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# Machine Learning for Recruitment Prediction

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**ABSTRACT:** Before they graduate from college, it is the goal of every student to have a job offer in their hands. Students can get an understanding of where they are and what needs to be done to get a good placement by using a placement chance predictor. A placement predictor is a method that can forecast the likelihood or the kind of employer where a pre-final year student will likely be placed. Therefore, a prediction system could aid in an institution's future academic planning. Numerous prediction models were introduced by examining the dataset of students from the previous year following the development of data mining and deep learning. According to the company's requirements, a placement predictor needs to be created to estimate the likelihood that a student will be put in a particular organization. The placement predictor uses a number of parameters that can be used to evaluate the student's skill level. While some criteria are based on university standards, others come from assessments made using the placement management system itself. By combining these data points, the predictor must correctly forecast whether or not the student will be hired by a company. The predictor has been trained using information from previous pupils. To do this, we will use the data set we collected to train an algorithm, which will then be tested against some test data to determine the algorithm's correctness.

**KEYWORDS:** Recruitment Prediction, Classification, SVM Algorithm, Feature Extraction, Data Pre-processing etc.

## I. INTRODUCTION

As part of creating a placement management system at the college level, we want to create a placement predictor that estimates the likelihood that students will be placed and aids in improving their abilities prior to the hiring process. For the placement prediction, machine learning is being used. Support Vector Machine (SVM) is used to group students into the right clusters, and the results will help the students' profiles. The comparison of various machine learning techniques can aid recruiters as well as students during placements and other relevant activities by noting the accuracy of reputable algorithms.

### A. Motivation

Before selecting a résumé, our method predicts if an employee will join. The forecast is based on a few significant variables, such as the employee's gender, educational background along with their respective scores in exams, it also checks whether said person is a fresher, etc. Finding potential employees and inspiring them to apply for jobs are the objectives of recruitment. Future recruiting procedures can benefit from the precise prediction since it makes it possible to choose qualified candidates rapidly. Businesses can fulfil their goals and objectives thanks to the cooperation between management and workers. Making a precise prediction not only increases employee retention but also reduces the cost associated with a bad hire.

### B. Problem Statement

Candidates must finish the tasks as quickly and cheaply as possible before resume selection and the whole procedure. This prediction is supported by a few pertinent quantitative elements barring in mind characteristics that are used to forecast candidate hiring in addition to quantitative factors like gender, work history, and aptitudes, utilizing various statistical methods for feature selection and developing the model with a range of machine learning algorithms. Who will join the conclusion can be predicted with the use of these findings.

## II. LITERATURE SURVEY

Jagan Mohan Reddy D 2nd Sirisha Regella 3Srinivasa Reddy Seelam et.al. This study's primary goal is to forecast when hiring effective candidates will occur, as well as how quickly and cheaply the entire hiring process will go. In order to predict the hiring candidates, this prediction is based on some pertinent quantitative and qualitative attributes, such as gender, educational background being the primary focus, etc.

It uses various statistical measures on feature selection and different machine learning algorithms to build the model. The applicants who ultimately join will be able to be predicted using these results.

Ali A. Mahmoud; Tahani AL Shawabkeh; Walid A.Salameh; Ibrahim Al Amro et.al. This study suggests a further conceptual model for applying artificial intelligence (AI) to the hiring process along with performance management

and social screening to forecast the predicted performance of the new candidate by examining past performances and employment conditions. The decision-makers in the employment process will receive an additional parameter thanks to this strategy. Although, this method is a step in the right direction for preventing bad hiring, it needs a lot of historical data, including performance tracking, personal data gathered from various sources like surveys and social media, and employee conditions related to the time of previous and current employees, in order to produce results that are more accurate and efficient.

Nikhil Kumar; Ajay Shanker Singh; Thirunavukkarasu K; E. Rajesh et.al. A placement predictor is a tool that can determine the likelihood or type of business that a pre-final year student will have possibilities of placing. While a forecasting programme could aid in an institution's academic planning for upcoming years. Numerous predictive models were used by studying the data set from the previous academic year thanks to the development of data mining and machine learning. This paper offers a literature review on various statistical selection models for graduate engineering students in their pre-final year.

M. Siva Surya; M.Sathish Kumar; D. Gandhimathi et.al. This study's objective is to examine student data from recent years and use it to forecast current students' placement prospects. There is a prediction algorithm built into this model. Any help in this regard will boost a university's ability to recruit pupils. Long-term, this will be advantageous for both the university and the students. This model contains a prediction technique. The data for the investigation was preprocessed appropriately and obtained from the same organisation that would perform the placement prediction. The proposed models were compared to other traditional classification methods in terms of accuracy. The findings show that the proposed method significantly outperforms the other algorithms.

WucherlYoo; Alex Sim; Kesheng Wu et.al. We set out to study whether these unsuccessful job statuses could be anticipated from known job characteristics. To explore this possibility, we have developed a job status prediction method for the execution of jobs on scientific clusters. The Random Forests algorithm was applied to extract and characterize the patterns of unsuccessful job statuses. Experimental results show that our method can predict the unsuccessful job statuses from the monitored ongoing job executions in 99.8% the cases with 83.6% recall and 94.8% precision. This prediction accuracy can be sufficiently high that it can be used to mitigation procedures of predicted failures.

### III. METHODOLOGY

In this research, we employ machine learning methods to forecast students' placement status based on a dataset. The dataset's parameters that are taken into account for the prediction. SVM is used in machine learning to forecast placement.

Support Vector Machine is the technical term. It is a supervised machine learning method that can be applied to classification and regression issues. However, classification issues are the main purpose for it.

A data item that represents a point in n-dimensional space is one in which each feature's value corresponds to a specific coordinate. The number of features you have in this case is n. We accomplish classification after plotting the data item by locating the hyper-plane that effectively distinguishes the two groups.

The challenge now is deciding which hyper-plane to pick so that it is the proper one. Several machine learning algorithms may be implemented using the Python library scikit-learn, and SVM can also be utilized with this library.

IV. SYSTEM ARCHITECTURE

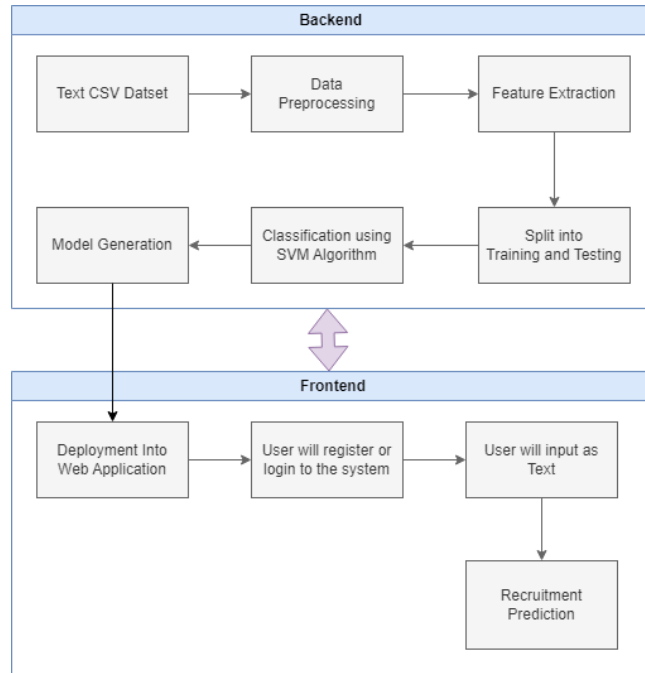


Fig. System Architecture

Describe a dataset. For a machine that doesn't see data the same way that people do, the data collected should be made standard and intelligible. Real-world data typically includes noise, missing values, and may be in an undesirable format, making it impossible to build machine learning models on it directly. Data pre-processing is necessary to clean the data and prepare it for a machine learning model, which also improves the model's accuracy and effectiveness.

By extracting new features from the current ones (and then deleting the original features), feature extraction tries to reduce the number of features in a dataset. The majority of the information in the original collection of features should then be summarized by this new, smaller set of features. The Classification algorithm, which uses supervised learning to categorize new observations in light of training data, is used to recognize new observations. In classification, a program makes use of the dataset or observations that are provided to learn how to categorize fresh observations into various classes or groups.

V. SIMULATION RESULTS

A method called the recruitment prediction system forecasts the placement status of final-year B-Tech students.

In the Python environment, several machine learning methods are employed for data analysis and prediction. We have used the SVM algorithm for the placement prediction. The outcome of applying SVM machine learning techniques, using the same dataset is as shown in the following screenshots. We predicted students' placement status and measured algorithm's accuracy as well as its True Positive, False Positive, False Negative, and True Negative rates.

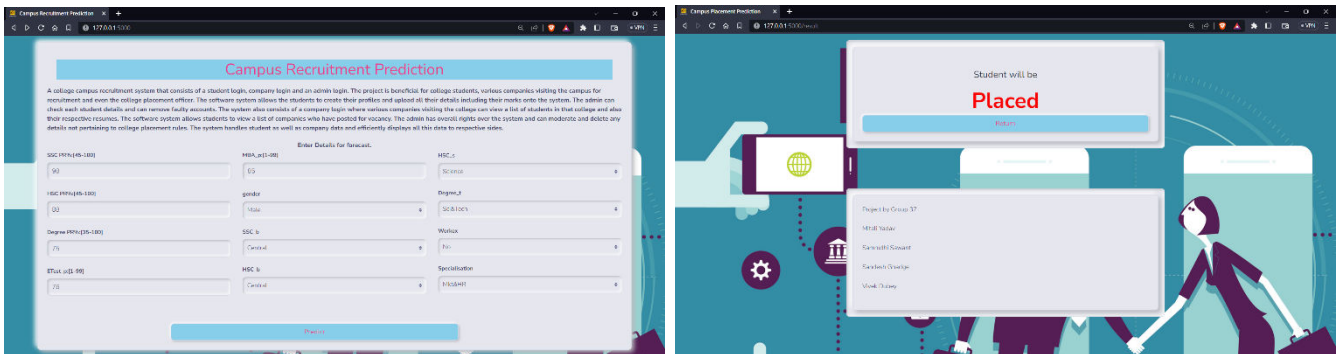


Fig. Placed Input and Output



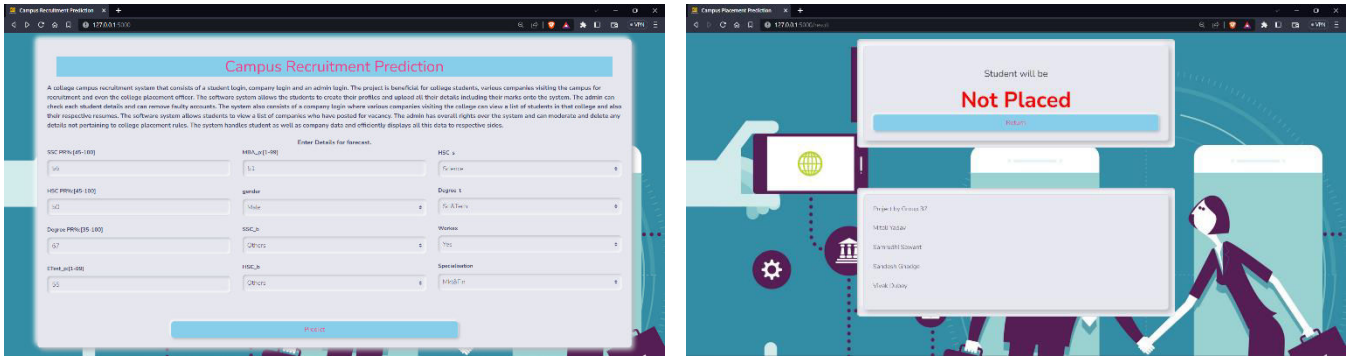


Fig. Not Placed Input and Output

## VI. CONCLUSION AND FUTURE WORK

For a corporation to grow, predicting personnel recruitment is essential. Making an informed choice when hiring lowers the expense of a poor choice while also enhancing employee retention.

In order to improve organizational business performance, effective talent acquisition assures quality hires of the relevant individuals. In this study, we measure the probability or rate of candidates quitting after being selected and produce precise projections for upcoming hiring processes using a binary classification machine learning model. A candidate may withdraw from consideration for the position for a variety of reasons, which have been identified.

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