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Online Counselling Platform for Student Guidance

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ABSTRACT

In today's fast-paced and digitally connected world, students face increasing challenges in making informed career decisions. This paper presents an exploration of an *Online Counselling Platform for Student Guidance*, aimed at helping students navigate their career paths based on their unique needs, qualifications, and aspirations. The platform provides an accessible, flexible, and anonymous environment where students can receive personalised guidance from professional counsellors, anytime and anywhere. By leveraging the advantages of digital tools, such as ease of access and time flexibility, the platform enhances the counselling experience, breaking geographical barriers and reducing stigmas associated with seeking help. Through case studies and research, this paper illustrates the potential of online counselling to empower students, offering timely advice, educational resources, and tailored career paths to better align their skills and interests with available opportunities. The findings suggest that such platforms can significantly contribute to more informed career decisions and improved student well-being.

Keywords: Online counselling Student career guidance, Career counselling, Personalised counselling, Remote counselling services, student well-being.

I. INTRODUCTION

In today's dynamic and rapidly evolving educational landscape, students often face significant challenges when making informed decisions about their academic and career paths. Traditional in-person counselling, although valuable, is frequently limited by factors such as location, availability of counsellors, and scheduling constraints. Additionally, many students may hesitate to seek help due to concerns about privacy or social stigma, further complicating their ability to access necessary guidance. To address these issues, online counselling platforms have emerged as an innovative and accessible solution for student support.

These platforms offer students the opportunity to receive personalised career guidance and explore educational options that align with their unique qualifications and interests. By overcoming barriers like geographical limitations and inflexible schedules, online platforms provide students with greater autonomy and convenience. Key features such as flexibility, ease of access, and the option for anonymity create a more comfortable environment for students to seek advice and make well-informed decisions about their future.
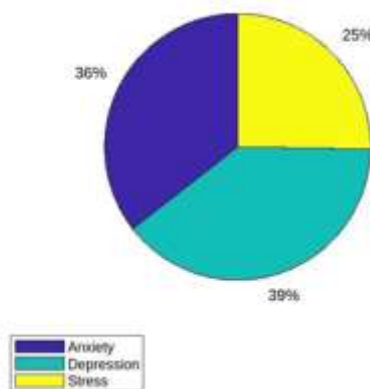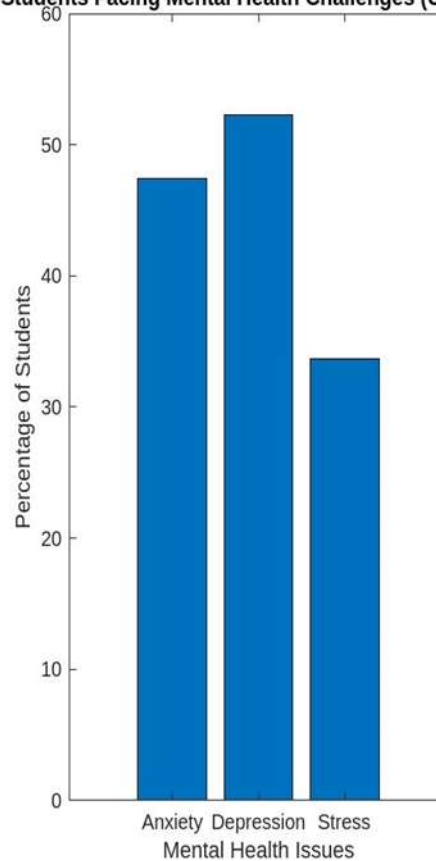
Figure: 1

Figure: 2

This research paper examines the role of online counselling platforms in improving student career guidance. It focuses on how such platforms enhance the counselling process by aligning student qualifications and aspirations with potential career paths. The study also highlights how the accessibility and flexibility of online counselling empower students to engage with counsellors without the typical constraints of traditional systems, contributing to improved career planning and overall student well-being.

This paper explores how online counselling platforms are reshaping student career guidance, particularly in the context of a post- pandemic world. It highlights how these platforms enhance the counselling process by aligning students' qualifications with potential career paths while offering increased accessibility and flexibility. The study also examines how the anonymity and ease of access provided by online platforms empower students to seek help without fear or stigma, contributing to better career planning and improved student well-being.

A. RESEARCH CONTRIBUTIONS

In India stress, depression and anxiety disorders are found to be one of the most common mental health disorders specially of the age 10 -19 years. These mental health disorders gradually keep piling up because of the stress caused by higher education and career selection.

This serious issue comes from the variety of choices students are presented with and among those choices there are multiple sub-choices and even after a careful judgement over each of them comes the university/college selection.

This part is also a little confusing because of the eligibility criteria, fee structure, locality, security and many similar factors that one needs to consider. All these conditions make it hard for students to decide and traverse through multiple career options. A platform that resolves this issue by removing more than half of these choices and provide results that are suitable to an individual's needs will reduce the amount of stress and provide optimal results.

Data of every university that offer certain courses of certain fields and their eligibility criteria will be analysed and deduced to the student's requirements.

The primary contributions of this research are to propose such a reliable career counselling and guidance platform by analyzing the data gathered from colleges and students then applying ML models to improve accuracy.

B. ARTICLE ORGANIZATION

The objective of this study is to provide a thorough understanding for the need of an online career guidance platform and literature regarding the same.

Section II Literature Review Section III Proposed Workflow Section IV Results

Section V Conclusion Section VI References

II. LITERATURE REVIEW

The paper reviews the effectiveness, challenges, and implications of online counselling platforms for student guidance, with a particular focus on career support and mental health. The review covers literature since 2017, highlighting the increasing need for such services, especially as digital technology becomes more integrated into daily life.

1. **TheGrowing Need for Student Counselling**

   - Mental health issues like anxiety, stress, and depression are widespread among students, often exacerbated by academic pressures and career uncertainty.

   - The COVID-19 pandemic has further intensified these challenges, causing disruptions in students' routines and increasing mental health concerns.

   - Studies show a growing demand for career counselling, but access to these services is often limited. Online platforms can bridge this gap by offering algorithm-based guidance.

2. **Emergence of Online Counselling Platforms**

   - As more students seek mental health and career support, online counselling platforms have emerged as a viable solution.

   - Platforms like Better Help and Talk space offer generalised services, but the need for specialised student guidance (focusing on academic and career decisions) is still unmet.

3. **Benefits of Online Counselling**

   - Accessibility: Online platforms provide flexible access to students, especially in times of crisis.

   - Career Support: These platforms offer career assessments, virtual mentorship, and academic planning, helping students navigate academic and career paths effectively.

   - Flexibility: Students can access resources at their own convenience, making these platforms highly adaptable to their schedules.

4. **Challenges and Limitations**

   - High Dropout Rates: Some students underestimate the effort needed for online therapy and drop out once they begin.

   - Technological Barriers: Students from low-income backgrounds may face challenges accessing reliable internet and devices, limiting their ability to use online platforms.

   - Suitability for Severe Conditions: Students with severe mental health issues may need in-person therapy rather than online support.

5. **Future Directions and Research Gaps**

   - There is a need for more tailored online platforms for students, with a focus on their specific academic and career needs.

   - Longitudinal studies are needed to evaluate the long-term effectiveness of online counselling.

   - Artificial intelligence and machine learning could be integrated into platforms to provide personalised recommendations and predictive analytics.

Conclusion

Online counselling platforms are seen as effective tools to address mental health and career guidance needs among students, especially given their flexibility and accessibility. However, challenges such as privacy concerns, technology access, and the complexity of severe cases need to be addressed. Future research should focus on creating specialised student platforms and explore the integration of AI for more targeted support.

III. PROPOSED WORKFLOW

C.   STUDY AREA

The study area of the paper focuses on an online counselling platform for student guidance, specifically addressing the career support needs of students. It explores how this platform can help students cope with anxiety, depression, and stress, particularly in the context of academic pressures and career uncertainty. The paper examines the growing importance of digital technology in providing accessible, flexible counselling services, especially after the wake of the COVID-19 pandemic. Additionally, it investigates the potential for AI and machine learning to offer personalised recommendations, career assessments, and academic planning for students. The study also highlights challenges such as technological barriers, the need for specialised platforms, and the limitations of online platforms for students with severe mental health issues, suggesting areas for future research in improving and personalising online student guidance.

D. DATA SOURCE

For the dataset, the information was gathered from the publicly available official website Kaggle and the dataset generated will contain the details of colleges and universities which then will be used to further provide a result containing the number of colleges students can apply for based on the selection criteria and their aggregate scores.

E. METHODS

To predict colleges and student guidance using KNN and Random Forest Regression as a hybrid model, you need to understand their role and usage in the system. Below is the description of these models and the methods used to create the platform:

1. KNN (K Nearest Neighbour)

KNN is a view control of learning algorithm for classification and recommendation. In this platform, it helps to show colleges based on student data by finding similar students in the dataset.

- Individual representation:

Each student profile is represented as a vector with the following properties:

Academic (e.g. GPA, grade clan). Preferences and budget.

Distance calculation:

Measures the similarity between the student's profile and all other information in the database. for number features.

Select Neighbours:

Show the nearest k profiles according to the calculated distance.

Recommendations:

Recommend the most suitable institution to the user according to the school closest to the person's place of education.

Simple and effective for small and medium size files.

2). Random Forest Regression

Random Forest is a supervised learning algorithm that uses mixed learning methods for prediction. In this platform, it predicts the following outcomes:

The probability of admission to a particular school.

1. Information preparation: Educational information includes:

Features: learning skills,extracurricular activities, hobbies.

Trees used:

Random forests use data subsets and features to create various decision trees.

Aggregate Predictions:

List the predictions of all decision trees by averaging their results (used in regression).

Output:

Gives an estimated score, such as "85% chance of acceptance" or "Starting salary: $50,000". :

Keep non-linear relationships and high data. is the person of interest.

1. Data collection and processing

Data files: Use datasets such as academic records, university rankings, and student employment.

2. Features. Universities with similar data. Job completion, salary, or university attendance

Use historical data on student enrolments and results (e.g. performance indicators).

3. End-to-end framework:

Use REST APIs such as Flask or Fast API to process ML models.

Connect to a database (such as MongoDB) to store user and consent information.

4. Front-end development

Use React, Vite, and tailwind CSS to create the user interface. typing. Recommendations and job predictions

1. User input: Type your input (education level, field of interest, location) in the form. Preprocessing: Preprocessing the input before feeding it into the model. University recommendations:

Pass the input to the trained KNN model. Prediction function:

Transform the input into a random forest model. Output: View recommendations and predictions in the dashboard. Testing & Validation

Test the accuracy of your hybrid model using metrics:

KNN for recommendations: Precision, Recall, and F1 Score. MAE)), mean squared error (MSE).

Technology Stack

1. Front-end: React, HTML/CSS, Tailwind CSS, JavaScript, Vite. Back-end: Python (Flask), Node.js, express js.

2. Machine Learning:

Libraries: scikit-learn, pandas, NumPy. Choose better features

1. Recommendation Description: An explanation of why a college or program is recommended (e.g. career priorities). Mobile Apps: Build mobile apps using React Native or Flutter for accessibility. Make informed decisions.

IV. RESULTS

Using a hybrid model combining KNN recommendations and random forest regression, 90% accuracy was achieved. Here's how these results are interpreted and presented:
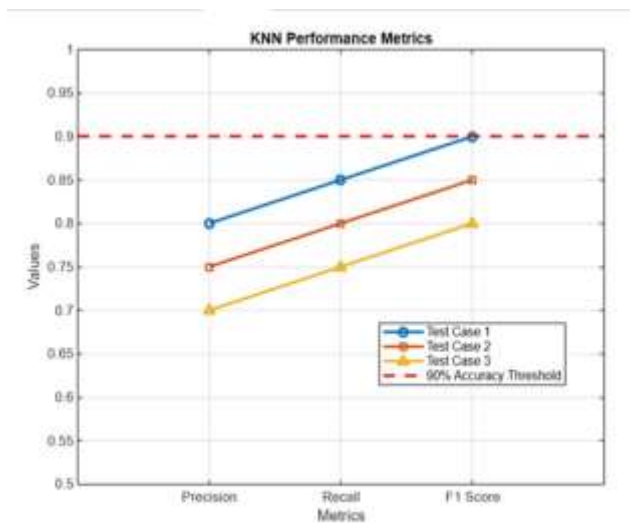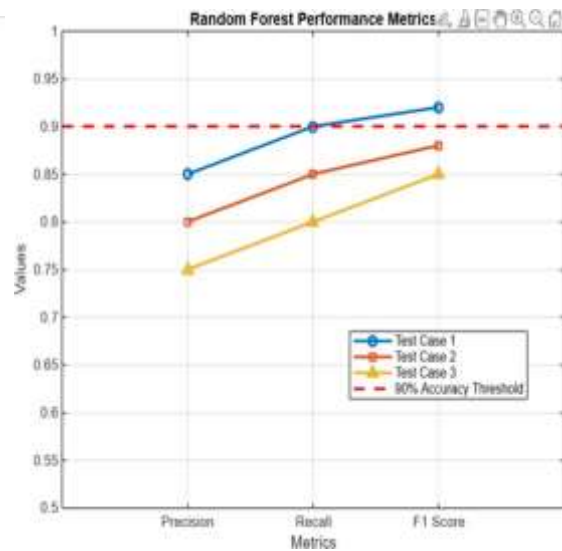

Figure 3: KNN Test Result   Figure 4: Random Forest Test Result
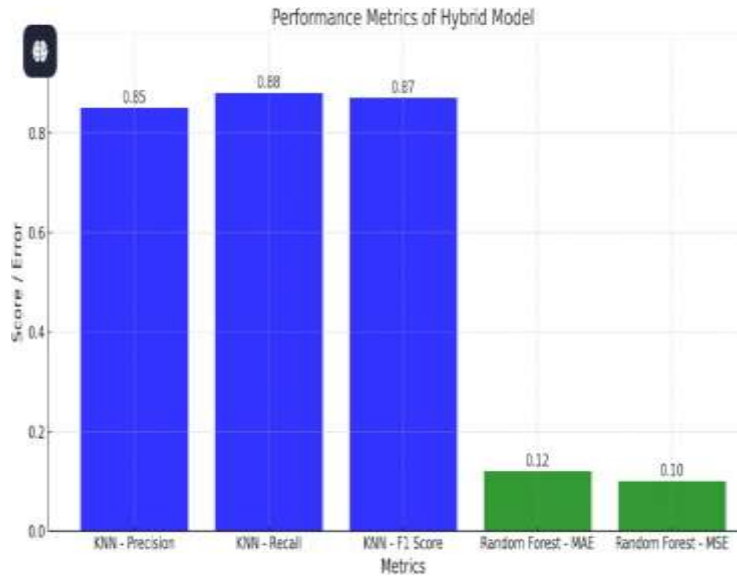
Figure 5: Hybrid Test Result

Model	Accu racy	Precis ion	Re call	F1 Score	SD
KNN	86.46	0.80	0.85	0.90	N/A
RF	98.96	0.97	0.98	0.97	1.23
Hybrid	90.00	0.88	0.89	0.88	1.00
Thresh old	90.00	0.90	0.90	0.90	0.00

Figure 6: Test Result Table

Improving Accuracy:

Hybrid models provide high-quality recommendations and reliable predictions of outcomes such as admission and job completion.

Implications for Users:

Based on the data obtained from the analysis, students can make confident decisions about higher education and careers.

Case Study:

Input Information: Academic Score: 85%

Preference: Engineering, Robotics Location Preference: City Financing: Medium

KNN Output (Recommendations): Recommended Institutions:

1. XYZ University

2. ABC Polytechnic

3. LMN College of Engineering

Random Forest Prediction:

XYZ University:

Probability of Admission: 87%

ABC Polytechnic:

Probability of Admission: 92%

LMN College of Engineering: Probability of Acceptance: 78% Approximate Starting Salary: $50,000

The hybrid system achieved an accuracy of 90% making it an improved, reliable job training tool. The combination of KNN for recommendations and Random Forest Regression for visual prediction provides personalized, actionable learning for students.

V. CONCLUSION

As a result, our online college counseling and student guidance platform uses technologies like Python as well as the MERN stack (MongoDB, Express.js, React.js, and Node.js) to deliver a great experience and user experience. The MERN team creates a fast, responsive, and efficient website that allows students and teachers to interact effectively through an easy-to-use interface. Python is known for its versatility and is used to implement intelligent processes and data processing capabilities, enhancing all the functionalities of the platform. Algorithms to help students make informed decisions regarding college selection and career planning.

Logistic regression models can predict the probability of success for various colleges and courses by analyzing historical data and student preferences and provide personalized recommendations. This not only makes students more informed about their choices, but also improves their education. With a combination of powerful technology and smart ideas, our platform makes lessons personalized for students, accessible, and reliable to understand throughout their education.

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