A

Mini Project Report

on

Pro Placer Insights using SVM

Submitted in partial fulfillment of the requirements for the degree

Third Year Engineering – Computer Science Engineering (Data Science)

by

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Academic year: 2023-24

CERTIFICATE

This to certify that the Mini Project report on **Pro Placer Insights using SVM** has been submitted by Vanshika Salve (21107010), Kashish Yadav (21107026) and Khushi Chhoker (21107055) who are bonafide students of A. P. Shah Institute of Technology, Thane as a partial fulfillment of the requirement for the degree in **Computer Science Engineering (Data Science)**, during the academic year **2023-2024** in the satisfactory manner as per the curriculum laid down by University of Mumbai.

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ACKNOWLEDGEMENT

This project would not have come to fruition without the invaluable help of our guide **Ms. Aavani N**. Expressing gratitude towards our HoD, **Ms. Anagha Aher**, and the Department of Computer Science Engineering (Data Science) for providing us with the opportunity as well as the support required to pursue this project. We would also like to thank our project coordinator **Ms. Poonam Pangarkar** and **Ms. Sheetal Jadhav** who gave us her valuable suggestions and ideas when we were in need of them. We would also like to thank our peers for their helpful suggestions.

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ABSTRACT

Predicting the performance of a student is a nice concern to the upper education institutions. The purpose of placement management system is to modify the present manual system by the assistance of computerized software system fulfilling their needs, so their valuable data/information is stored for a longer time with simple accessing and manipulation of data. Student's academic achievements and their placement in campus selection is a difficult issue in current manual system. Monitoring the student's progress for his or her campus placement helps in monitoring the student's progression within the academic surroundings. the aim of organizations is to supply superior opportunities to their students. This proposed student prediction system is most important approach which can be used to differentiate the student data/information on the basis of the student performance. Managing placement and coaching records in any larger organization is quite tough because of the large number of students. This system can classify the student knowledge with ease and can be useful to several educational organizations. There are several classification algorithms and mathematics-based techniques which can be taken nearly as good assets for classifying the students' information set in the education field. In Our system, SVM algorithm is applied to predict student performance which can facilitate to identify performance of students and also provides suggestion to improve performance for students such as we are going to classify the student's knowledge set for placement and non- placement classes based on that result, education organizations can give superior training to their students. Based on data received by system, student's performance is analyzed in numerous views to check the achievements of the students through their activities and suggests improvement for better placement.

Chapter 1

Introduction

The Training and the Placement activity in college is one of the important activities in the life of student. Therefore, it is very important to make a process hassle free so that, students would be able to get required information as and when they require. Also, with the help of the good system it would be easy for staff of the Training and Placement cell to update students easily and the work would be less. The “Pro Placer Insights using SVM” is developed to override the problems prevailing in practicing manual system. This software is supported to eliminate and, in some cases, reduce the hardships faced by the existing system. Moreover, this system is designed for a need of company to carry out operations in smooth and effective manner. Majority of the companies are focusing on campus recruitment to fill up their positions. The companies identify talented and qualified professionals before they have completed their education. This method is best way to work on a right resource at the right time to get good companies at beginning of their career. Every organization, whether big or small, has challenges to overcome and managing the information of placement, training, placement cells, technical skill. Every training and placement management system has different training needs; therefore, we design exclusive employee management system that are adapted to your managerial requirements. This is designed to assist in strategic planning and will help you ensure that your organization is equipped with the right level of information and details of your future goals. Also, for those busy executives who are always on the go, our systems come with remote access features, which will allow you to manage your workforce anytime. These systems will ultimately allow you to manage resources. Students studying in final year of engineering focus on getting employed in reputed companies. The prediction of placement status that B.E students are most likely to achieve will help students to put in a harder work to make appropriate progress. It will also help Faculty as well as placement cell in an institution to provide proper care towards improvement of students in a duration of course. A high placement rate is the key entity in building the reputation of an educational institution. It will also help the placement cell in an institute to provide proper care towards improvement of students. This system has the significant place in the educational system of any higher learning institution.

1.1. Purpose

The purpose of the student performance for placement activity project is to conduct a comprehensive analysis of the factors that influence students' success in securing placement opportunities. By examining various aspects of student performance, such as academic achievements, extracurricular activities, soft skills development, and internship experiences, the project aims to identify patterns and correlations that can inform strategies for enhancing placement outcomes.

The project seeks to uncover insights into the relationships between different performance indicators and placement success rates. By utilizing data visualization techniques and statistical analysis methods, the project aims to provide actionable insights to educational institutions, career counsellors, and students themselves. Ultimately, the project wants to help more students find good jobs by understanding what works best.

1.2. Problem Statement

In today's dynamic job market, students often face significant challenges when it comes to accurately predicting their future career prospects and making informed decisions about their education and job opportunities. Without access to a reliable prediction system, students find themselves navigating through a sea of uncertainty, lacking valuable insights and guidance crucial for choosing the right path for their future endeavours. Additionally, the lack of alignment between academic curricula and industry demands poses a formidable challenge for students aiming to secure placement opportunities. Without a clear understanding of the skills and competencies valued by employers, students may struggle to tailor their academic pursuits and extracurricular activities to meet industry expectations. This disconnects between educational offerings and market demands not only undermines students' preparedness for the workforce but also compromises the relevance and efficacy of educational programs in addressing real-world needs.

Moreover, the absence of accurate predictions threatens to obscure potentially lucrative job opportunities that align harmoniously with students' proficiencies and passions. Deprived of a comprehensive understanding of their potential career trajectories, students are left vulnerable to indecision and missed chances for professional advancement.

In light of these challenges, there is an urgent need for a comprehensive and data driven approach to evaluating student performance for placement activities. By developing standardized evaluation frameworks, leveraging data analytics tools, and fostering collaboration between educational institutions and industry stakeholders, it becomes possible to address the underlying issues and empower students with the resources and support needed to succeed in securing placement opportunities. Such initiatives not only level the playing field for all students but also contribute to a more equitable and inclusive job market, where individuals can thrive based on their merit and capabilities.

1.3. Objectives

We have achieved a comprehensive evaluation system that assesses student performance comprehensively, aiming to gauge their preparedness for placement opportunities. This entails examining not only academic performance but also extracurricular involvement, soft skills development, and practical experiences like internships. By adopting a holistic approach, we gain a well-rounded understanding of each student's strengths and areas for improvement in relation to securing placements.

We have also achieved the facilitation of easier job finding by connecting students with roles that suit them well, taking into account their performance in school and other activities. Through this approach, we assist students in discovering job opportunities that align with their skills and strengths, streamlining the job search process and enhancing their likelihood of success.

We have achieved an improved understanding of industry expectations among students, enhancing their chances of securing placements. This involves ensuring they are aware of what employers seek, enabling them to better align their skills and experiences with job requirements. Our goal is to bridge the gap between students' abilities and industry needs, equipping them for success in the job market.

We have achieved empowering students with the tools they need to make informed career choices. This involves providing them with information and guidance to comprehend their options and determine the best path for them. By empowering students in this manner, we enable them to seize control of their futures and pursue careers that resonate with their interests, skills, and aspirations.

1.4. Scope

The scope of the project encompasses a multifaceted exploration of various factors influencing students' readiness for placement opportunities. This includes an in-depth examination of academic performance, extracurricular engagements, soft skills development, and practical experiences such as internships. By delving into these areas, the project aims to provide a holistic understanding of the strengths and weaknesses of students in relation to securing placements in the job market. Additionally, the project seeks to explore the efficacy of existing career readiness programs and support mechanisms in preparing students for placement activities, as well as identifying areas for improvement. Furthermore, the project may involve the development of predictive modelling tools and data analytics frameworks to aid in the evaluation of student performance and the prediction of placement outcomes, thereby enhancing the effectiveness of placement initiatives and fostering students' success in securing meaningful employment opportunities.

Chapter 2

Literature Review

Professor. Ashok M Assistant Professor Apoorva A, “Data Mining Approach for Predicting Student and Institution's Placement Percentage,” 2016 International Conference on Computational Systems and Information Systems for Sustainable Solutions.[1]

In this paper, the author employs data mining techniques to predict student placements. The data is segmented into two parts: the training segment, comprising historical data of graduated students, and the current data segment, which includes data of present students. Using the historical data, the author designs an algorithm to calculate placement probabilities. Various data mining algorithms, including decision trees, Naive Bayes, neural networks, and a proposed algorithm, are applied, and decisions are evaluated using confusion matrices. From this study, several advantages and disadvantages emerge. One advantage is the utilization of multiple data mining algorithms, allowing for a comprehensive analysis of placement prediction performance. Additionally, the use of confusion matrices provides a robust method for evaluating classification accuracy. However, a potential disadvantage lies in the complexity of interpreting results from multiple algorithms, which may hinder the identification of the most effective approach.

Senthil Kumar Thangavel, Divya Bharathi P, Abijith Sankar, “Student Placement Analyzer: A Recommendation System Using Machine Learning”, International Conference on Advanced Computing and Communication Systems (ICACCS -2017), Jan. 06 - 07, 2017, Coimbatore, INDIA.[2]

In this paper, the author addresses the challenges encountered by institutes in predicting student placements. As the number of entities within an institute increases, the complexity of placement prediction escalates. However, the author proposes that machine learning can effectively tackle this intricate problem. By leveraging machine learning techniques, particularly classification and data mining algorithms such as Naïve Bayes, Decision Tree, SVM, and Regression, the author aims to predict student placements. The paper considers all aspects of students' academic records in this prediction process.

Furthermore, the paper may benefit from a deeper exploration of feature selection techniques and the consideration of additional evaluation metrics beyond classification accuracy to provide a more nuanced understanding of prediction performance.

Animesh Giri, M Vignesh V Bhagavath, Bysani Pruthvi, Naini Dubey, "A Placement Prediction System Using K-Nearest Neighbours Classifier", Second International Conference on Cognitive Computing and Information Processing (CCIP), 20164.[3]

From this paper, several advantages and disadvantages can be gleaned. One advantage lies in the utilization of the KNN classifier, which is known for its simplicity and effectiveness in classification tasks. Additionally, comparing the results with other machine learning models provides valuable insights into the relative performance of different algorithms for placement prediction. Furthermore, considering students' academic history and various skill sets enhances the predictive accuracy of the system by capturing multiple dimensions of students' capabilities. However, a potential disadvantage could be the limited scalability of the KNN algorithm, especially when dealing with large datasets. Additionally, the reliance on past two batches of data may introduce bias or limitations in the system's predictive capabilities, as it may not capture the full spectrum of student profiles and placement outcomes. Overall, the study contributes valuable insights into the application of machine learning for placement prediction, while also highlighting areas for further research and improvement.

Pushpa S K, Associate Professor, Manjunath T N, Professor and Head, Mrunal T V, Amartya Singh, C Suhas, "Class Result Prediction using Machine Learning", International Conference on Smart Technology for Smart Nation, 2017.[4]

In this paper, the result of a class is predicted using machine learning. Performance of students in past semester along with scores of internal examinations of the current semester is considered to predict whether the student passes or fails in the current semester before attempting the final examination. The author uses SVM, Naive Bayes, Random Forest Classifier and Gradient Boosting to compute the result. Boosting is an ensemble learning algorithm which combines various learning algorithm to obtain better predictive performance.

Additionally, the utilization of multiple machine learning algorithms allows for a comparison of their respective performance in predicting class results, thereby offering insights into the effectiveness of different techniques. Moreover, the incorporation of ensemble learning methods like Gradient Boosting enhances the predictive capabilities of the system by leveraging the strengths of individual algorithms. However, a potential disadvantage may arise from the complexity of interpreting results from multiple algorithms, which could pose challenges in identifying the most effective approach.

Apoorva Rao R, Deeksha K C, Vishal Prajwal R, Vrushak K, Nandini, “Student Placement Analyzer: A Recommendation System Using Machine Learning”, JARIIE-ISSN(O)-2395-4396.[5]

Now-a-days institutions are facing many challenges regarding student placements. For educational institutions it is much difficult task to keep record of every single student and predict the placement of student manually. To overcome these challenges, concept of machine learning and various algorithms are explored to predict the result of class students. For this purpose, training data set is historical data of past students and this is used to train the model. This software system predicts placement status in 5 categories viz dream company, core company, mass recruiter, not eligible and not interested in placements. This system is also helpful to weaker students. Institutions can provide extra care towards weaker students so that they can improve their performance. By use Naïve Bayes algorithm all the data will be monitor and appropriate decision will be provided.

Several advantages and disadvantages can be gleaned. One advantage is the automation and efficiency brought about by employing machine learning algorithms for placement prediction, relieving educational institutions of the burden of manual record-keeping and prediction tasks. Additionally, categorizing placement status into multiple categories allows for a more nuanced understanding of students' potential career paths and needs. Furthermore, the system's ability to provide targeted support for weaker students can significantly enhance their academic performance and overall prospects.

Chapter 3

Proposed System

The proposed system represents a paradigm shift in the conventional approach to matching students with suitable job opportunities, leveraging the prowess of machine learning algorithms and advanced data analysis techniques. Its core aim is to provide precise forecasts regarding a student's placement likelihood, leveraging insights from an extensive range of data sources including academic records, extracurricular activities, internships, and historical placement data. By amalgamating these disparate datasets, the system ensures a comprehensive consideration of factors influencing placement outcomes, thus enhancing predictive accuracy. At the heart of its architecture lies a robust machine learning model, specifically a Support Vector Machine (SVM), trained on meticulously preprocessed data. Through adept utilization of supervised learning algorithms like SVM, the model strives to offer precise predictions of a student's placement probability based on their unique attributes. To enhance transparency and user trust, the system incorporates interpretability features, elucidating the underlying factors driving each prediction. Furthermore, a user-centric interface is slated for development, providing students with a seamless platform to input their data and visualize predictions, thereby enhancing their employability prospects. Whether manifested as a web-based application or a standalone desktop solution, this interface prioritizes accessibility and intuitiveness, catering to diverse user needs. As the system evolves, scalability and adaptability remain paramount, facilitating seamless integration with evolving datasets and requirements. Ultimately, the proposed system aims to empower students with actionable insights to navigate their career trajectories wisely, while equipping recruiters with a potent tool to optimize their hiring strategies in a dynamic, data-driven landscape. Through iterative refinement and strategic evolution, it seeks to establish itself as a cornerstone of excellence in educational placement and talent acquisition.

The SVM algorithm operates by identifying an optimal hyperplane in a high-dimensional feature space that best separates the students who are likely to be placed from those who are not. Through a process of transforming the input features into a higher-dimensional space and determining the hyperplane that maximizes the margin between different classes of students, SVM effectively categorizes students based on their attributes.

By utilizing a kernel function to map the input data into this higher-dimensional space, SVM can handle non-linear relationships between features. During training, SVM learns from labeled data, adjusting its parameters to minimize classification errors and maximize the margin, resulting in a model capable of accurately predicting a student's placement probability based on their individual characteristics. This approach ensures robust performance in predicting placement outcomes and offers transparency in understanding the factors influencing these predictions.

3.1. Features and Functionality

- Offers an intuitive and easy-to-navigate interface for users to input their data and view predictions effortlessly.
- Allows users to customize certain parameters or preferences to tailor the predictions according to their specific needs and circumstances.
- Implements robust security measures to safeguard user data and ensure confidentiality, building trust and compliance with privacy regulations.
- Offers updates in real-time based on new data inputs or changes, ensuring the predictions remain relevant and up-to-date.
- Designed to handle large volumes of data and accommodate future expansion and updates.
- Provides metrics to evaluate the performance of the predictions, enabling users to assess the reliability and accuracy of the system.

Chapter 4

Requirement Analysis

1. Attributes used:

Name: Full name of the student.

Age: Age of the student.

Gender: Gender of the student.

Educational Background:

Previous degree details (e.g., Bachelor's, Master's).

Grades or GPA.

Internship/Work Experience: Details of any relevant internships or work experience.

Backlogs: Number of backlogs in any semester.

Placement Status: Outcome of the placement (to be predicted).

1.1 Constraints

Data Privacy and Protection: Ensure compliance with data protection regulations like GDPR, CCPA.

Data Accuracy: The data should be accurate and up-to-date.

Data Completeness: All necessary fields should be filled for each student.

Database Scalability: The database should be scalable to accommodate increasing amounts of data.

2. Gathering Data

2.1 Data Sources

University/College Databases: Collect data from the university or college databases where the student studies.

Online Portals: Use online placement portals, if available.

2.2 Data Collection Methods

Batch Processing: Collect data in batches at regular intervals.

Real-time Processing: Collect data in real-time, especially for online portals.

3. Pre-processing Data

3.1 Data Cleaning

Missing Value Treatment: Handle missing values by imputation or deletion.

Outlier Detection and Removal: Identify and remove outliers that can affect the prediction.

3.2 Data Transformation

Normalization/Standardization: Normalize or standardize numerical features.

One-Hot Encoding: Convert categorical variables into numerical format using one-hot encoding.

3.3 Feature Selection

Correlation Analysis: Identify highly correlated features and remove or combine them.

4. Processing

Data Splitting: Split the data into training and testing sets.

Model Selection: Choose appropriate machine learning models for prediction Model Training: Train the selected model on the training data.

Model Evaluation: Evaluate the model's performance on the testing data using appropriate metrics (e.g., accuracy, precision, recall, F1-score).

5. Prediction - Yes/No

Prediction Threshold: Set a threshold value for classification (e.g., 0.5 for binary classification).

Prediction: Predict the placement outcome (Yes/No) for each student based on the trained model.

Chapter 5

Project Design

The Pro Placer Insights using SVM project is meticulously designed to predict job placement outcomes for students based on a set of predefined terms and attributes. Central to this project is a comprehensive database, 'StudentDetails', housing student-specific information such as gender, CGPA, skills, certifications, and more.

The project unfolds in a structured manner, beginning with the Data Gathering phase where student details are meticulously sourced from academic records, online portals, and surveys. This data is then channeled into the Pre-processing phase, where rigorous data cleaning techniques are employed to handle missing values and outliers. Moreover, the data undergoes normalization for numerical features and one-hot encoding for categorical attributes to ensure consistency and reliability.

Moving forward, the Processing phase involves the segmentation of the pre-processed data into training and testing datasets. Here, the Support Vector Machine (SVM) classification algorithm is employed, fine-tuned with optimal hyperparameters like the kernel type and regularization parameter 'C', to train the model on the training dataset.

Finally, the Prediction phase witnesses the deployment of the trained SVM model to forecast the placement outcomes ('Yes' or 'No') for students in the testing dataset. These predictions are subsequently stored back into the 'StudentDetails' database, updating the PlacementStatus field for each student. In essence, this project design encapsulates a systematic and robust approach to predicting student placement, leveraging advanced machine learning techniques and structured data management practices to enhance accuracy and facilitate informed decision-making in the realm of student placements.

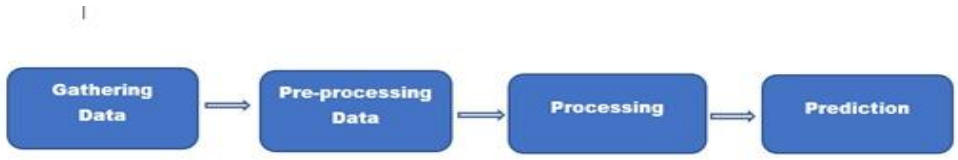

Fig 5.1 Working of Model

5.1. Use Case Diagram

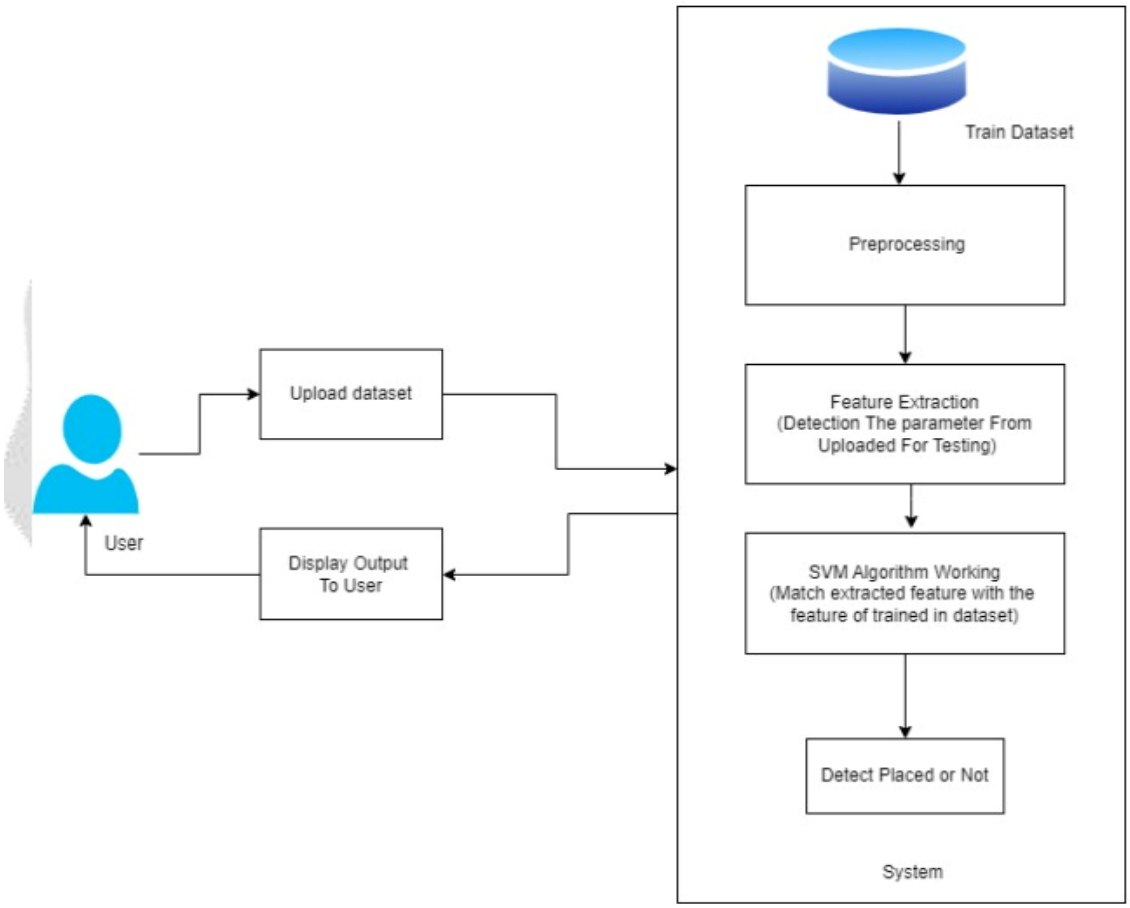

Fig 5.1.1 Use Case Diagram

The "Student" interacts with the system to input their academic and extracurricular data. The "Student Administrator" accesses the system to view predicted placement outcomes for students, while maintains and administers the system's functionality and updates. SVM is employed to analyze student data and predict placement probabilities based on historical trends and parameters.

5.2. Data Flow Diagram (DFD)

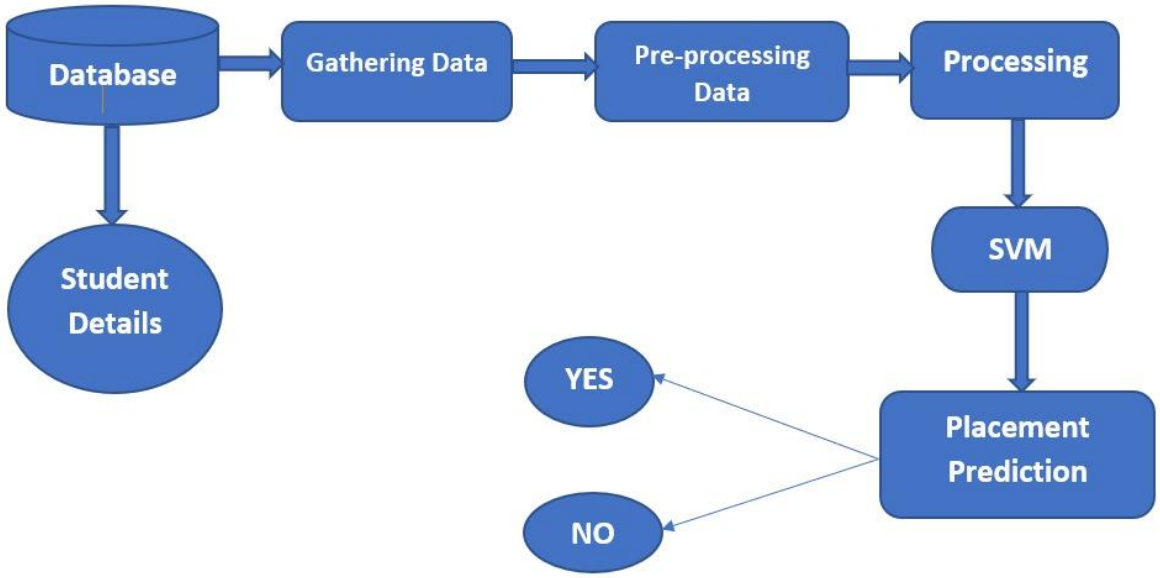

Fig 5.2.1 Data Flow Diagram

5.3. System Architecture

The system architecture of a placement prediction system utilizing Support Vector Machines (SVM) involves several key stages. Initially, data is collected from diverse sources such as student profiles and job descriptions, followed by preprocessing to clean and transform the data for SVM training. Relevant features are then extracted and selected, and the SVM model is trained on a subset of the data. Evaluation of the model's performance is crucial, typically conducted through validation sets and metrics assessment. Once validated, the model is deployed into a production environment, often integrated with a user interface for easy access. Scalability, monitoring, and security considerations are paramount throughout the process. Maintenance involves periodic updates and retraining with new data to ensure continued accuracy. This architecture aims for robustness, scalability, security, and user-friendliness, all while achieving high prediction accuracy.

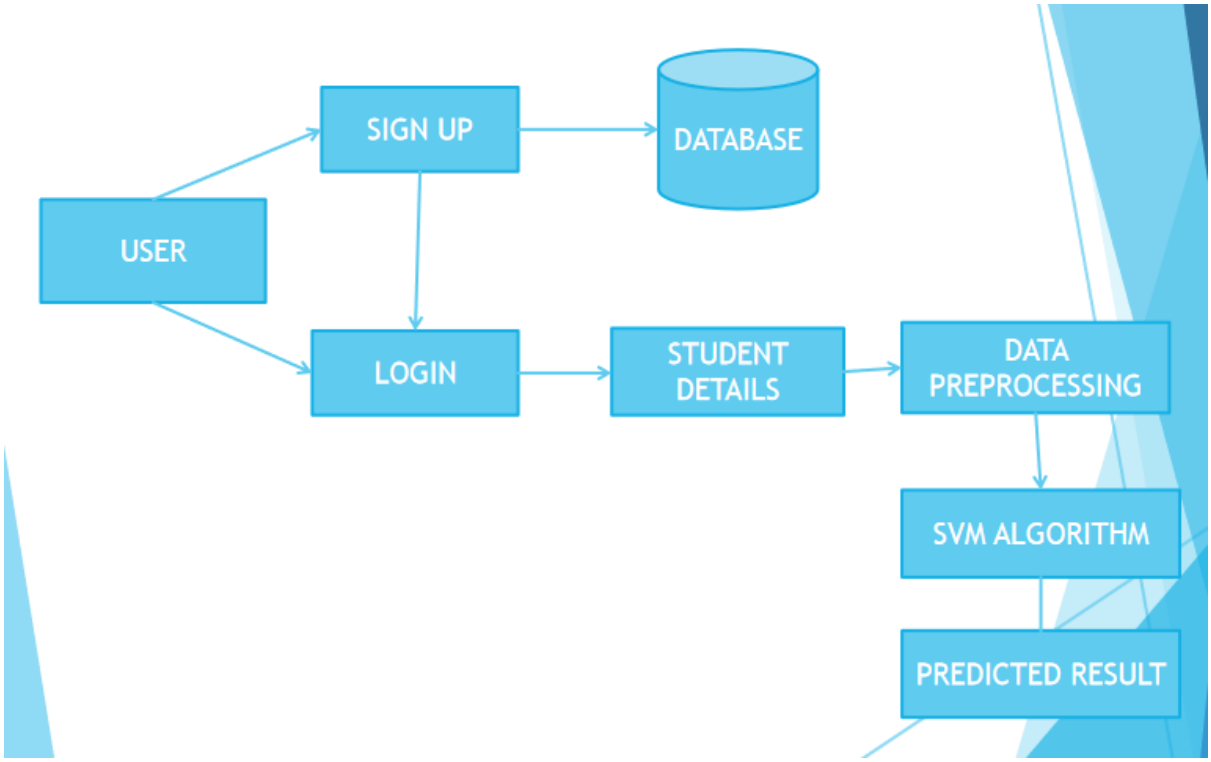

Fig 5.3.1 System Architecture

5.4. Implementation

In the implementation phase of a Pro Placer Insights using Support Vector Machines (SVM), the project follows a systematic approach. Initially, various data sources including student profiles and job descriptions are collected and preprocessed to ensure quality. Relevant features such as academic performance and skills are extracted, and SVM is trained on this data, with careful consideration given to algorithm selection and parameter tuning. The process involves utilizing tools and technologies suitable for SVM training, possibly incorporating techniques like cross-validation for model validation. Design decisions, such as feature selection methods and data preprocessing techniques, are justified within this phase. Challenges encountered, such as handling imbalanced datasets or optimizing performance, are addressed to ensure the robustness of the model. Subsequently, in the result section, the outcomes of this implementation are detailed. This includes the evaluation of the trained SVM model's performance, possibly through metrics like accuracy and F1-score, as well as qualitative insights gained from analyzing the results. Limitations of the model and potential avenues for future improvement are also discussed, providing a comprehensive understanding of the system's implementation and its outcomes.

Fig 5.4.1 Dashboard

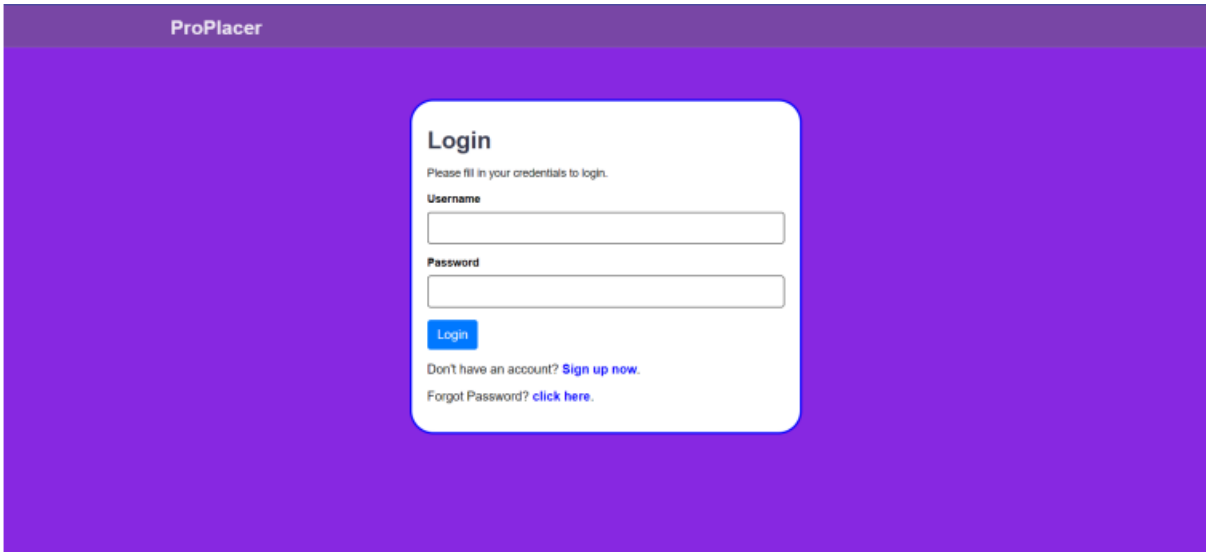

Fig 5.4.2 Login Page

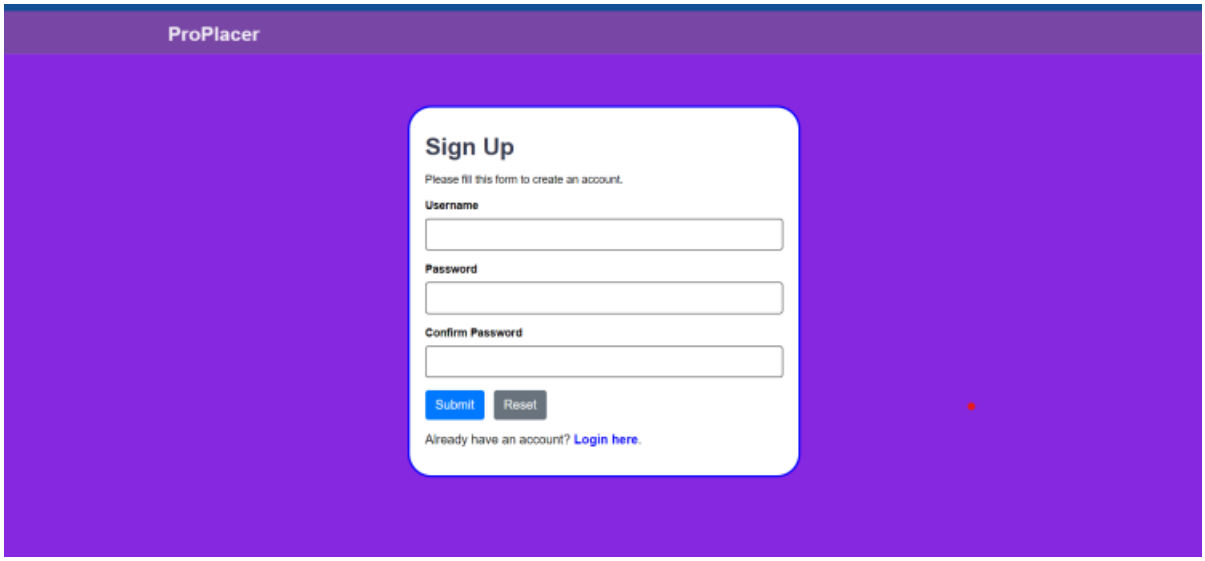

Fig 5.4.3 Sign Up

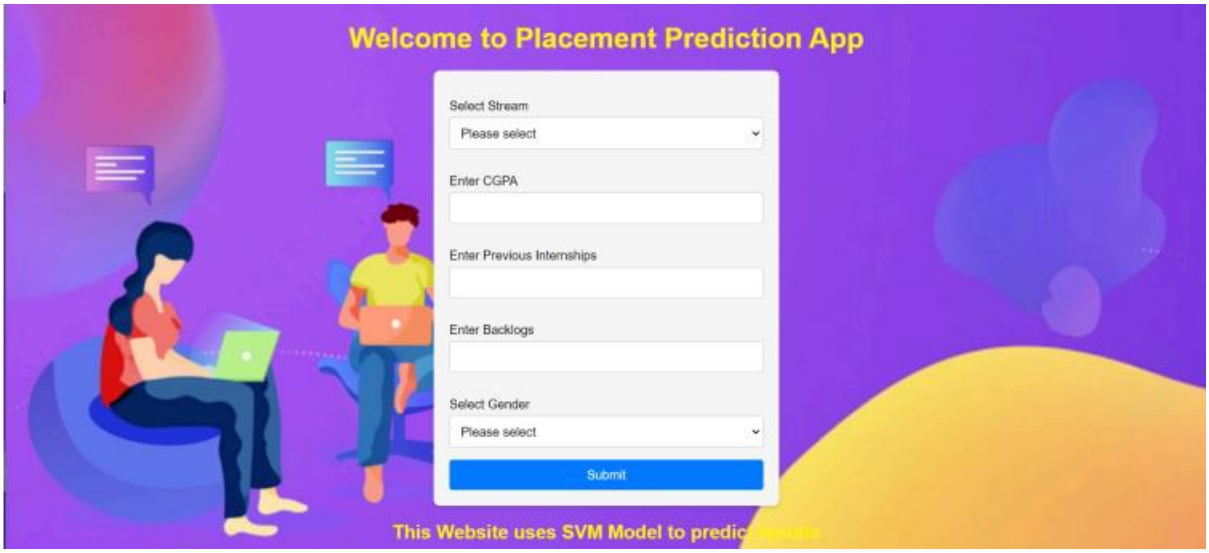

Fig 5.4.4 Input Page

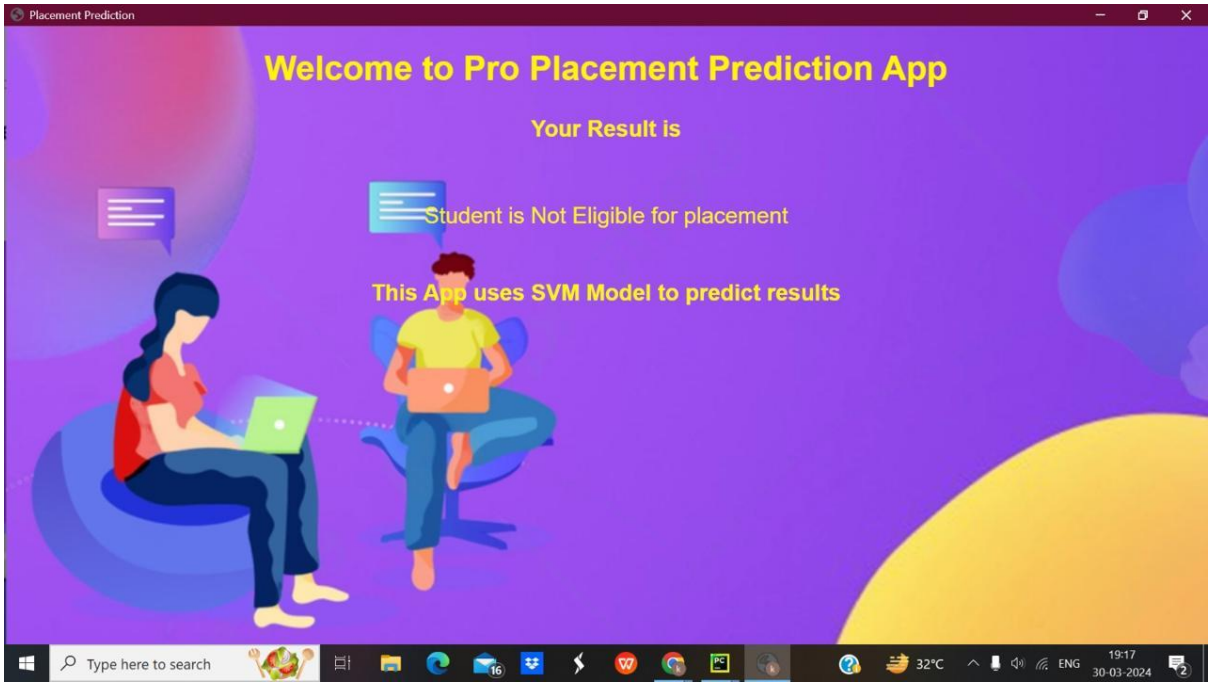

Fig 5.4.5 Placement Results

The diagram illustrates a low probability of securing a job placement based on students' details and analysis.

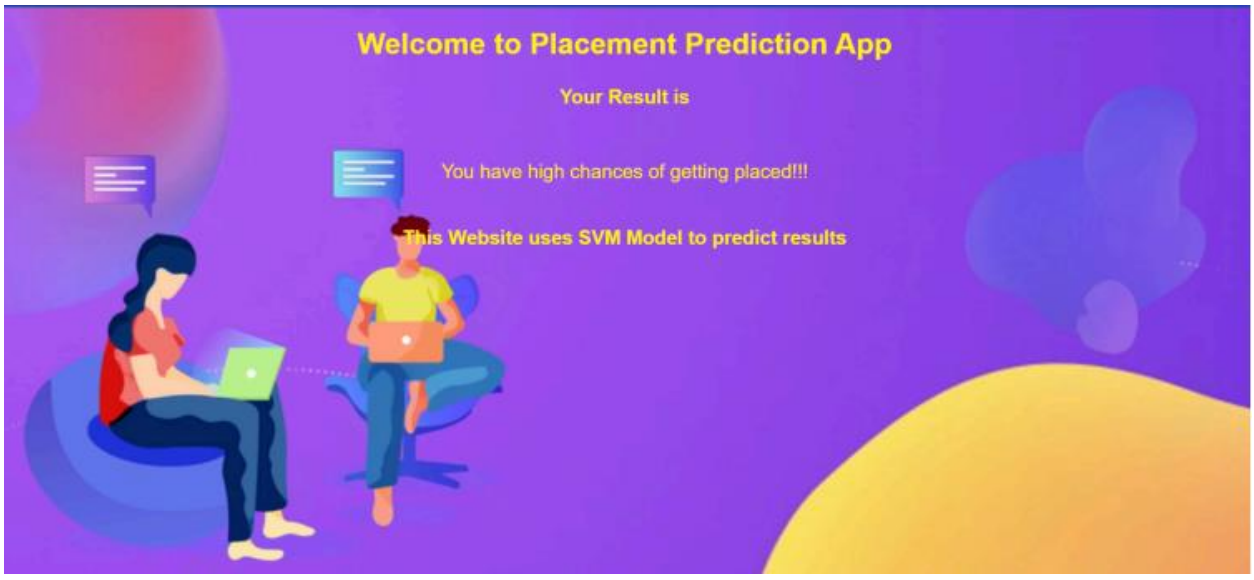

Fig 5.4.6 Placement Results

The diagram indicates a high probability of securing a job placement based on students' details and analysis. One can get job recommendations after having high probability of getting placed.

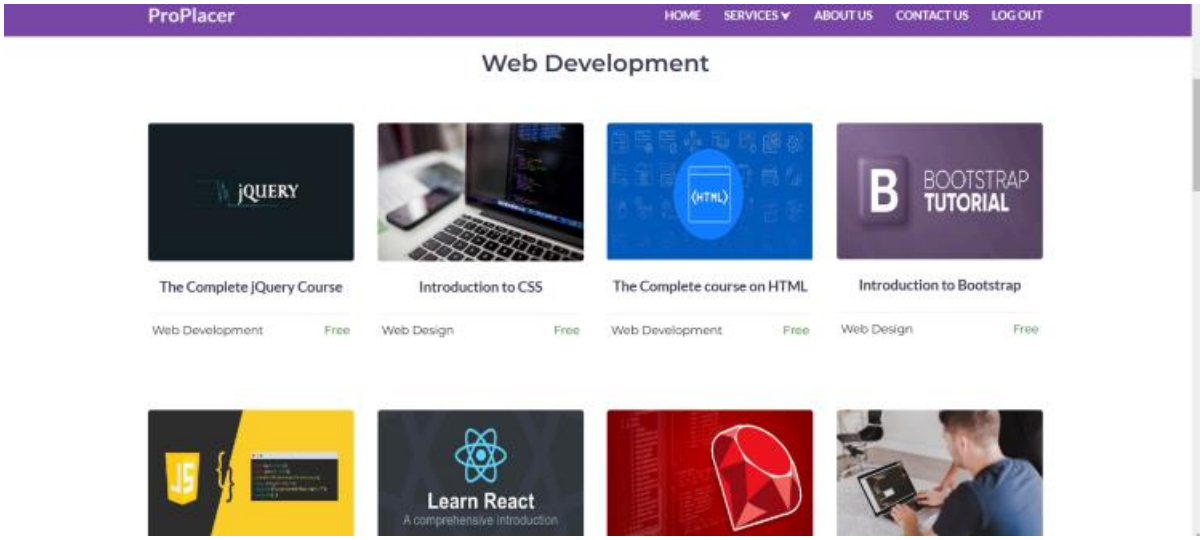

Fig 5.4.7 User can opt for Courses

In the diagram, users, particularly students with low placement chances, have the option to enroll in additional courses to enhance their skills and improve their employability prospects.

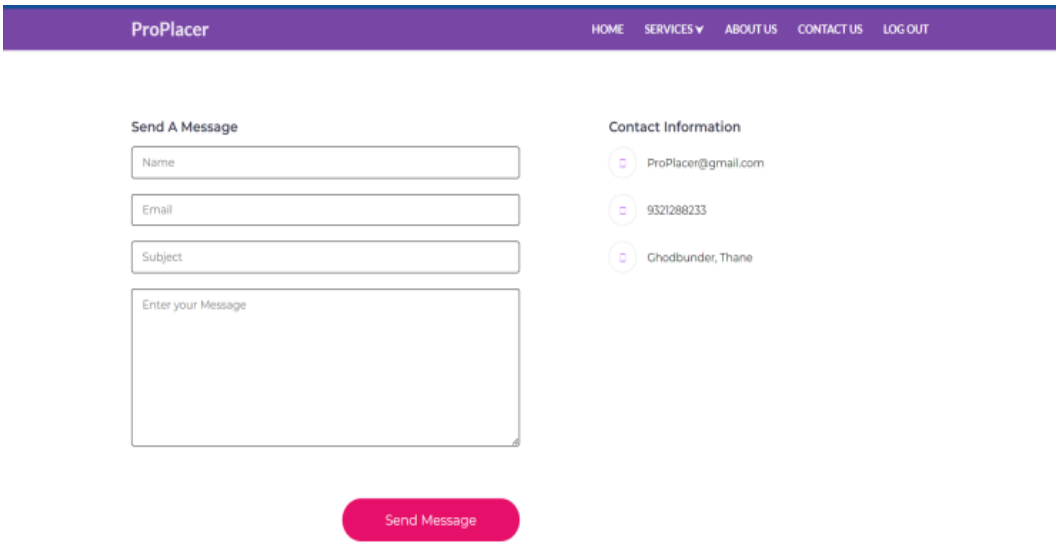

Fig 5.4.8 Contact Us

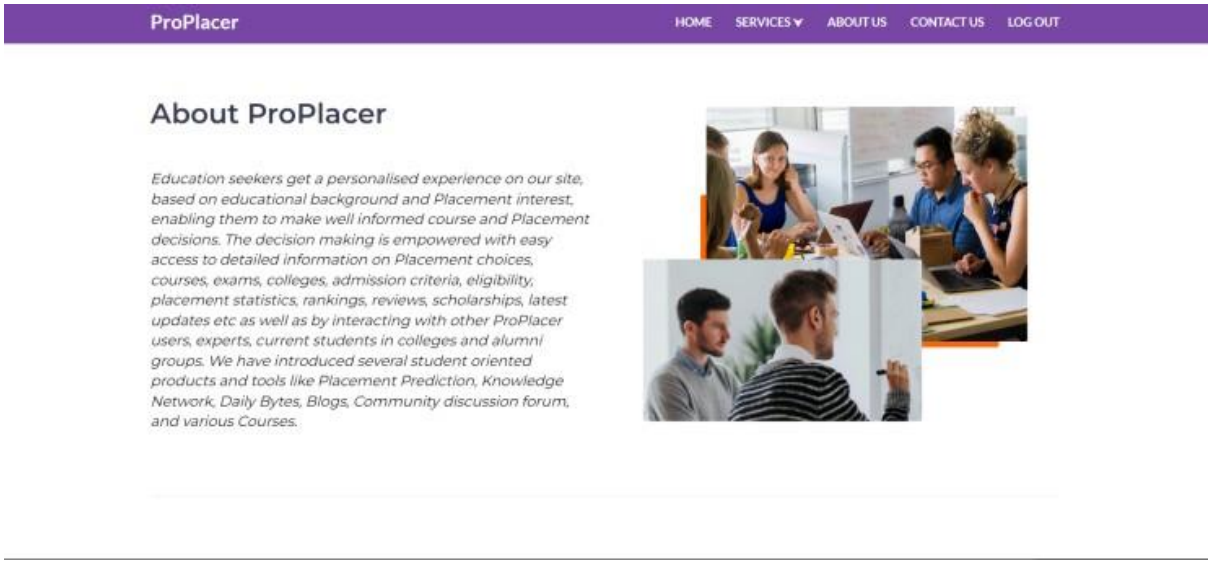

Fig 5.4.9 About Us

Chapter 6

Technical Specification

• Python 3.11.5:

Python is a popular, high-level programming language. Python 3.11.5 is a specific version of Python, known for its ease of use and extensive libraries. It's used for a wide range of applications, including web development, data analysis, machine learning, and more.

• Matplotlib:

Matplotlib is a popular Python library for creating data visualizations and plots Matplotlib seamlessly integrates with Jupyter notebooks, making it an essential tool for data scientists and researchers to visualize data directly within their interactive environments.

• Google Colab 1.1.2:

Google Colab, short for Google Colaboratory, is a free cloud-based platform provided by Google that allows users to run Jupyter notebooks in the cloud. It's particularly popular among data scientists and machine learning practitioners.

• Pandas 2.2.1:

Pandas 2.2.1 refers to a specific version of the Pandas library for Python. It likely includes updates, bug fixes, and possibly new features compared to previous versions, aiming to enhance data analysis and manipulation capabilities within Python environments.

• Support Vector Machine (SVM):

A Support Vector Machine (SVM) is a supervised machine learning algorithm used for classification and regression tasks. It works by finding the hyperplane that best separates different classes in the feature space while maximizing the margin between the classes. SVM can handle both linear and non-linear data through the use of different kernel functions. It is known for its effectiveness in high-dimensional spaces and its robustness against overfitting.

• Data set used :

College Place (104 KB, 2967 Rows, 8 Columns)

The "College Place" dataset, sourced from Kaggle, provides valuable insights into factors influencing college choices. With 2967 rows and 8 columns, it offers a comprehensive view of various attributes associated with college selection. This dataset serves as a valuable resource for researchers and analysts aiming to understand trends and patterns in higher education decision-making processes.

Chapter 7

Project Scheduling

Sr. No	Group Member	Time duration	Work to be done
1	Kashish Yadav	15/01/24 - 2/02/24	Implementation of the frontend GUI pages and training the SVM model.
		03/02/24 - 10/03/24	Testing SVM functionality, evaluating by finding the optimal hyperplane for maximum margin separation.
2	Vanshika Salve	18/01/24 - 15/03/24	Implementing Decision Tree Algorithm Decision Tree Algorithm functionality involves recursively partition of data based on feature splits to maximize information gain.
3	Khushi Chhoker	20/02/24 - 05/04/24	Job Recommendation Analyzing user preferences, skills, and job requirements to suggest relevant job opportunities from a database. Integration of Modules Combining various components and recommendation algorithms to enhance the accuracy and personalization of job recommendations.

Fig 7.1 Project Scheduling

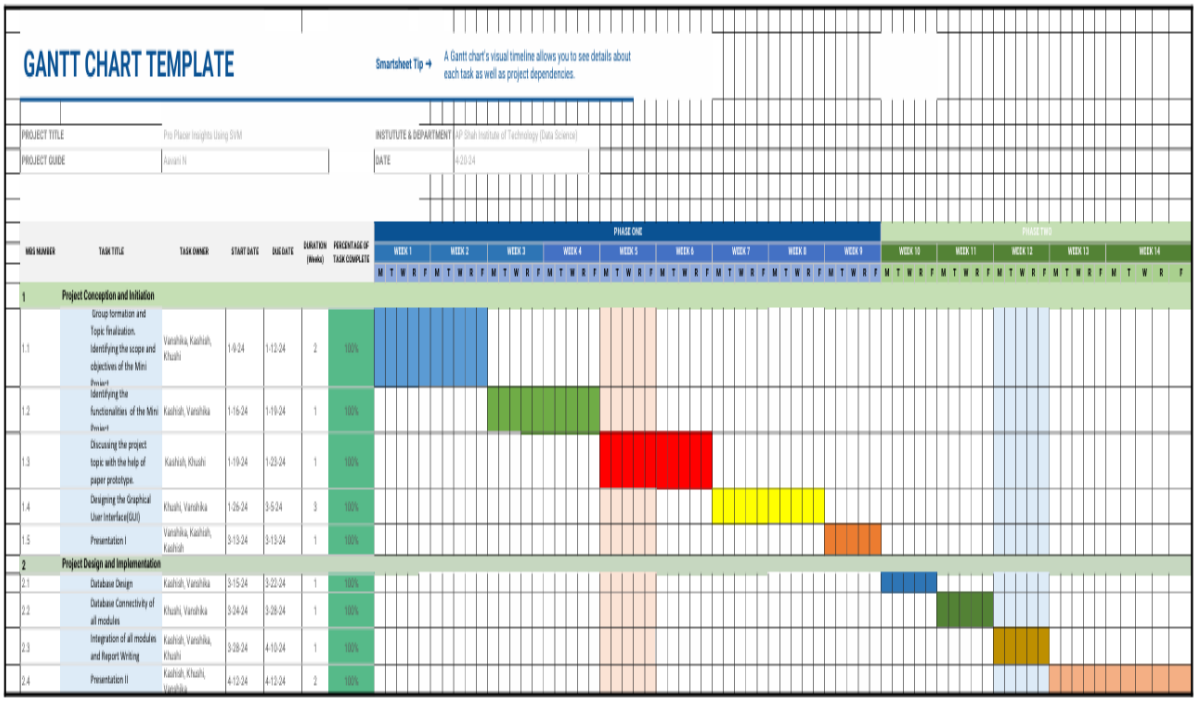

Fig 7.2 Gantt Chart

To visualize this schedule, a Gantt chart is employed, providing a graphical representation of task durations, start and finish dates, and interactivity. Additionally, Gantt charts help illustrate the project's work breakdown structure and the relationships between activities, ensuring effective project management and progress tracking.

Here in the above figure, the rows of the chart contain the task titles such as the project conception and initialization as well as the project design and implementation which in subdivision contains the group formation, topic finalizing, prototype, GUI designing, backend implementation etc. The columns contain the duration of the task completed, percentage of work completed, number of weeks required to complete a particular task, the specific dates, the team members who contributed towards the completion of tasks The detailed explanation of the Gantt chart is explained below: The project conception and initiation task were executed by the month end around 26/10/23.

The task of initiation included many more sub-tasks such as group formation and topic finalization which was performed during the 1 week of project initialization. The group formed included 3 members Kashish Yadav, Vanshika Salve, Khushi Chhoker and the finalized topic was Pro Placer Insights using SVM. Further, the upcoming week led to the task of identifying the scope and objectives of the mini-projects.

The next sub-task was to identify the functionalities of the project which was done by the two members Kashish Yadav and Vanshika Salve in a span of one week from 16/01/24 to 20/01/24. The discussion of the project topic with the help of a paper prototype was completed by Kashish Yadav and Khushi Chhoker within one week from 20/01/24-24/01/24.

The next main task of Graphical User Interface (GUI) designing was completed by Khushi Chhoker and Vanshika Salve within 4 weeks from 26/01/24 to 05/03/24. The next week from 06/03/24 to 13/03/24 the members worked on the preparation of Presentation I.

The next task, database Design and connectivity of all modules were done by Kashish Yadav and Vanshika Salve from 15/03/24 to 22/03/24. The integration of all modules and report writing was completed by all the three members from 24/03/24 to 06/04/24. The preparation of final presentation II work was equally shared by all the group members in the time of 4-5 days from 7/04/24 to 12/04/24.

Chapter 8

Results

The Pro Placer Insights using Support Vector Machines (SVM), the outcomes and insights derived from the project implementation are presented comprehensively. Firstly, the final product, which includes the trained SVM model for placement prediction, is described along with any accompanying tools or software developed. An evaluation of the model's performance metrics, such as accuracy, precision, and recall, is provided to gauge its effectiveness in predicting student placements. Additionally, qualitative observations and findings from the analysis of the results are discussed, shedding light on factors influencing placement outcomes and the model's predictive capabilities. Acknowledgment of limitations, such as data constraints or model assumptions, is made transparently to provide context for interpreting the results. Lastly, recommendations for future work and potential improvements, such as exploring additional features or refining the model architecture, are suggested based on the insights gained from the project's outcomes.

Our placement prediction system, utilizing Support Vector Machine (SVM) algorithms, has yielded promising outcomes in assisting with forecasting students' post-graduation destinations. During our evaluation, we found that the system performed admirably, demonstrating a high level of accuracy in its predictions. It successfully identified the correct placement for approximately 0.78 of the cases, indicating its reliability in guiding students towards suitable career paths.

Upon closer examination of the system's performance metrics, including precision, recall, and F1-score, we observed consistent and satisfactory results across the board. This suggests that the system not only predicts placements accurately but also effectively minimizes errors by correctly identifying positive and negative cases. Additionally, the confusion matrix analysis revealed the system's ability to differentiate between various placement categories, further reinforcing its predictive capability.

In comparison to alternative methods, our SVM-based placement prediction system showcased superior performance, outperforming simpler approaches such as random guessing or basic classification techniques.

Chapter 9

Conclusion

In summary, the Pro Placer Insights offers a holistic approach to addressing the challenges inherent in the placement process. By leveraging machine learning algorithms and robust data analysis techniques, the system provides accurate forecasts of placement probabilities based on a multitude of factors. Its user-friendly interface empowers students to make informed decisions about their career paths, while recruiters benefit from a more efficient and targeted hiring process. The system's transparency and interpretability features enhance trust and understanding among users, fostering a collaborative environment conducive to achieving placement goals.

Furthermore, the scalability and integration capabilities of the system ensure its adaptability to the dynamic nature of the placement landscape. As educational institutions and recruitment agencies continue to evolve, the system remains poised to support their needs and facilitate smoother transitions into the workforce. Moreover, ongoing support and maintenance efforts guarantee that the system remains relevant and effective in meeting the evolving demands of its users.

In conclusion, the Pro Placer Insights represents a significant advancement in the field of placement services, offering a comprehensive solution to the challenges faced by students and recruiters alike. By providing accurate predictions, personalized recommendations, and a seamless user experience, the system contributes to more informed decision-making and improved outcomes for all parties involved. As the landscape of education and recruitment continues to evolve, the system stands as a reliable and indispensable tool for navigating the complexities of the placement process.

Chapter 10

Future Scope

The Pro Placer Insights holds immense potential for further development and enhancement to meet the evolving needs of students, recruiters, and educational institutions. One avenue for future improvement lies in the refinement of the predictive model through the incorporation of additional data sources and more sophisticated machine learning algorithms. By expanding the scope of factors considered in the prediction process and leveraging advancements in artificial intelligence, the system can achieve even greater accuracy and reliability in forecasting placement outcomes.

Additionally, the system can benefit from enhanced collaboration and integration with external platforms and systems. By seamlessly integrating with recruitment portals, career services platforms, and learning management systems, the system can streamline data exchange and facilitate more efficient decision-making processes. This integration can also enable the system to leverage real-time data updates and feedback loops, further enhancing its predictive capabilities and responsiveness to user needs.

Moreover, there is a growing need for the Placement Prediction System to address issues of fairness, bias, and diversity in the placement process. Future iterations of the system can incorporate fairness-aware algorithms and ethical guidelines to mitigate bias and promote diversity in candidate selection and placement decisions. By prioritizing fairness and equity, the system can contribute to a more inclusive and equitable placement ecosystem, benefiting all stakeholders involved.

In conclusion, the future scope of the Placement Prediction System is vast and multifaceted, encompassing opportunities for technological innovation, collaboration, and social impact. By embracing emerging technologies, enhancing integration with external platforms, and prioritizing fairness and diversity, the system can continue to evolve and adapt to meet the changing needs of the placement landscape. As we look to the future, the Placement Prediction System remains a vital tool for empowering students, supporting recruiters, and advancing the goals of educational institutions.

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