from past data is one goal of utilizing Decision Tree as a training model (training data). The Decision Trees Algorithm is quite simple to grasp.

comparison to other categorization methods. The decision tree algorithm uses a tree model to try to answer the issue. An attribute and a class label are represented by the tree's internal nodes and leaf nodes, respectively. The root of a decision tree is used to anticipate a record's class label. root attributes and records are compared by their values. We jump to the next node by following the branch that corresponds to that value. This process continues until we reach a leaf node with a projected class value for each of our attributes. Knowing how the modeled decision tree may be utilized to forecast the target class or value is a huge advantage. br> Let's have a look at the process of building a decision tree model.

Review of the Literature:

Among the many steps in the software development process, the most critical is doing a literature review. There are a number of factors that must be taken into consideration prior to the development of a tool. It's time to select which operating system and programming language may be employed for the tool. Programmers begin work on the tool, and it's not long before Programmers need a great deal of help from others. From senior programmers, books, or the internet. For the development of the planned system, the aforementioned considerations are taken into account before construction begins.

Sadath, L., "Data Mining: A New Tool for Human Resource Knowledge Management" in the International Journal of Innovative Technology and Exploring Engineering.

The capacity of a business to develop and maintain a positive reputation in its market or sector is a key indicator of its competitiveness. In order for an organization to remain competitive and productive, Human Resource Management (HRM) plays an important role. Employee conduct, attitude, and performance are all influenced by HRM policies, practices, and systems. A company's HR processes are seen as a 'people practice'. Because of this, the Human Resources Manager (HRM) is responsible for discovering the greatest talent, training and developing it, observing it and rewarding it, as well as ensuring that it remains satisfied in the workplace. For the simple reason that all of an organization's strategies are connected to its employees' abilities in some way. To maintain a competitive advantageInformation management (creating, disseminating, and putting into practice new knowledge) becomes more important as a company grows in size. However, the topic of how HRM relates to Knowledge Management (KM) is critical. When workers are assessed on the basis of their output, a variety of techniques may be used to extract the most useful information from them. With this paper, we are attempting to investigate and better understand the potential of Data Mining (DM) techniques for making intelligent automated decisions based on vast databases of employee performance data, in order to implement the best KM strategies to achieve a stable HR system and brilliant business.

An Introduction to Data Mining with Case Studies by G. K. Gupta, ISBN-81-203-3053-6:

For businesses that use computers, data mining is a discipline that offers ways for the automatic finding of useful information from the gathered data. Data mining theory and

application are explained in detail in this book. Students of computer science are the primary audience for this book's primary purpose, which is to be used as a textbook.
a combination of management, computer programming, and other related fields; Students who lack a solid mathematical background might nonetheless benefit from the book's coverage of the most common data mining methods. Pre-processing, association rule mining and supervised classification are only few of the approaches that may be used for data pre-processing. A case study or two from academic publications follows each chapter to help readers better grasp the topics being presented and to provide examples of how the strategies outlined in the book are put into action. Most case studies focus on real-world business issues (for example, marketing, e-commerce, and customer relationship management). Reading the case studies helps the reader have a better understanding of data mining.
Q. A. AI-Radaideh, E. M. AI-Shawakfa and M I NAJJAR, "Mining Student Data using Decision Trees", Yarmouk University International Arab Conference on Information Technology.
Higher education administrators are very concerned about how students perform in university courses, where a variety of variables might influence success. This is a research paper.
Students' performance in courses may be improved by using data mining, especially classification, to identify the most important factors that influence students' success. The CRISP data mining framework is used to mine student-related academic data for this purpose. The decision tree is used as a classification approach for the production of classification rules, which are then researched and assessed. Students may forecast their final grade in a course , by using a system that enables the usage of the rules developed.

Conclusion:

In the HRM profession, the use of DM approaches in various problem domains is regarded to be an urgent and essential subject. In Egypt, particularly in the governmental sector. The government sector's strong performance may be achieved by broadening the scope of academic and practical research on DM in HR.
MOCA's workers' performance may be predicted utilizing this paper's focus on constructing a predictive model.
By analyzing and evaluating the aspects that might favorably impact the MOCA's workers' performance, categorization approaches were developed. Some of them had a significant impact on the predicted performance. When it came to improving performance, Proftrain. (X9) was shown to be the most impactful component (X3). As a result of the three trials that were conducted, SVM was shown to be the best classifier for generating the predictive model, with an accuracy of 86.90 percent. Experiments were carried out using the WEKA toolset. An updated version of this model or one that incorporates more information may be used by HR managers and decision makers to forecast the performance of prospective workers who will be promoted, to anticipate the performance of recently-appeared personnel, and so on. To improve the accuracy of the prediction model, it is advised that the dataset utilized be supported by a larger number of workers in the future. In order to verify these results, additional categorization approaches, such as Neural Network (NN), fuzzy logic, and many more, need be tested.

References:

[1]L. Sadath, (2013) 'Data Mining as a Tool for Knowledge Management in Human Resource,' International Journal of Innovative Technology and Exploring Engineering, Vol. 2, Issue 6, April2013.'
[2]"Introduction to Data Mining with Case Studies," by G. K. Gupta, ISBN 81-203-3053-6, 2006