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NextGen College Advisor

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Abstract: ***Navigating the college admission process in India is often overwhelming for students due to fluctuating cutoff ranks, diverse domains, and the need to consult multiple sources. Traditional methods of college selection rely heavily on manual research, which is time-consuming and error-prone. To address this challenge, NextGen College Advisor leverages machine learning specifically the Random Forest algorithm to predict students' admission chances based on historical KCET cutoff trends. The platform offers real-time, category-specific (General, OBC, SC, ST) predictions across various domains such as engineering, veterinary, and agriculture. It features secure OTP-based authentication, an intuitive dashboard, and multilingual support to enhance accessibility. By automating data analysis and college recommendation, the system minimizes human effort, increases prediction accuracy, and empowers students with personalized guidance for informed decision-making.***

Keywords: NextGen College Advisor, Machine Learning, Random Forest, KCET Cutoff Prediction, Educational Recommendation System

I. INTRODUCTION

College admissions in India have long lacked centralized organization, leading to confusion, inefficiencies, and missed opportunities for students. With the rapid increase in applicants and institutions, manually comparing cutoffs and eligibility across colleges has become a time-consuming and error-prone process. As competition intensified and data grew more complex, the need for a smarter, more structured approach to college selection became increasingly apparent. The rise of category-based reservations and variable cutoff trends further complicated decision-making for students and parents alike.

To tackle these challenges, we propose NextGen College Advisor, an intelligent, AI-powered guidance system designed to simplify and streamline the college admission process. Leveraging machine learning specifically the Random Forest algorithm our system analyzes historical KCET cutoff data to predict admission probabilities for various professional courses including engineering, veterinary, and agriculture. Students input their exam rank, preferred domain, and category into an intuitive interface. Based on this data, the model generates real-time predictions and displays personalized college recommendations through an interactive, multilingual dashboard.

This innovation automates the complex analysis traditionally done by students, increases the accuracy of decisions, and makes admission guidance more accessible, efficient, and inclusive for all.

II. LITERATURE REVIEW

Research has increasingly focused on developing intelligent systems to assist students in navigating complex college admission processes. Traditional recommendation platforms rely on static datasets and manual entry of academic preferences. While useful, these systems lack real-time analysis and personalized predictions, limiting their capability to offer dynamic, data-driven guidance. Such approaches underscore the foundational utility of digitization but also highlight the need for more adaptable, AI-powered solutions.

Several studies have explored the integration of artificial intelligence and machine learning in educational recommendation systems. Techniques like collaborative filtering and decision trees have been employed to suggest college options based on academic performance. However, these systems often overlook key factors such as category-based reservations, exam-specific cutoff variations, and real-time trends. Their static nature and limited adaptability make them less effective in the dynamic landscape of Indian competitive exams like KCET, underscoring the importance of models that evolve with shifting admission data.

Advanced systems have been proposed using Naïve Bayes and association rule mining to enhance recommendation accuracy. These techniques offer improved personalization but face challenges in scalability and domain-specific implementation. For instance, they are often confined to engineering disciplines and do not extend to veterinary or agricultural streams. Additionally, many lack multilingual interfaces, reducing accessibility for students from diverse linguistic backgrounds. These gaps reveal a critical need for flexible, multilingual systems capable of handling domain diversity and demographic inclusivity.

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Recent studies have also investigated AI-based systems that leverage neural networks and fuzzy logic to predict student success in admissions. While these models offer higher prediction accuracy, they often require large, well-structured datasets and suffer from interpretability issues. Furthermore, they rarely integrate real-time user input, which limits their practical applicability during dynamic counseling phases.

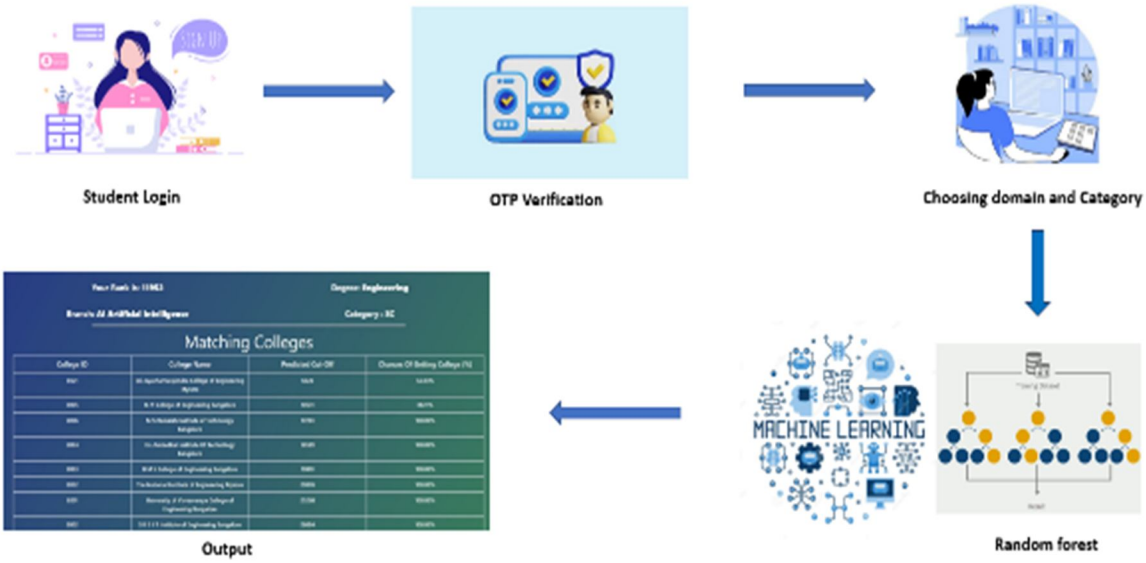
In response to these limitations, hybrid approaches are being explored that combine machine learning algorithms with user authentication, historical data analysis, and localized support. Such systems aim to deliver real-time, personalized college recommendations while ensuring security and accessibility. The inclusion of features like OTP-based login, secure dashboards, and local language options represents a significant step toward bridging technological gaps in education. These advancements pave the way for intelligent platforms like NextGen College Advisor, which utilize Random Forest models to offer category-based, domain-specific admission predictions, thereby revolutionizing how students approach the college selection process. The system not only reduces the manual burden on students but also improves decision-making by offering data-backed insights. Its multilingual and domain-flexible design makes it accessible to a broader range of users across regions. With continuous updates and scalability, it has the potential to become an essential tool in the modern educational ecosystem.

III. METHODOLOGY

The NextGen College Advisor system uses a layered architecture to deliver accurate admission predictions and an intuitive user experience. After secure OTP-based login, students enter their KCET rank, preferred branch, and category. This input is processed by a Random Forest model trained on six years of historical cutoff data to predict admission chances. Results are displayed on a React.js frontend with multilingual support, while Node.js and Express.js handle backend processing. MongoDB stores user data and predictions, ensuring real-time, personalized guidance through an efficient and scalable system.

Predictions are displayed through a responsive, multilingual React.js interface. The backend, built with Node.js and Express.js, manages user interactions and data flow, while MongoDB stores inputs and results for real-time access. This integrated system offers a fast, accurate, and personalized college recommendation experience for students.

Figure 1: Block Diagram Representing College Advisor



IV. RESULT AND DISCUSSION

The performance of the NextGen College Advisor system, demonstrating its effectiveness in predicting college admissions using historical KCET cutoff data. The system provides tailored recommendations based on user input, including rank, preferred branch, and reservation category. A carefully curated dataset spanning six years of cutoff records was used to train the Random Forest model, ensuring robust and reliable predictions.

The system's capabilities include:

- Admission Prediction Accuracy: The model achieved 85%–95% accuracy in predicting admission chances, with results displayed as college recommendations along with estimated cutoffs and probabilities.
- Multilingual Support: The interface supports local languages, enabling wider accessibility and ease of use for students across diverse backgrounds.
- Interactive Dashboard: A user-friendly dashboard presents real-time insights, including category-wise predictions and visual cues for admission likelihood, helping students make informed academic decisions quickly.
- Data Logging: The system maintains logs of student inputs and prediction results, enabling continuous performance evaluation and potential integration of updated cutoff trends.

Figure 2: Student login interface

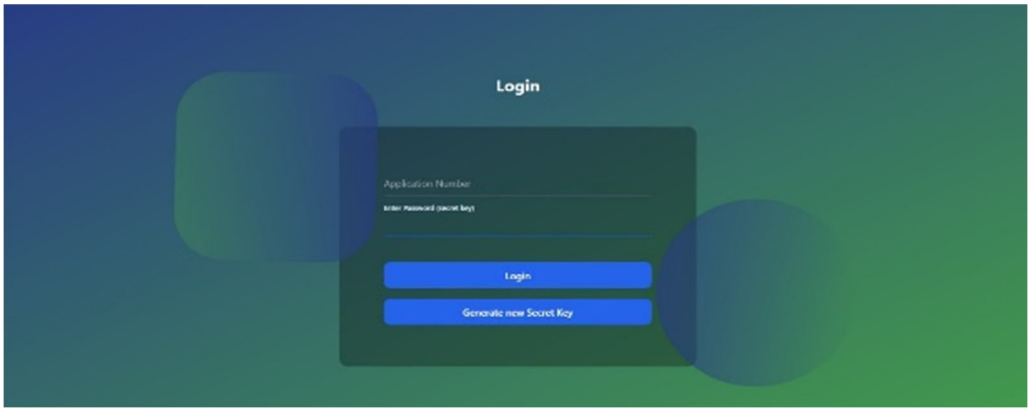


Figure 3: Generating secret key

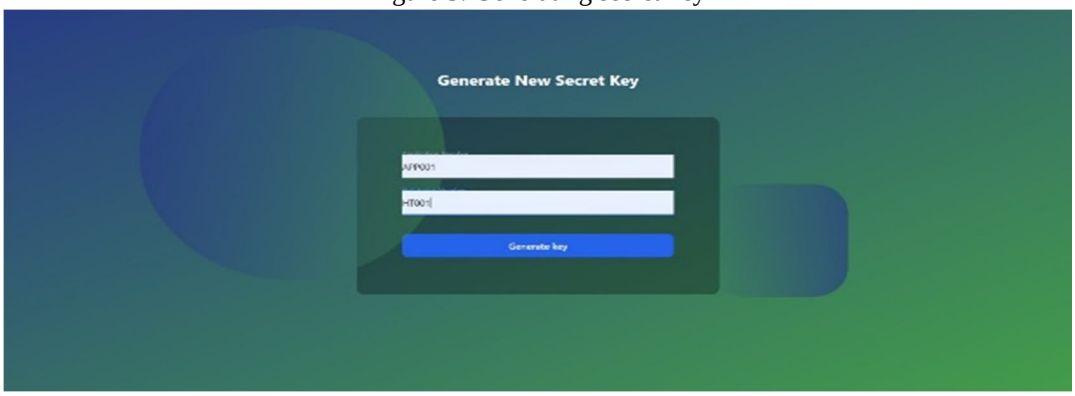


Figure 4: Student dashboard

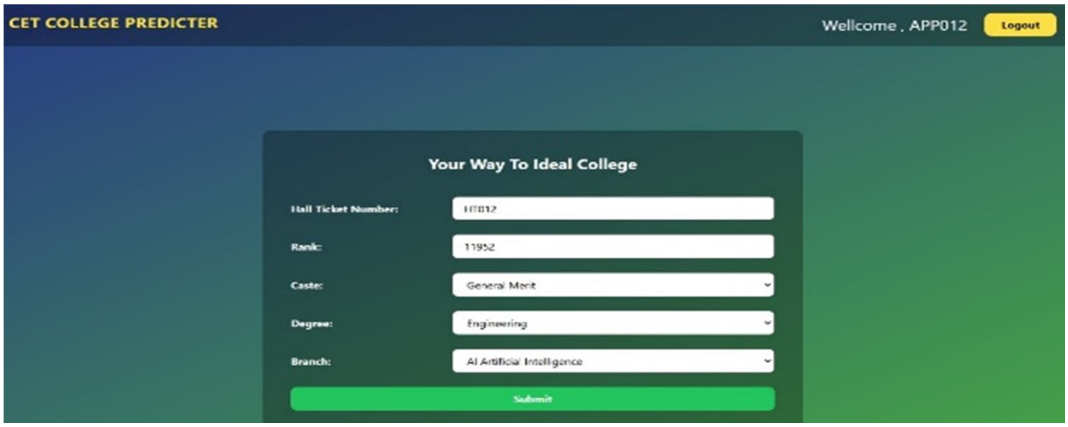
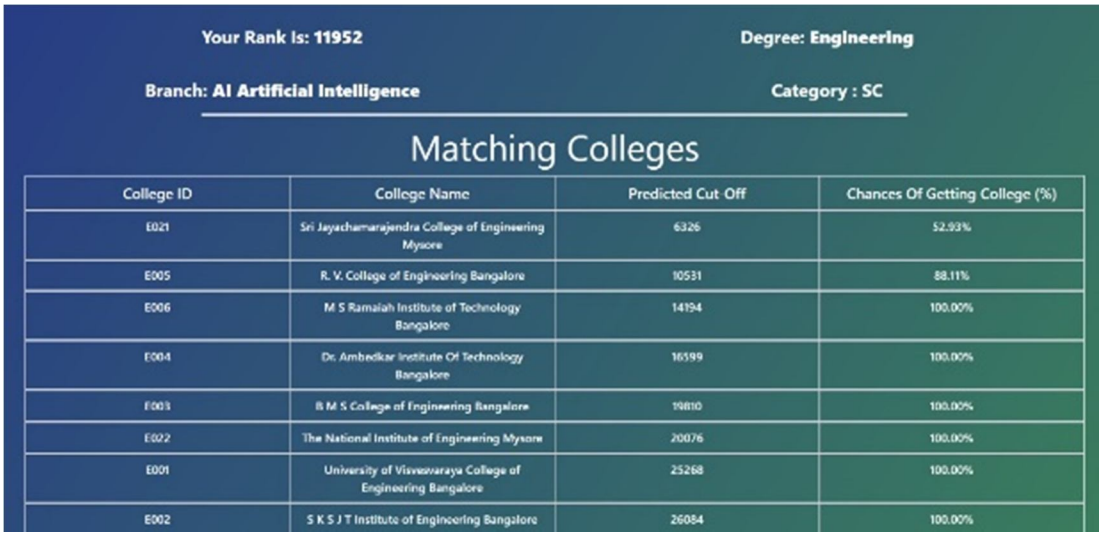


Figure 5: Displays available colleges with predicted cut-offs and admission chances



Your Rank Is: 11952 **Degree: Engineering**

Branch: AI Artificial Intelligence **Category : SC**

Matching Colleges

College ID	College Name	Predicted Cut Off	Chances Of Getting College (%)
E021	Sri Jayachamarajendra College of Engineering Mysore	6326	52.93%
E005	R. V. College of Engineering Bangalore	10531	88.11%
E006	M S Ramaiah Institute of Technology Bangalore	14194	100.00%
E004	Dr. Ambedkar Institute Of Technology Bangalore	16199	100.00%
E003	B M S College of Engineering Bangalore	19810	100.00%
E022	The National Institute of Engineering Mysore	20076	100.00%
E001	University of Visvesvaraya College of Engineering Bangalore	25268	100.00%
E002	S K S J T Institute of Engineering Bangalore	26084	100.00%

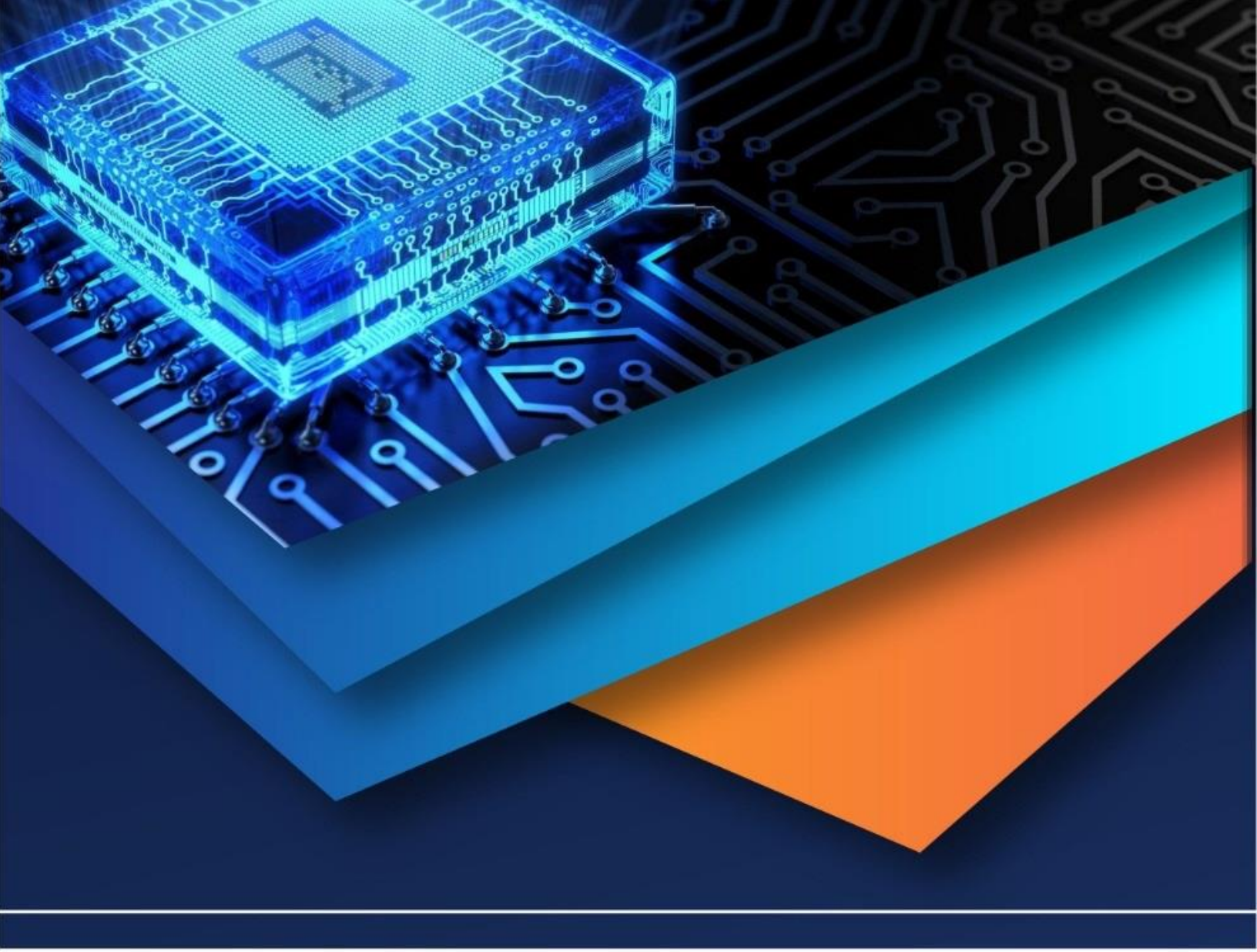
V. CONCLUSION

NextGen College Advisor offers an intelligent solution to the challenges of college admissions by integrating machine learning with a user-friendly, multilingual platform. Unlike traditional methods that require manual research and comparison across multiple websites, this system automates the prediction of admission chances based on historical KCET cutoff data, providing personalized, category-wise recommendations. Its scalable architecture supports diverse academic domains and ensures accessibility for students from various backgrounds. By streamlining the admission process, reducing effort, and improving decision-making accuracy, NextGen College Advisor empowers students with data-driven guidance and sets a new benchmark for AI-assisted educational support systems.

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