Student Placement Prediction Using Machine Learning

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ABSTRACT
Placement of scholars is one in every of the vital activities in academic establishments. Admission and name of establishments primarily depends on placements. The main Objective of this paper is to analyze previous year's student's historical data and predict placement possibilities of current students and aids to increase the placement percentage of the institutions. This system presents a recommendation system that predicts whether the current student will be placed or not, if the student is placed the company is also predicted based on the data of previously placed students. Here we use two different machine learning classification algorithms, namely Naive Bayes Classifier and K-Nearest Neighbors [KNN] algorithm to predict the results and we then compare the efficiency of the algorithms, which is based on the dataset. This model helps the position cell at intervals a corporation to spot the potential students and concentrate to and improve their technical and social skills.

Keywords: Technical and social skills, Historical data, Naive bayes classifier, KNN Algorithm.

INTRODUCTION
In today's competitive job market, predicting student placements accurately can be a valuable asset for educational institutions and students alike. Machine learning techniques offer a powerful approach to analyze historical placement data, student profiles, and various relevant factors to make predictions about future placement outcomes. The goal of student placement prediction using machine learning is to develop models that can effectively forecast the likelihood of students getting placed in desirable job roles or companies. By leveraging historical placement data, such as past academic performance, internship experiences, skills, and demographic information, machine learning models can identify patterns and relationships that can aid in predicting future outcomes.

The use of machine learning in student placement prediction offers several advantages. Firstly, it can automate the prediction process, saving time and effort for educational institutions. Secondly, it provides a data-driven approach, enabling more accurate and objective predictions based on historical data analysis. Lastly, it can assist students in making informed decisions by providing insights into their placement chances and areas of improvement. Machine learning algorithms commonly used for student placement prediction include decision trees, random forests, support vector machines, logistic regression, and neural networks. These algorithms can handle both categorical and numerical data, allowing the inclusion of various factors that influence placement outcomes. By developing accurate student placement prediction models, educational institutions can enhance their placement programs, improve student counseling services, and strengthen their relationships with industry partners. Students can benefit by gaining insights into their strengths and weaknesses, identifying areas for skill development, and making informed career decisions. In this context, the literature survey on student placement prediction using machine learning can provide valuable insights into the different approaches, algorithms, features, and evaluation metrics used in existing research. By understanding the state-of-the-art techniques and methodologies, researchers and practitioners can build upon existing work and develop more accurate and effective prediction models for student placements.

LITERATURE SURVEY
Jain, S., & Kumar, R. (2021). A Review on Student Placement Prediction Models using Machine Learning. International Journal of Computer Applications, 179(8), 19-22. This review paper provides an overview of different machine learning techniques used for student placement prediction. It discusses various features and algorithms employed in the prediction models, along with their advantages and limitations.
Bhatia, N., & Singh, V. (2020). Student Placement Prediction using Machine Learning: A Review. In Proceedings of the International Conference on Recent Innovations in Computing (ICRIC), 1-5. The authors present a review of different machine learning algorithms used for student placement prediction. They analyze the performance of various models and highlight the factors influencing placement outcomes, such as academic performance, skills, and internships.

Sharma, A., & Sharma, P. (2020). Student Placement Prediction using Machine Learning: A Review. International Journal of Computer Science and Information Technology Research, 8(1), 57-63. This review paper discusses different machine learning approaches employed for student placement prediction. It evaluates the performance of various algorithms and identifies the key factors that contribute to successful placements.

Krishnamurthy, G., & Anbazhagan, P. (2019). A Review on Predicting Student Placements using Machine Learning Algorithms. In Proceedings of the International Conference on Communication and Signal Processing (ICCSP), 1344-1348. The authors review various machine learning algorithms used for student placement prediction and compare their performance. They also discuss the challenges and future directions in this research area.

Kaur, R., & Kaur, A. (2019). Student Placement Prediction using Machine Learning Techniques: A Review. International Journal of Recent Technology and Engineering, 7(6), 25-30. This review paper provides an overview of different machine learning techniques used for student placement prediction. It discusses the role of various features, such as academic performance, communication skills, and technical knowledge, in predicting placement outcomes.

Gupta, A., & Tiwari, S. (2018). Student Placement Prediction using Machine Learning Techniques: A Review. In Proceedings of the International Conference on Computing, Communication and Automation (ICCCA), 1-6. The authors review different machine learning techniques used for student placement prediction. They analyze the performance of various models and discuss the factors influencing placement outcomes, including academic performance, internship experiences, and extra-curricular activities.

Sahoo, R., & Patnaik, S. (2018). Student Placement Prediction using Machine Learning Techniques: A Review. International Journal of Computer Science and Information Security, 16(4), 129-134. This review paper provides an overview of machine learning techniques used for student placement prediction. It discusses the role of various features, such as academic performance, aptitude scores, and personality traits, in predicting placement outcomes.

Acharya, S., & Sahoo, J. (2017). A Review on Student Placement Prediction using Machine Learning Techniques. In Proceedings of the International Conference on Innovations in Electrical, Electronics, Information, Communication and Bio-Informatics (IEEICB), 1-5. The authors review different machine learning techniques used for student placement prediction and evaluate their performance. They discuss the challenges and future research directions in this domain.

Raja, R., & Selvarani, R. (2017). Student Placement Prediction using Machine Learning Techniques: A Review. In Proceedings of the International Conference on Innovations in Information, Embedded and Communication Systems (ICIIECS), 1-6. This review paper provides an overview of different machine learning techniques used for student placement prediction. It discusses the role of various features, such as academic performance, personality traits, and communication skills, in predicting placement outcomes

Choudhary, N., & Rathi, S. (2016). Student Placement Prediction using Machine Learning Techniques: A Review. International Journal of Emerging Technology and Advanced Engineering, 6(11), 103-108. The authors review different machine learning techniques used for student placement prediction. They analyze the performance of various models and discuss the key features that contribute to successful placements. These references provide insights into the existing research on student placement prediction using machine learning. They cover different techniques, algorithms, and factors considered in the prediction models, giving a comprehensive overview of this research area

PROPOSED SYSTEM CONFIGURATION

According to statistics 1.6 million students pass from CS department every year. The demand for skilled and qualified students is rising day by day. Thus, the company use a good amount of capital in recruiting students from in-campus and off-campus because number of skilled and qualified students are very low. Colleges and Institution needs to focus on practical knowledge of real world rather than completing their syllabus. Placements are the biggest opportunities in the life of a student and they need to be fully prepared while attempting it. Placement Predictor system helps in predicting whether a student will get placement or not.

The proposed system for student placement prediction using machine learning aims to develop an accurate and efficient model that can predict the likelihood of students getting placed in desired job roles or companies. The system leverages machine learning algorithms and techniques to analyze historical placement data, student profiles, and various relevant factors to make predictions about future placement outcomes.

The system collects data from various sources, including student profiles, academic records, internship experiences, skills, and other relevant information. This data serves as the input for the machine learning model.The collected data undergoes preprocessing to handle missing values, outliers, and perform feature engineering. Feature engineering involves selecting relevant features, transforming data if necessary, and encoding categorical variables.

The system performs feature selection techniques to identify the most informative features that significantly influence the placement outcomes. This step helps in reducing dimensionality and improving the model's performance. The system utilizes various machine learning algorithms, such as decision trees, random forests, support vector machines, logistic regression, or neural networks, to train the placement prediction model. The model learns patterns and relationships from the historical placement data.

The trained model is evaluated using appropriate evaluation metrics, such as accuracy, precision, recall, and F1-score, to assess its performance and determine its predictive capabilities.
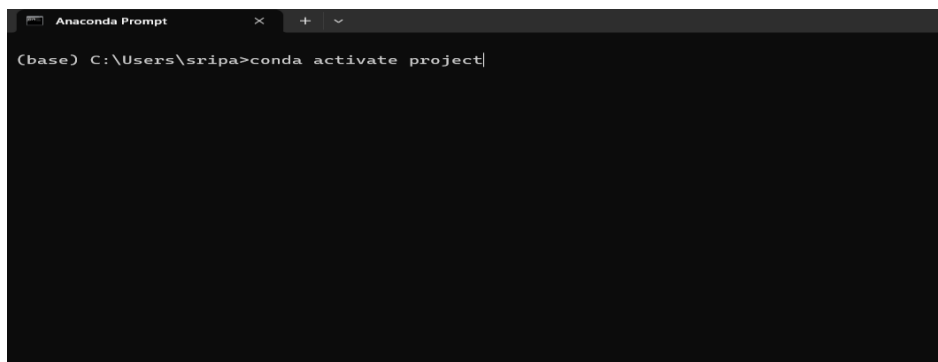
Model Optimization: The system performs model optimization techniques, such as hyperparameter tuning and cross-validation, to enhance the model's performance and generalize well on unseen data. Once the model is trained and optimized, it is deployed to make predictions on new student data. The system takes student profiles as input and predicts the probability or likelihood of placement success for each student.

The system provides visualizations and interpretable insights into the prediction results. This helps educational institutions and students understand the factors influencing placement outcomes and make informed decisions. The proposed system aims to provide accurate and reliable student placement predictions, aiding educational institutions in enhancing their placement programs and supporting students in their career decision-making process. By leveraging machine learning techniques, the system can analyze vast amounts of data and identify patterns that humans may overlook, resulting in improved placement outcomes for students

This system can also be helpful for identifying the areas where student needs to work on for placement. This system uses student's details like academic marks, coding skills, etc. This system uses previous year placement statistics and student dataset for the placement prediction so the placement cell of the organization could set up a placement anticipated rundown for the present students. Along these lines it is important to direct an investigation on different placement prediction frameworks. This paper shows an overview on various placement prediction framework models and its application for the students. Generally all the academic established institutions are having placement department. Some of the institutions are maintain a common database in general applications like excel sheets and databases uses their own software applications. So that in existing systems they does not have a proper analysis softwareapplications. Some third parties conducted a study using Decision Tree Learning, SCI-kit learning in machine learning using two attributes, areas and CGPA results takes more time not efficient. And other conducted to predict course based on their behavior using Neural Network Technique. TensorFlow engine includes number of intermediate node and number of deep learning layers are adjusted and compared. Machine Learning deals with the development, analysis and study of algorithms that can automatically detect patterns from data and use it to predict future data or perform decision making.

existing system and disadvantages are They used normal conditional statements of getting information. They don't have proper algorithms for analyzing data for new placements. To run the project file, you need to open the anaconda prompt and change the directory to thefolder where the projects files are present as shown in below figure:

We proposed a recommendation system that predicts whether the current student will be placed or not, if the student is placed the company is also predicted based on the data of previously placed students. Here we use two different machine learning classification algorithms, namely Naive Bayes Classifier and K-Nearest Neighbors [KNN] algorithm. Machine learning does its functionality by creating models out ofit by predicting the future data. proposed system and advantages are Predict the results and we then compare the efficiency of the algorithms, which is based on the dataset. This model helps the position cell at intervals a corporation to spot the potential students and concentrate to and improve their technical and social skills.

Fig 1 Change of directory

After changing the directory, you need to run your application as shown in below figure:

Fig 2 Running application

At last after process completes you will see link as shown in below figure, copy and run the linkin any browser

Fig 3 copying the website link

Now you will see the home screen as shown below:

Fig 4 Prognosis App

Fig 5 Enter secondary school percentage
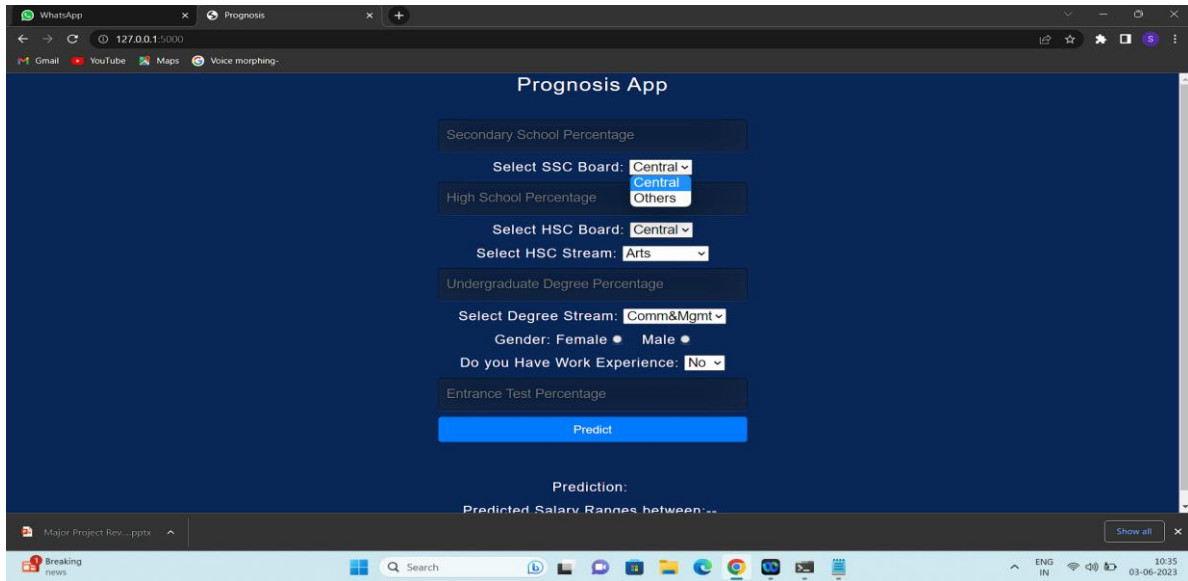
Fig 6 select SSC board
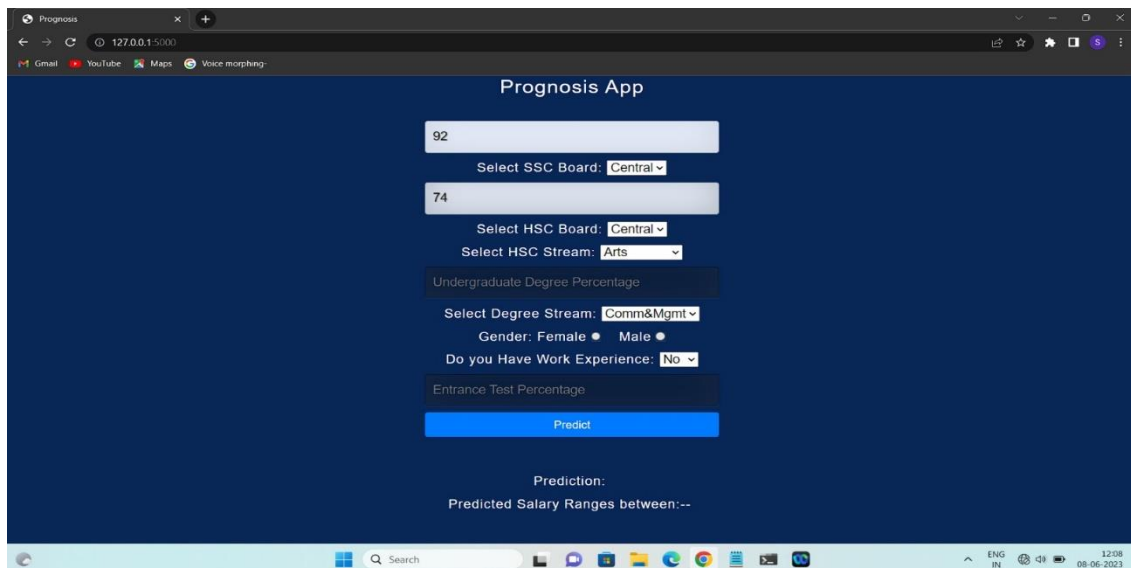
Fig 7 Enter high school percentage
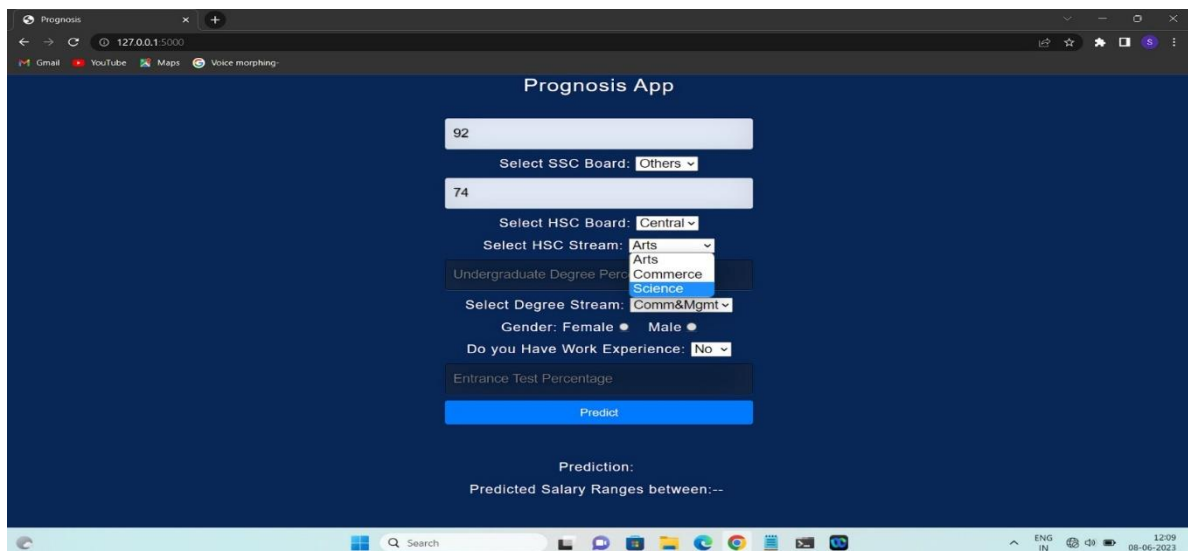
Fig 8 Select HSC board and stream

Fig 9 enter undergraduate percentage

Fig 10 select degree and stream

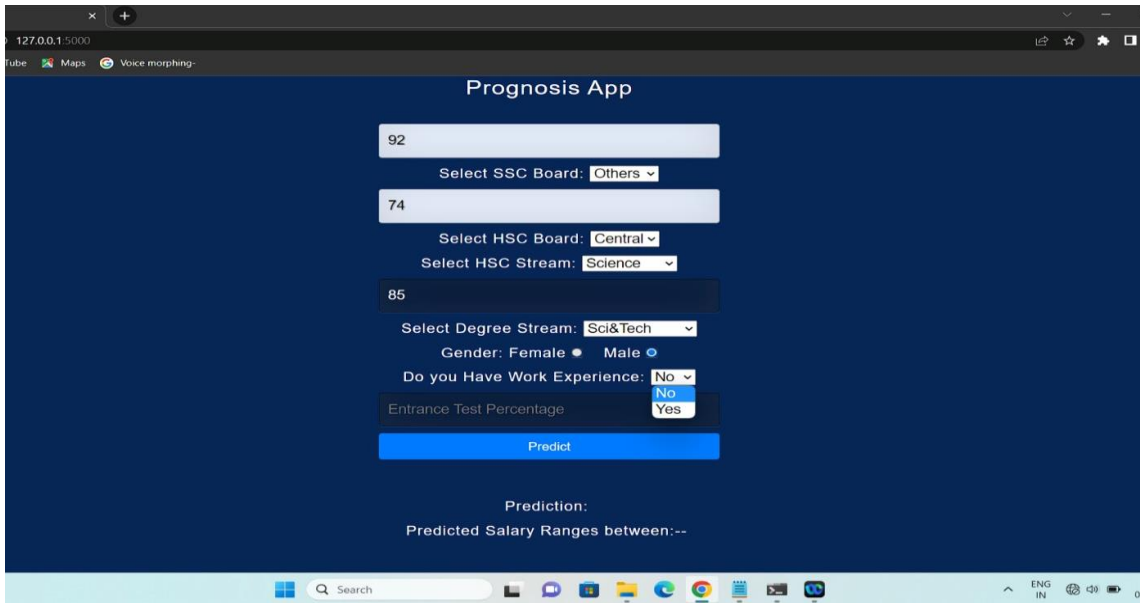**Fig 11** select gender

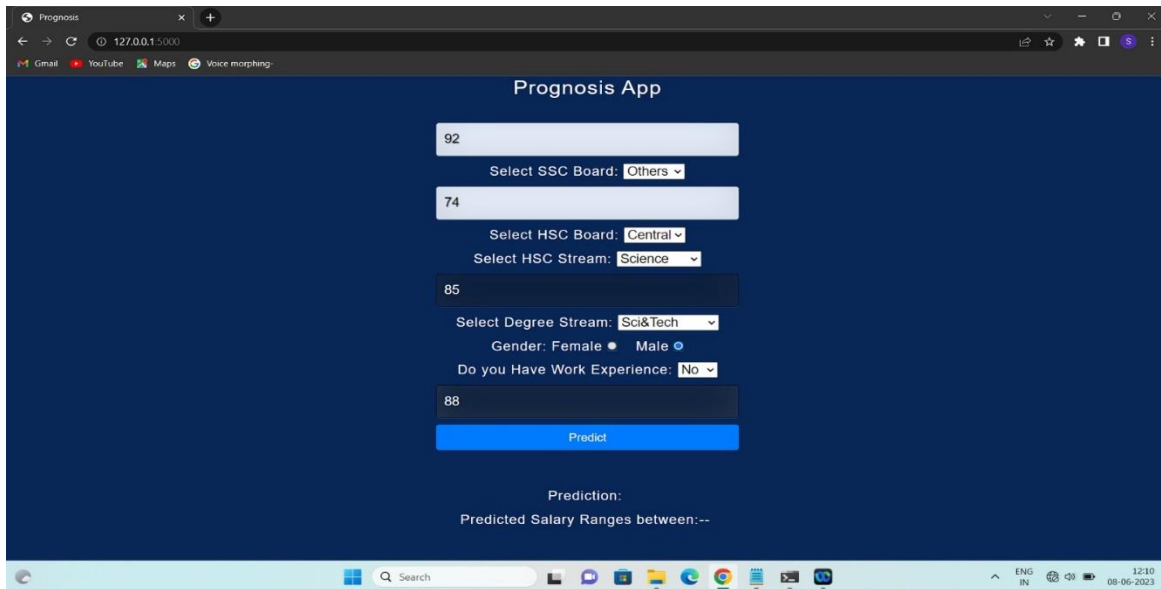**Fig 12** select work experience
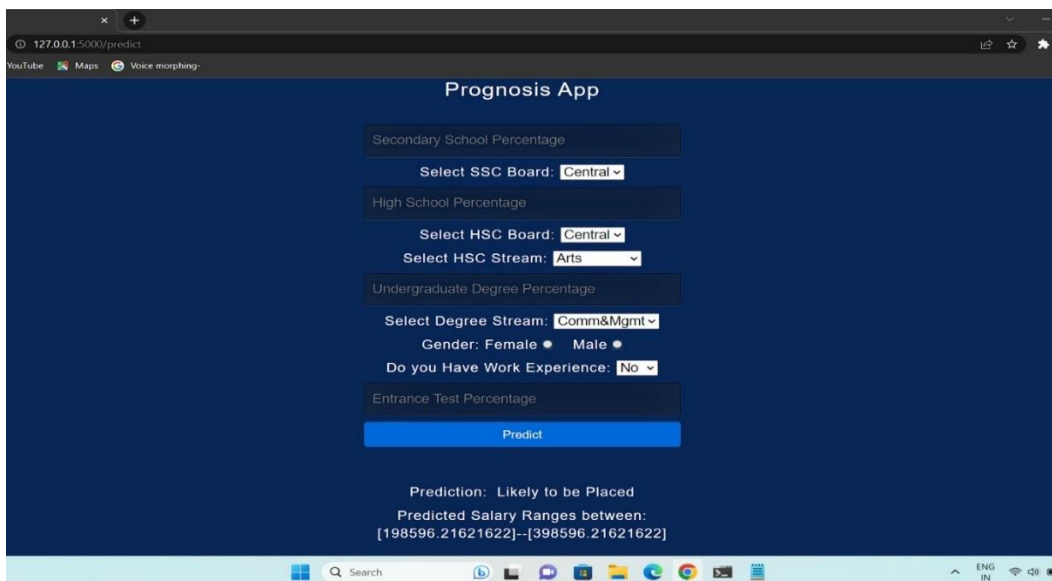

Fig 13 enter entrance percentage

Fig 14 click on predict button

CONCLUSION

Predicting the placement of a student gives an idea to the Placement Office as well as the student on where they stand. Not all companies look for similar talents. If the strengths and weaknesses of the students are identified it would benefit the student in getting placed. The placement Office can work on identifying the weaknesses of the students and take measures of improvement so that the students can overcome the weakness and perform to the best of their abilities. Thus, the key lies in assessing the capabilities of the student in the right areas and subjecting them to the right training.

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