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Employee Performance Prediction using Machine Learning Algorithms

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ABSTRACT

Organizations are always working towardsincreasing their productivity and growingbigger by the day. It owes a lot to its employees. Employee productivity and efficiency drives a company's growth. Therefore, companies need to ensure that clear objectives and expectations are set for their employees and the same is communicated to them too but setting goals is not enough. Itis equally important to evaluate, measure, monitor, and enhance employee performance on these set goals on a recurring basis. For, an organization to achieve desired goals, every employee from the CEO to the junior-most levelneed to contribute. Performance, under-performance, and non-performance of each employee reflect overall organizational performance. To ensure that organizational performance is not affected, employees should be engaged and motivated. Adopting an agile and continuous Performance Management System can enable organizations to drive these benefits regularly. An employee evaluation is the assessment and review of a worker's job performance. Most companies have an employee evaluation system wherein employees are evaluated on a regular basis. Performance Rating is the Step in the work measurement in which the analyst observes the worker's performance and records a value representing that performance relativeto theanalyst's concept of standard performance.

Key words: Human Resources, Employee Performance,Naive Bayes

INTRODUCTION

Performance Rating is the Step in the work measurement in which the analystobserves the worker's performance and records a value representing that performance relative to the analyst's concept of standard performance. Organizations arealways working towards increasing their productivity and growing bigger by the day. It owes a lot to its employees. Employee productivity and efficiency drives a company's growth. Therefore, companies need to ensure that clear objectives and expectations are set for their employees and the same is communicated to them too but setting goals is notenough. It is equally important to evaluate, measure, monitor, and enhance employee performance on these set goals on a recurring basis. For an organization to achieve desired goals, every employee from the CEO to the junior-most level need to contribute. Performance, under-performance, and non- performance of each employee reflect overall organizational performance. To ensure that organizational performance is not affected, employees should be engagedand motivated. Adopting an agile and continuous Performance Management System can enable organizations to drive these benefits regularly. An employee evaluation is the assessment andreview of a worker'

LITERATURE SURVEY

Research on Employee Performance Prediction Based on Machine Learning done by Jia Yuan[1] in the Year 2022. This paper constructs a prediction model based onmachine learning algorithm and enterprise human big data, and predicts the performanceof enterprise employees. Empirical research showsthat this method and the performance prediction model can accurately predict employee performance. At the same time, in the data construction stage, it focuses on the collection of employee attendance information and data construction. The experimental results show that this type of data is feasibleand accurate for accurately predicting employee performance.

Employee's Performance Analysis and Prediction Using K-means Clustering & Decision Tree Algorithm done by Ananya & Shamim, S. M. & Zaman, Md. Shahid & Rahman, Md in the Year 2018. Employee is the key element of the organization. Thesuccess or failure of an organization depends on the employee performance. Hybrid procedure based on Data Clustering and Decision Tree of Data mining method may be used by the authority to predict the employees' performance for the next year. This paperpresents how data clustering method can be applied for evaluating the employee'sperformance as well in decision making process. Different performance evaluation factors like personality, punctuality, tact oral expression etc hasbeen studied. The result of this paper predicts the number of employee those are selected for promotion or designation and discharged according to their performance.

PROPOSED SYSTEM:

System Includes architecture based on web development which follows the workflowas given in the above introductionpart which gives general idea about the system. Provides a system, method and computer program product for tracking the performance of an employee. Various details relating to each activity undertaken by the employee arecaptured. The analyzed and observed details may be used to monitor the activities currently being performed by the employee, generating reports detailing the time spent by the employee onvarious activities, availability of the employee.

The proposed solution model improves the accuracy by employing a feature selection algorithm. By filtering into 30 features of the initial dataset, the algorithm selects those that are critical in influencing the outcome of the prediction. Therefore, by having a few features, irrelevant features do not influence theaccuracy of the model and its prediction. Furthermore, the prediction model is trained through ensemble learningwhere multiple learning models are used. By using multiple modelswhen conducting predictions, the outcomes are not bias to only one model. Hence, we demonstrate that the results fromall the models are used and counted to determine the majorityof votes. For example, if the majority of the models indicate that an employee performance is good, then, the final prediction of the ensemble shows that the employee performance is good.

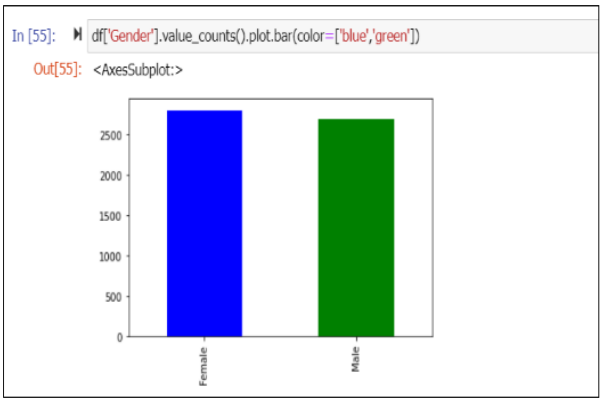
METHODOLOGY

This research follows CRIPS-DM methodology. CRIPS- DM offers standardized steps to conduct machine learningproject. It is a well- know methodology in many industry and can be used with different tools and techniques. It has six phases: business understanding, data understanding, data preparation, modelling,

evaluation and deployment[20]. In the business understanding step, business objectives, planning, success criteria, risk assessment, cost-benefit of the machine learning task is studied extensively. In this research, business objectivesisto reduce cost turnover rate of employee.

RESULT

With the Naïve Bayes method and measure an updated performance score as the objective variable, with 96.77% accuracy. This Naïve Bayes model takes 0.01 seconds to build with hardware described previously. Figure 1 displays the number of instances with a degree of accuracy. It shows that the number of instances is related to the level of accuracy. Asnumber of instances getting increased, the higher the accuracy became. Table 2 shows the confusion matrix result. There are more true positives than false positives and more false negatives than false positive



CONCLUSION

This study shows that human resource can plays an essential role in company growth. A human resource department need anassessment whether the employee wouldcomply company's wants. They can use of machine learning technology to predict employee's resignment before it happens and can decide in advance how to face it. Fromthe evaluation, correctly classifiedinstance is 95.48% using the proposed model of Naïve Bayes. This is shows that the naïve bayes technique is very good at predicting. Alongside, based on the confusion matrix, it found aslight amount of false-positive result that means the cost of Using the naïve bayes technique is small.

REFERANCES

[1] L. Sadath, (2013) "Data Mining: A Tool for Knowledge Management in HumanResource," International Journal of Innovative Technology and ExploringEngineering, Vol. 2, Issue 6, April 2013.

[2] G. K. Gupta (2006) "Introduction to Data Miningwith Case Studies" ISBN-81-203-3053-6.

[3] AI-Radaideh, Q. A., AI-Shawakfa, E.M., and AI- Najjar, M. I., (2006) "Mining Student Data using Decision Trees", International Arab Conference on Information Technology(ACIT'2006), Yarmouk University, Jordan, 2006.

[4] Surjeet K. Y., Brijesh B., Saurabh P., (2011)"Data Mining Applications: A comparative Study forPredicting Student's performance", International Journal of Innovative Technology and Creative Engineering, Vol.1 No.12 (2011) 13-19.

[5] Jantan, H., Hamdan, A. R., & Othman, Z. A. (2010b). "Human talent prediction inHRM using c4.5 classification algorithm". International Journal on Computer Scienceand Engineering, 2 (08-2010), PP. 2526–2534 [D].

[6] Islam, M. J., Wu, Q. M. J., Ahmadi, M., and Sid- Ahmed, M. A., (2010), "Investigating the Performanceof Naive- Bayes Classifiers and K- Nearest Neighbor Classifiers" Journal of Convergence Information Technology Volume 5, Number 2, April 2010.