



SCHOLAR OPPORTUNITY VISTA

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Abstract: Scholar Opportunity Vista is an intelligent AI-powered platform that helps student find scholarships by making it easier to understand complicated rules and locate scholarship opportunities in one place. It uses smart filtering tools to match students with the right scholarships based on their details. The platform is built with React.js to make the website fast and easy to use. It gives students a personalized list of scholarships they can apply for, along with instructions on how to apply and what documents they need. Unlike other scholarship websites, Scholar Match offers highly specific suggestions that match each student's background, making it easier for students, teachers, and schools to find funding for education. Users can create a profile, look at recommended scholarships, and apply directly. The platform has useful features like real-time filters to check if they qualify, the ability to save applications and come back later, and a dashboard to track their progress. By automating the process of finding scholarships, Scholar Match saves time, helps students who are often overlooked, supports fair access to education in both city and rural areas, and increases awareness about government and private funding sources. This makes it easier for students to move from having dreams to achieving them in a smarter, quicker, and more inclusive way.

Keywords - Scholarship recommendation system, machine learning, artificial intelligence, student eligibility analysis, educational data mining, personalized recommendations, chatbot assistance, decision support system

I. INTRODUCTION

The Scholar Opportunity Vista project helps students find scholarships that match their needs. It offers support in areas like education access, financial aid, career guidance, and academic inclusion, especially when it's important to find and apply for scholarships quickly. The project uses smart filtering and AI with classification-based algorithms to connect students with the right scholarship programs based on their academic, personal, and financial backgrounds. These details are checked through a system that uses rules and data to find scholarships like those based on merit, need, minority status, or specific government programs. The results are then shown on a website built with React.js, Tailwind-CSS, and Node.js. This website lets users create profiles, look for scholarships they qualify for, apply directly, and check the status of their applications in real time. By using smart sorting, organized data checks, and modern web tools, Scholar Opportunity Vista makes it easier for students to find scholarships, speeds up the application process, and connects students who need financial help with the right support.

II. REVIEW OF LITERATURE

Recent studies show that machine learning is being used more and more in education to make finding scholarships easier and more tailored for students. Old ways of looking for scholarships are usually done by hand, take a lot of time, and don't work well. Because of this, researchers are trying out automated systems that look at student profiles and what they qualify for to suggest the right scholarships. Research says that models like classification, clustering, and mixed methods can match students with scholarships that fit their grades, money situation, and personal details. Also, using easy-to-use interfaces and chatbots helps make the process better for students, making them more involved and helping them decide better. These ideas are the basis for the Scholar Opportunity Vista system, which uses machine learning and smart tools to give students accurate, ontime, and customized scholarship suggestions. Recent studies show that machine learning is being used more and more in education to make finding scholarships easier and more tailored for students. Old ways of looking for scholarships are usually done by hand, take a lot of time, and don't work well. Because of this, researchers are trying out automated systems that look at student profiles and what they qualify for to suggest the right scholarships. Research says that models like classification, clustering, and mixed methods can match students with scholarships that fit their grades, money situation, and personal details. Also, using easy-to-use interfaces and chatbots helps make the process better for students, making them more involved and helping them decide better. These ideas are the basis for the Scholar Opportunity Vista system, which uses machine learning and smart tools to give students accurate, on-time, and customized scholarship suggestions.

Patel, D., et al. [1] did a detailed review of AI methods used to help find scholarships. They looked at different approaches like content-based, collaborative, and hybrid systems, and they talked about what works well and what doesn't. Their study found some problems, such as difficulty in starting with new users, not having enough personalization, and issues with fairness. They recommend that future work should focus on better hybrid models, making AI systems more transparent, and using these techniques in real-life situations.

Jemarus, J., et al. [2] created a decision support system called DSS to help choose students who should receive the PIP scholarship at SMKN 1 Borong. They used the TOPSIS method, which stands for Technique for Order Preference by Similarity to Ideal Solution. The team looked at several important factors that determine if a student is eligible, like how well they do in school, their financial situation, and their achievements in extra activities. They gave each of these factors a weight based on how important it is. Then, they used TOPSIS to rank the students and come up with a list of who should get the scholarship first. They also explained how this method helps deal with situations where different criteria might conflict and how it helps school leaders explain their choices.

Sharma, R., Gupta, et al. [3] suggest using a machine learning system to determine which students are likely to qualify for scholarships. They gather important student information like academic performance, family income, and participation in extracurricular activities. This data is cleaned and prepared before being used to train various classification models, such as decision trees, logistic regression, SVM, and other widely used techniques. The system then uses these models to forecast a student's chances of receiving a scholarship or being eligible for it. The research indicates that these machine learning models perform well in making accurate predictions, suggesting that such tools can help administrators evaluate scholarship applicants in a more efficient and fair manner.

Kaur, M., et al. [4] created an AI system to help students find the right scholarships on their own. They gathered information about scholarships, including the requirements, how much money they offer, when they're due, and details about students like their grades, financial situation, and interests. Then they used AI or machine learning methods such as classification, recommendation, and ranking to match students with scholarships that fit them best. Their system makes it faster, more accurate, and more personalized to find scholarships compared to searching manually. The authors suggest ways to improve the system, such as better ways to organize the data, keeping the information up to date, making the system more transparent, and using it more widely in schools and colleges.

M. Ali Khan, et al. [5] propose a machine learning framework to predict if a student is eligible for a scholarship by using important factors like their financial situation, how well they do in school, and other related factors. They tested several types of classifiers, such as Support Vector Machines, Neural Networks, K-Nearest Neighbors, and C4.5. They found that the C4.5 decision tree model gave the highest accuracy, about 95.62%, using data from a public university in Pakistan. Their system is designed as a Decision Support System (DSS) to make the scholarship selection process more transparent, efficient, and fair by either replacing or helping with the current manual methods.

Nair, P., et al. [6] created a comprehensive machine learning method to fairly distribute scholarships by considering both academic achievement and fairness for all students. The model takes into account factors such as grades, family income, and personal background to help ensure that students from less represented groups are not unfairly overlooked. It uses accurate predictions along with fairness rules to make the scholarship process more just while still selecting students effectively.

S. N. Mohanty et al.[7] suggested a new system that combines machine learning with artificial emotional intelligence to improve scholarship programs. Their method is designed to make the scholarship selection process more accurate and fair by looking at more than just grades and money needs. It also takes into account emotional and mental factors that might affect a student's ability to succeed. By including emotional intelligence, the system tries to give a fuller picture of each candidate, helping to ensure that students who are truly deserving are not missed because of old ways of evaluating people.

Sinaga, B., et al. [8] used the TOPSIS method to create a Decision Support System that helps pick students for undergraduate scholarships. They set up several factors like how well students do in school, how much they need financial help, and their involvement in activities outside of class. Each of these factors was given a weight based on how important it was. The system then calculated how close each student was to the best possible solution and the worst possible one. This helped rank the students fairly. The study showed that this system can help schools make clear and fair decisions when choosing scholarship winners.

Yuliana, S. N, et al.[9] created a system to choose scholarship winners by mixing two methods: Analytic Hierarchy Process (AHP) and Multi-Objective Optimization on the basis of Ratio Analysis (MOORA). AHP helped figure out how important each factor was, and MOORA was used to compare the students and decide who did best based on those factors.

M. Rizky, et al.[10] created a recommendation system using the TOPSIS method, which stands for Technique for Order Preference by Similarity to Ideal Solution. This system looks at different factors like how well students do in school, their financial situation, and their involvement in activities outside of class. It helps decide who gets scholarships by ranking students based on these factors. When I tested the system, the results from the computer were the same as what you would get by doing the math by hand. People who used the system liked it a lot. All the administrators were happy, about 83.33% of the counseling teachers were satisfied, and around 65.15% of students liked how the system worked.

Kanimozhi, V. et al. [11] to check how well the Scholarship Recommendation System works and how easy it is to use, a survey was done with 50 students from different educational levels, like undergraduate, postgraduate, and higher secondary. The goal was to get their opinions on how accurate the scholarship recommendations were, how simple the system was to use, and how happy they were with it. The students were asked to use the platform, enter their academic and personal information, and look through the list of suggested scholarships.

P. Roonrakwit, et al. [12] this study developed a Scholarship Recommender System for the *Office of the Civil Service Commission* to help users find suitable scholarships and study-abroad institutions. Evaluations by users and experts showed it is effective, user-friendly, and enhances communication of scholarship opportunities.

D K Nugroho et al. [13] this study developed a **Decision Support System** to help higher education students find suitable scholarships, showing it provides accurate, personalized recommendations and effectively supports scholarship decision-making.

J. Li and Z. Ye et al. [14] This study uses a **collaborative filtering algorithm** to provide personalized course recommendations in online education, improving accuracy and enhancing learners' overall experience. It also supports multiple learning modes, such as recorded videos and live classes, to better meet diverse learner needs.

J. Lin et al. [15] This study presents an **intelligent course recommendation system** using the SLIM algorithm to provide personalized, accurate, and efficient course suggestions, enhancing students' learning experience in smart education.

III. METHODOLOGY

The Scholar Opportunity Vista system is designed to help students find the right scholarships by using machine learning. It makes it easier for students to find suitable scholarships by looking at their personal, academic, and financial details, which they provide through simple forms. The system uses a machine learning model to check

eligibility and show the best scholarships at the right time. It also has features like user login, smart data handling, and real-time display of scholarship options with full details. A chatbot is available to help users and answer their questions, making the whole process efficient and easy for students to find and choose scholarships.

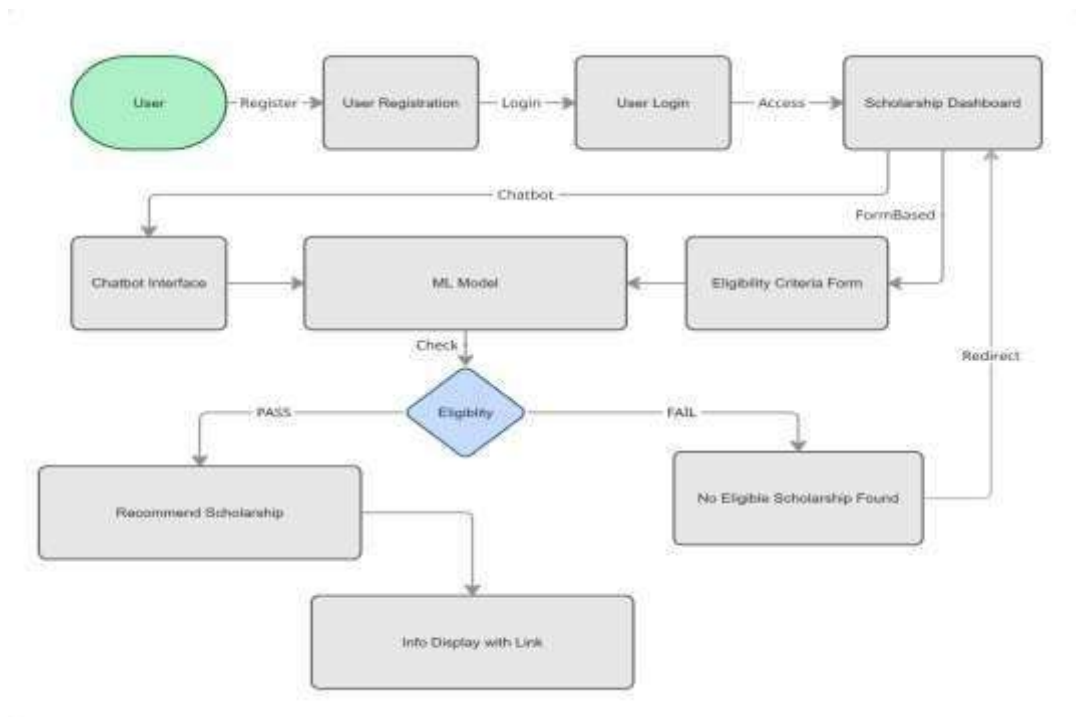


Fig. 1 Block Diagram

Fig. 1 shows block diagram of work flow of scholarship opportunity vista.

In this stage, the user signs up on the platform by giving the necessary information. After signing up, an email is sent to confirm the user's identity. Once the email verification is done and approved, the user can log in with their correct username and password to access the platform securely.

The second stage after logging in successfully, the user is taken to the dashboard, which acts as the main control center of the system. From there, the user can easily move to different sections like Home, Scholarships, Schemes, About Us, and the Chatbot, allowing them to access all the system features in a clear and organized way.

In the third stage, the user completes the scholarship filter form by providing the necessary personal, academic, and financial information. This data is gathered to properly assess the user's eligibility, which is important for finding the right scholarships later on.

The fourth stage the recommendation engine looks at the information the user gives in the scholarship filter form. It checks the user's eligibility and then finds the best scholarships that fit their profile.

The final stage the system shows a list of suggested scholarships and gives full details about each one. The chatbot also helps the user by offering advice, answering questions, and explaining how to apply and what to know about the process.

IV. IMPLEMENTATION RESULTS

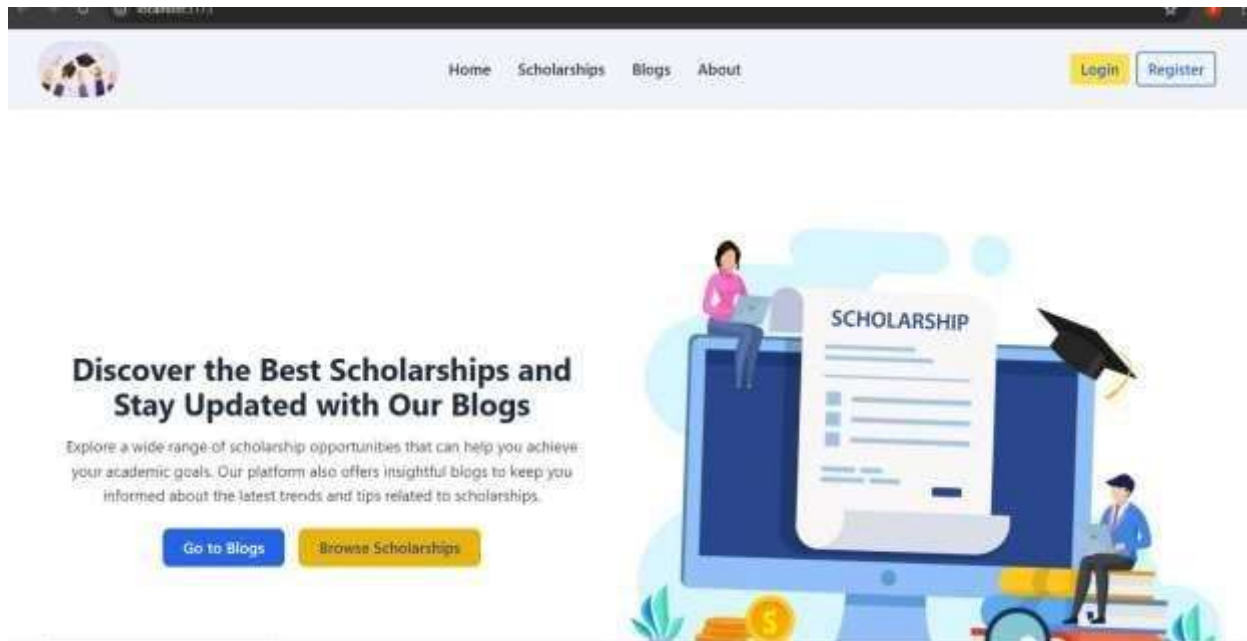


Fig. 2 Home Page

Fig. 2 shows the Home Page of the proposed Scholarship Recommendation System.

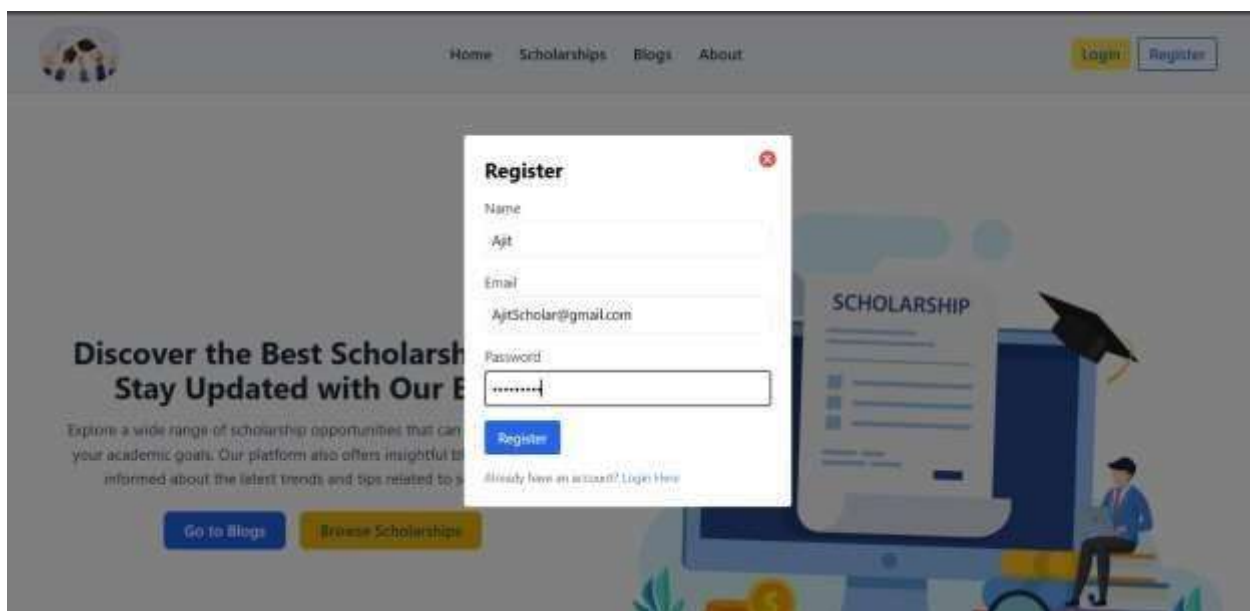


Fig. 3 Login Page

Fig. 3 shows the login page where users can sign-up website to enter in home page.

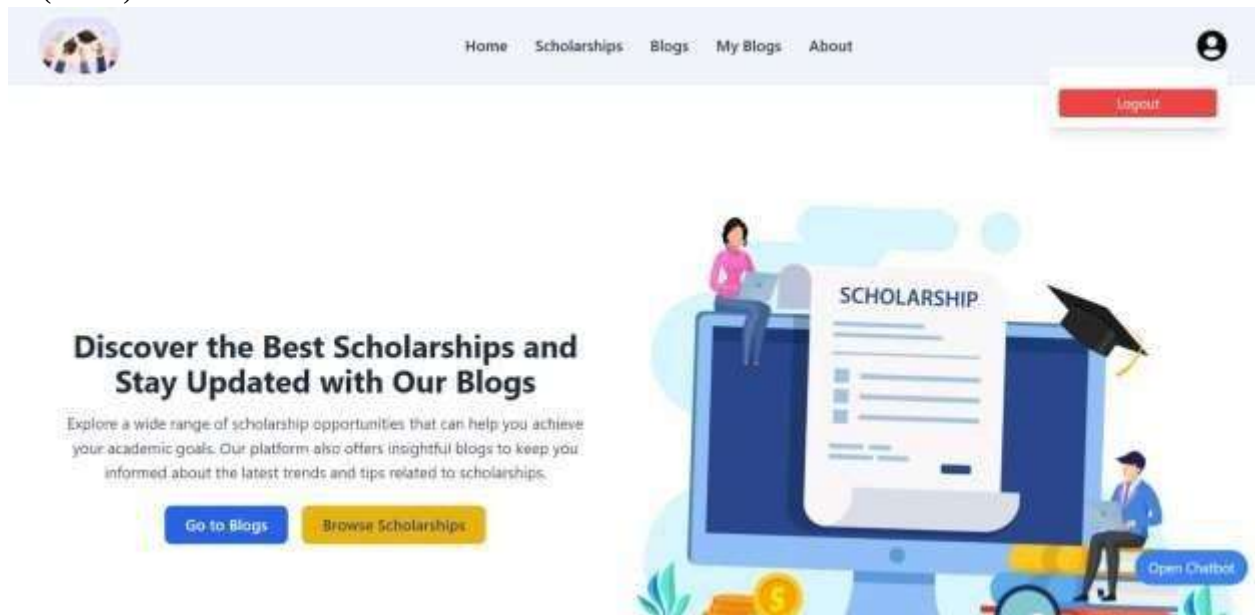


Fig. 4 Scholarship Dashboard

Fig. 4 shows section processes user can use dashboard process.

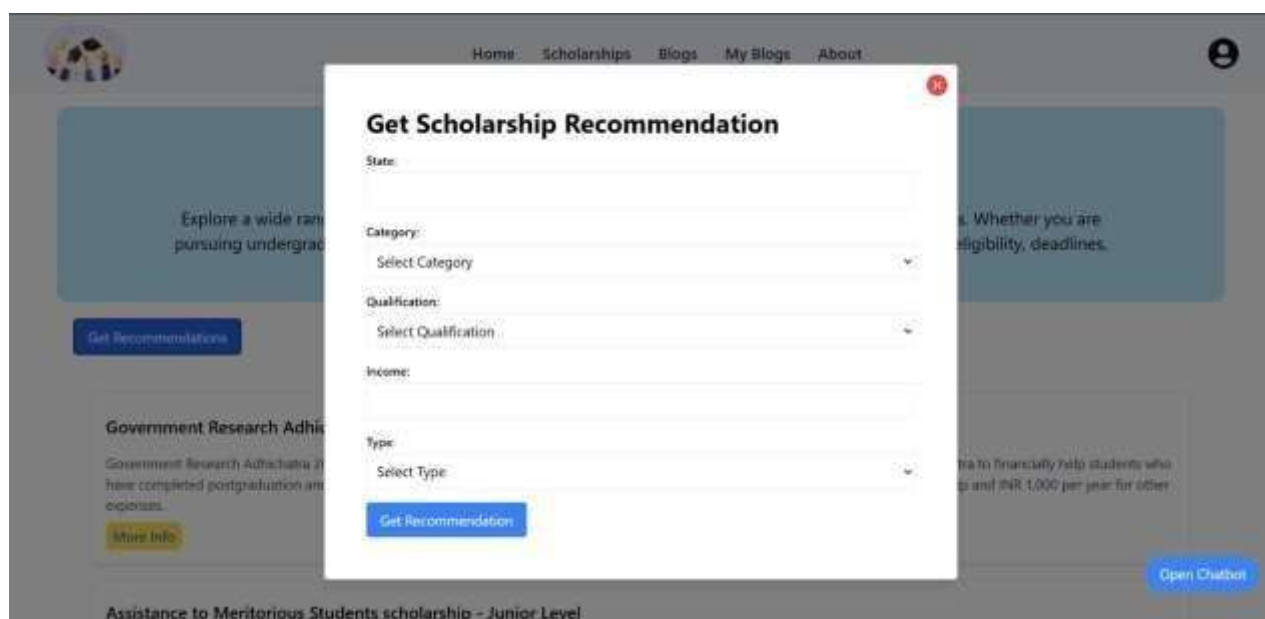
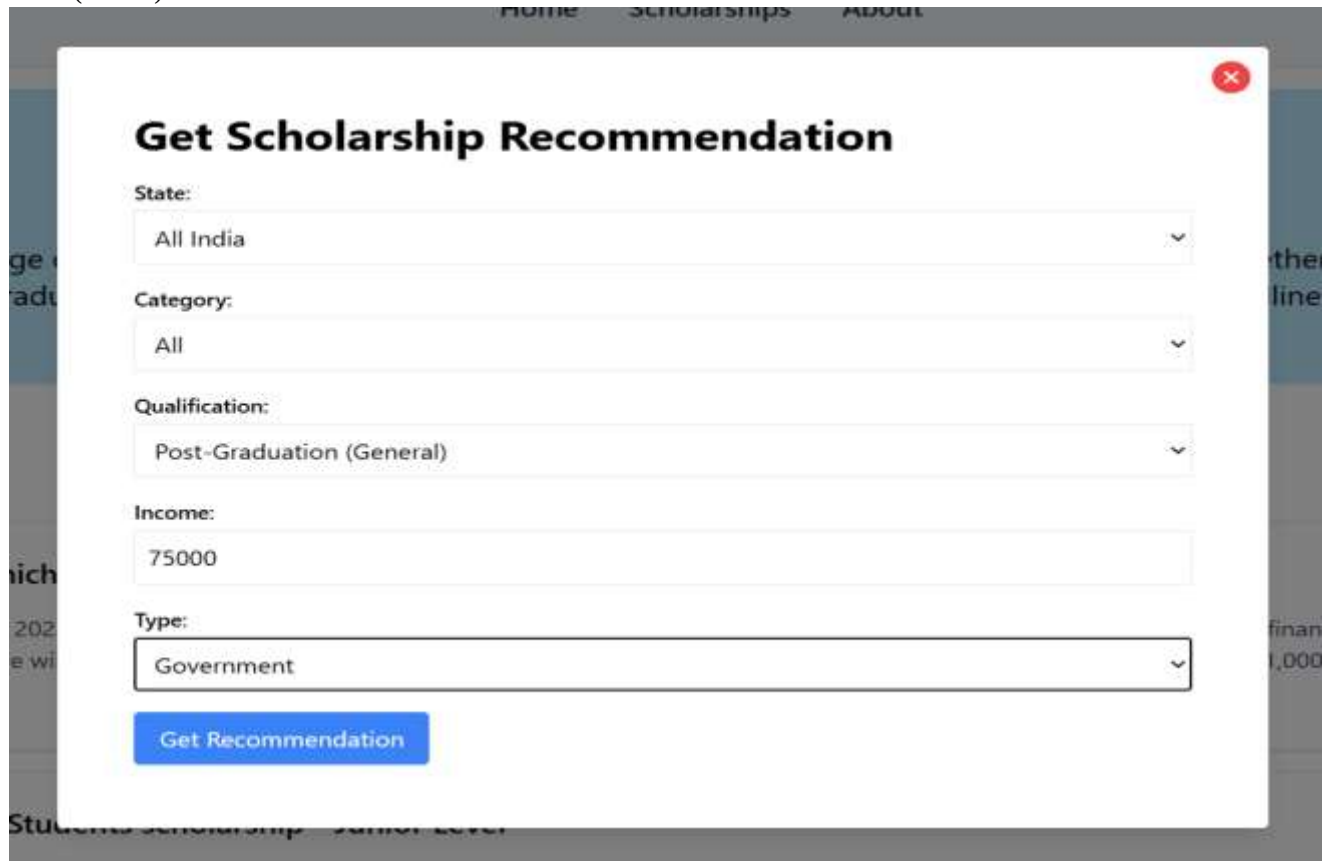


Fig.5 Scholarship Recommendation Interface

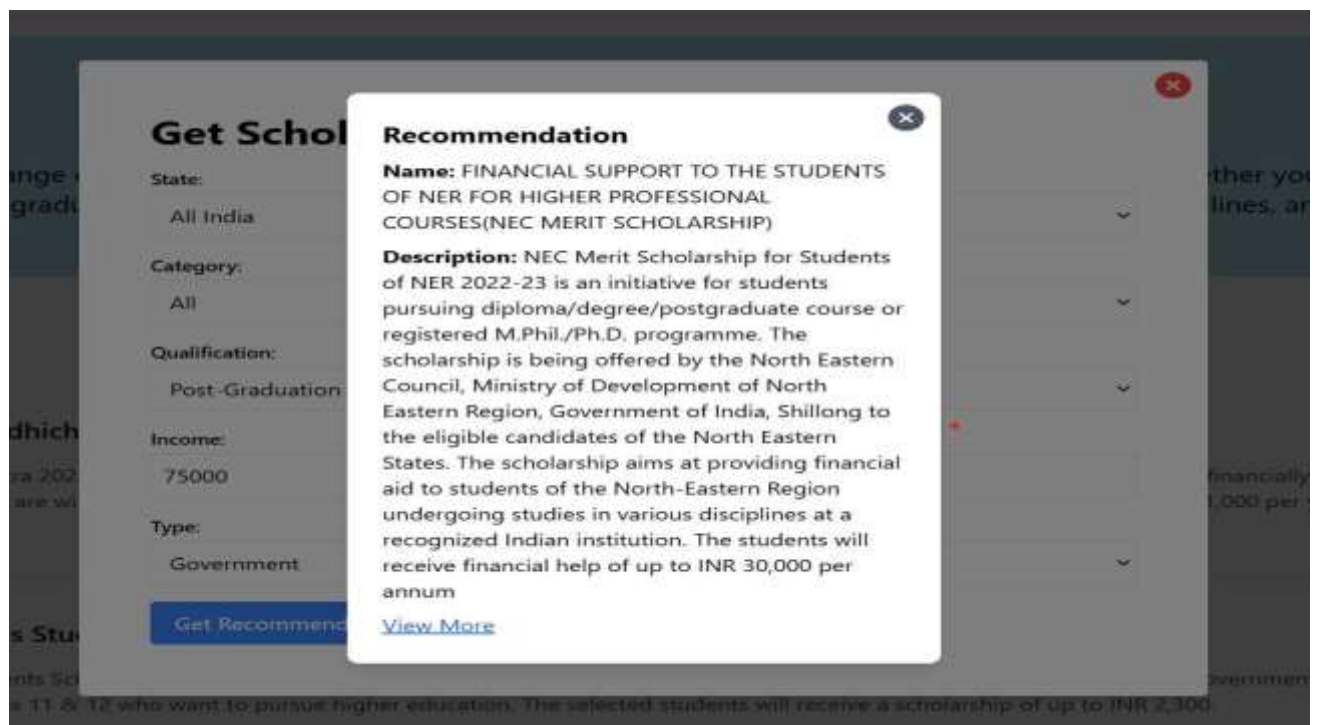
Fig. 5 shows Scholarship Recommendation filter for personalized scholarship selection.



The screenshot shows a web application interface with a modal titled "Get Scholarship Recommendation". The modal contains several input fields: "State:" with a dropdown menu showing "All India"; "Category:" with a dropdown menu showing "All"; "Qualification:" with a dropdown menu showing "Post-Graduation (General)"; "Income:" with a text input field containing "75000"; and "Type:" with a dropdown menu showing "Government". Below these fields is a blue button labeled "Get Recommendation". The background of the page is dark grey with some text visible, including "Home", "Scholarships", and "About".

Fig..5.1 Scholarship Recommendation Input Detail

Fig. 5.1 Scholarship recommendation input interface for entering user details.



The screenshot shows the same "Get Scholarship Recommendation" modal, but now it displays the results of the recommendation. The modal is titled "Recommendation" and contains the following text: **Name:** FINANCIAL SUPPORT TO THE STUDENTS OF NER FOR HIGHER PROFESSIONAL COURSES(NEC MERIT SCHOLARSHIP). **Description:** NEC Merit Scholarship for Students of NER 2022-23 is an initiative for students pursuing diploma/degree/postgraduate course or registered M.Phil./Ph.D. programme. The scholarship is being offered by the North Eastern Council, Ministry of Development of North Eastern Region, Government of India, Shillong to the eligible candidates of the North Eastern States. The scholarship aims at providing financial aid to students of the North-Eastern Region undergoing studies in various disciplines at a recognized Indian institution. The students will receive financial help of up to INR 30,000 per annum. Below the description is a blue button labeled "View More". The background of the page is dark grey with some text visible, including "Get Schol", "State:", "Category:", "Qualification:", "Income:", "Type:", and "Get Recommendation".

Fig.5.2 Scholarship Recommendation Result

Fig. 5.2 Recommended scholarship details displayed after submitting the input form

II. Comparative Analysis

This table presents a comparative analysis of existing research papers on scholarship recommendation and prediction systems.

Sr. No.	Feature / Aspect	Existing Systems	Scholar Opportunity Vista
1	Decision Logic	Predominantly black-box machine learning models (SVM, Random Forest) or rigid rule-based techniques with limited interpretability. [1][2][5]	Explainable AI (XAI) approach that provides transparent, human-readable justification for each scholarship recommendation.
2	Data Handling	Often limited to single-source or small datasets and prone to data imbalance issues. [2][3][5]	Handles multi-source and diverse datasets using advanced preprocessing and data balancing techniques.
3	Feature Weighting	Uses static or fixed feature weights that do not adapt to different scholarship requirements.[2][3]	Employs dynamic feature weighting that adapts according to scholarship-specific eligibility criteria.
4	Fairness & Bias	Fairness considerations are minimal, leading to potential demographic bias and poor generalization. [1][3][5]	Integrates fairness-aware algorithms to mitigate bias and promote equitable scholarship selection.

5	Evaluation Metrics	Evaluation is mostly limited to accuracy or basic performance measures. [3][5]	Uses multi-dimensional evaluation metrics, including precision, recall, fairness scores, and user trust.
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V. CONCLUSION

The Scholarship Recommendation System shows how combining smart sorting tools with today's web tech can make it easier for students to find the right scholarships. It uses strong user login security, custom filters, instant suggestions, and a chatbot to help students navigate the process. This makes it simpler to find and apply for financial help, speeds up access to funding, and gives students a user-friendly and effective platform. The project proves how helpful AI-based recommendation systems can be in education, and it sets the stage for future improvements like AI help with applications, linking to official scholarship sites, and better accessibility options.

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