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ELEVATING STUDENT WELL-BEING THROUGH AI

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*Abstract :*The Student Counselling System through Artificial Intelligence (AI) is a cutting-edge platform designed to enhance student well-being, and career readiness. Leveraging advanced AI algorithms, the system provides personalized counselling, emotional support, and career guidance to students. A key feature of this system is its ability to generate comprehensive reports of counselling conversations, allowing both students and educators to track progress and identify areas of concern. The platform supports both voice and text input during counselling sessions, ensuring flexibility and accessibility for a diverse range of users. The role of Artificial Intelligence in human monitoring and recognition is taking advanced steps on every progress. This technology makes a greater impact on student's life in helping parents and teachers understand and realize their panic situations. This is achieved by monitoring facial expressions and human behavioral patterns. Utilize emotion recognition technology that can analyze facial expressions during the counselling session. Implement privacy protections to ensure that students' behavior and emotions in real- time, to evolving emotional states. If the system detects a student is sad or in stress during the counselling then it provides the suggestions to overcome the stress. The system also generates the report of the conversation held during the counselling session.

1. INTRODUCTION

In this modern world, students are vulnerable to many distractions that affect their education and career. Taking this social aspect into consideration, the Students Performance Analysis and It identifies the factors affecting the performance and helps counsel the student to improve it and provide relevant guidelines to choose a career path by providing an assessment report. The role of Artificial Intelligence in human monitoring and recognition is taking advanced steps on every progress. This technology makes a greater impact on student's life in helping parents and teachers understand and realize their panic situations. Several students are losing lives due to unbearable panic attacks and tough decisions they make due to their panic phase. In the current education system, many students face panic due to fear of exams, failure in exams, bullying, and so on. If this situation is recognized at its initial stage, it can help the guardians to save them from any dangerous decisions or situations. This automated system built eliminates the intervention of a human counsellor, which makes the software efficient, helps with unbiased decisions, and decreases the margin of error. In this system the conversation takes place using chatbot framework. The input to the system can be either through text or voice format. The input given by the student will be matched with the dataset content and the relevant output will be displayed. The student can also ask for the guidelines, which will be helpful for their future days.

The counselling that takes places between the student and the system will be recorded and the report is been generated. This report helps the teachers or parents to know the present condition of the student. This counselling system also detects the emotions of the students during the counselling session. If the students is found to be sad, stress, worried then the system generates and displays the queries related to students emotions. The privacy will be maintained for the each students details and counselling reports. The

conversation will be continued until the student encounters the exit button. This counselling system helps the students to freely share their problems, open up to ask guidelines.

I. ABOUT THE PROJECT

The Automated Student Performance and Counseling System emerges as a transformative force in modern education, addressing the intricate challenges students face. Fueled by Artificial Intelligence (AI), the system serves as a vigilant guardian, monitoring and responding to real-time student emotions. At the forefront is a dynamic chatbot, blurring the lines between human-like interactions and technological efficiency, adeptly processing both textual and vocal inputs for a versatile user experience. Beyond conventional assessments, the chatbot delves into the complexities of academic trajectories, providing students with not just numerical evaluations but comprehensive analyses. These outputs become roadmaps, offering insights into potential paths and pitfalls in the educational journey, aiding students in making informed decisions about their future careers. Privacy is a top priority, with each counseling session treated as a confidential conversation securely stored for reference. The conversations metamorphose into insightful reports, guiding educators and parents through the labyrinth of student well-being. The system's emotional intelligence is a cornerstone, adapting responses to the nuanced spectrum of student emotions, whether joy, sadness, stress, or worry. This blend of AI technology and emotional acumen creates a counseling experience that transcends binary distinctions, fostering a holistic and adaptive support system for students navigating the complexities of both academics and emotions.

II. SCOPE OF THE PROJECT

The Automated Student Performance and Counseling System is a comprehensive initiative leveraging Artificial Intelligence (AI) and an advanced chatbot framework to revolutionize educational support. It addresses multifaceted challenges in students' academic journeys, providing timely interventions through continuous AI monitoring. The chatbot automates counseling with flexibility in text and voice interactions. Beyond numerical evaluations, it analyzes factors influencing student success, offering detailed roadmaps for educators and parents. Privacy is prioritized, recording confidential sessions for insightful reports. Emotion detection tailors responses, enhancing a personalized counselling experience. This project transcends technological boundaries, blending innovation and empathy to create a digital sanctuary for holistic student development. It redefines academic success, promoting mental and emotional well-being, envisioning a transformative ecosystem that recognizes and addresses diverse student needs.

III. LITERATURE SURVEY

AI -Based Deep Learning Chatbot for Career and Personal Mentorship:

Muskan Sharma, Anita Kumari, Jyostna [1] proposed the system that has been made to meet this facility, where a student can express themselves anonymously, and without any criticism and partiality. The Chat-bot will be used to interact with the student regarding their professional and their professional and personal life both, which will solve their issues and doubts based on the questions they have asked. The student will input their query through text, and the bot will generate an output best suited in the student's interest. The proposed system created can provide the students with an alternate to hectic and physical mentoring system. In this system user can input their query as text message, after that the chatbot identifies the intent of the input query. Chatbot in this system is able to provide information and help in the academic session career choice this also creates friendly atmosphere to make the user comfortable enough to share their troubles. This computerised system stimulates human conversation, either in written or speech format allowing humans to interact with machines. The proposed system has been created using NLP and is a type of retrieval based chat-bot which is why it needs to be trained repeatedly for different batches of the dataset in order to produce an even more accurate model.

Machine Learning based Intelligent Career Counselling Chatbot(ICCC):

Dr. Reema Goyal, Navneet Chaudhary, and Mandeep Singh present ICCC [2], a chatbot catering to 10th and 12th standard students, as well as BTech students in the CSE/IT domain, offering comprehensive career guidance. Utilizing Emotional Intelligence and a user-friendly interface, ICCC engages users with a series of questions, aiding in doubt resolution, learning, and career decision-making for higher studies. The chatbot extends support beyond academics, addressing personal, relationship, and work-related concerns. The authors position ICCC within the broader context of conversational agents (CAs) and AI-powered chatbots, citing Io and Lee's analysis on their growing significance. Furthermore, they reference Adam, Wessel, and Benlian's insights into the impact of AI-powered chatbots in customer support. Additionally, Singh, Thakur, and Sharma

contribute to the discourse by discussing supervised machine learning algorithms' relevance in creating intelligent chatbots for career counseling. Proposed system has a narrow focus only to the certain aged students.

Title	authors	methodology	advantage	disadvantage
video analytic in-class student monitoringsystem	Mu-chun su, Ming ching chang	input through singleRGB camera	Detects and recognizes components based on eye blinking, gazes and expressions implemented in a classroom.	In class monitoring student cannot interact or share their emotions with this system.
Career chatbot on facebook messenger using AI	Nalina Suresh ,Nkandu Mukabe, Aina Hauwanga	Natural Languag eProcessing, data are stored in JSON files.	The user is able to request different resources from the chatbot	The chatbot was only able to interact in English. The system was only available to the facebook users.
Monitoring system to Ease Self-Regulated Learning Processes	Mario Manso-Vazquez	MLO and the integration of KWLused to communicate	Remote monitoring and automated evolution of user Could detect a problem from analyzing the information	This monitoring is only possible if counsellor have continuous direct contact with the students.
Monitoring and alerting panic situations in students using artificia lintelligence	Aishwarya Gowda A G, Wen-Kai Kuo, Heru Dwi Santoso	CNN algorithm Tensorflow API	Camera accessibility for stress and panic monitoring. Identifies different facial expressions and alert message sent to parents, teacher.	Fails to properly understand all the emotions.
Visual counselling agent and its evaluation	Yoshitaka Sakurai, Yukino, Motoki sakai	Generation of responses or reply by CREA	Generates counsellor like2D avatar output. Voice recognition result on strip window withdeletion button.	The report cannot be viewed by third party. Input is through voice. If the conversation is paused for long time then session disabled.
Application of psychological counseling syste mbased on virtual realitytechnology in collegestudent's psychological counselling	Dongxing, QingJi	Zig bee technology3DS max software	Data transmission usingBluetooth, WIFI. Implemented in classroom	It will not take the inputfrom the camera.
Using machin e learning to explore the relation betwee n student engagement and student performance	Fidelia Orji, Julita Vassileva	Expectation-maximization algorithm. Scikit-Learn libraryK-mean algorithm	Each student will have separate profile. Indicate the average percentage of student based on academic performance.	Student can interactwith the system.

IV. PROBLEM STATEMENT

The current state of student counselling systems is marked by inadequacies in personalization, emotional support, and career guidance, leading to suboptimal student well-being and academic outcomes. Conventional approaches lack the adaptability to provide tailored assistance based on individual student needs, resulting in a one-size-fits-all model that may not address nuanced emotional states or effectively guide students towards suitable career paths. The absence of a standardized system for documenting and analysing counselling interactions further hinders the ability to track student progress comprehensively.

Several students are losing lives due to unbearable panic attacks and tough decisions they make due to their panic phase. In the current education system, many students face panic due to fear of exams, failure in exams, bullying, and so on. If this situation is recognized at its initial stage, it can help the guardians to save them from any dangerous decisions or situations.

Sometimes students will not be comfortable in sharing any problems or hesitate to open up with the human counsellors. Due to the absence of counsellor in colleges, the students may not be able to attend counselling session. This issues can be resolved in AI based counselling system.

V. OBJECTIVES

- Students has to login to chatbot before starting the counselling session.
- Input can be given either in text or voice format.
- Report of the counselling session will be generated, which is available to the teachers or parents.
- Students can also get career guidance through the implemented algorithms and datasets.
- Students emotions are detected and based on that counselling is done.
- Number of counselling sessions attended is been monitored using login details by teachers.
- Each students will be provided with unique password inorder to login session.
- The counselling session is ended when the student encounters exit button.

VI. EXPECTED OUTCOMES

- Students can interact with system either through text or voice, which helps the student to interact comfortably during thecounselling session.
- The report of the each students' conversation with the system will be generated and stored in database.
- The privacy of the student data is maintained by allowing only the relevant admin to view the report of counsellingsession. The report generated can only be viewed by relevant admin.
- Student can also get career guidance through this counselling system.
- Attendance of the session can be recorded without any external help. When the student login into the counselling sessionthe attendance will be taken into count.
- Counselling is been carried based on student emotions and relevant solutions will be provided.

VII. SYSTEM DESIGN

System design is the method of defining the architecture, modules, interfaces and data for a system to satisfy specified requirements. System design could be seen as the application of systems theory to product development. The importance of system design process is to provide 'sufficient detailed data and information about the system and its system elements to enable the implementation consistent with architectural entities as defined in modules and views of the system architecture'. The structure of the system is perhaps the most critical factors affecting the quality of the software, and as a major impact on the later phases, particularly testing and maintenance. This design activity is often divided into separate phases that i.e, architecture design and detailed design.

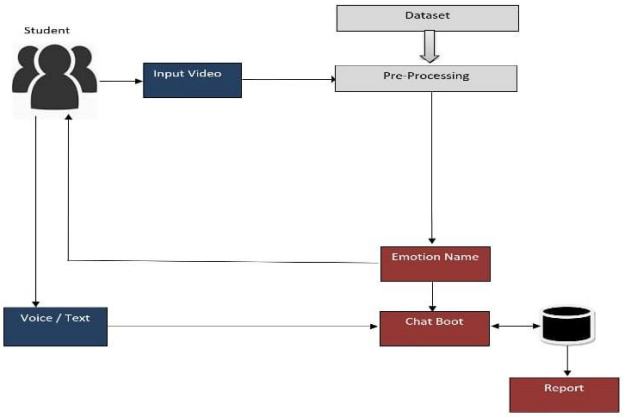

Figure 1: architecture design of counselling system

An architecture diagram is a network map used to explain the general shape of software program software in addition to the interactions, regulations and bounds between factors. It includes creating a plan that outlines the diverse additives, modules, and subsystems that make up the device, in addition to how they interact with one an any other. The software program this is built for computer-primarily based structures can showcase any such many structure patterns. determine 5.1 indicates the Architecturedesign of counselling machine.

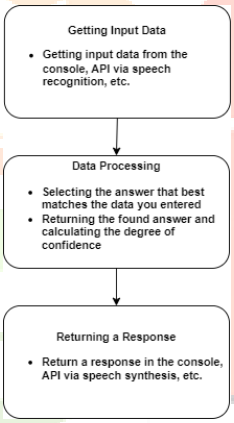

Figure 2: chatbot decision making architecture

VIII. RESEARCH METHODOLOGY

Elevating student well-being through AI involves a comprehensive research methodology to understand, implement, and assess the impact of artificial intelligence on various aspects of student life. Conduct an extensive review of existing literature on the intersection of AI and student well-being. Examine studies, articles, and reports that explore the potential benefits and challenges of AI in education and well-being. Identify and define specific indicators of student well-being, such as academic performance, mental health, social connections, and overall satisfaction with the learning environment. Establish a baseline understanding of the factors that contribute to well-being. Design surveys and conduct interviews with students, educators, and relevant stakeholders to gather qualitative and quantitative data on their perceptions of well-being, the current state of support systems, and the potential role of AI in enhancing well-being. Collaborate with educational institutions and AI experts to plan the implementation of AI-based solutions. This may involve developing AI tools for personalized learning, mental health support, or early intervention systems. Investigate the ethical implications of using AI in education and well-being. Ensure that privacy, data security, and bias considerations are addressed in the development and deployment of AI systems.

IX. CONCLUSION AND FUTURE ENHANCEMENT

The project goal is to implement a system that can be used in monitoring and guiding the student. In this system chatbot is implemented which can simulate human conversation, either through text or speech format, allowing student to interact with machines just like they do with human a human counsellors. The chatbot allows interaction to share the issues freely and also seek for career guidance. With the help of webcam the student emotions are detected and counselling will be carried out. The incorporation of an AI-powered student counseling system is a critical development in meeting the various and intricate demands of students in the context of education. Because of the system's ability to produce thorough reports, each student's progress can be thoroughly understood, facilitating prompt interventions and individualized support. With speech and text input possibilities, the communication platform is more flexible and inclusive, accommodating different learning methods and preferences. The system's capacity to recognize and address students' emotional states during counselling sessions is indicative of its dedication to offering thoughtful and perceptive assistance. The addition of on-demand career assistance to the system gives it a forward- thinking aspect and gives students the ability to make well-informed decisions as they navigate their educational and professional paths. The addition of on-demand career assistance to the system gives it a forward-thinking aspect and gives students the ability to make well-informed decisions as they traverse their educational and professional paths. Additionally, the addition of login count for attendance tracking enhances instructors' understanding and highlights the system's diverse role in raising overall student involvement. It offers a comprehensive and accommodating atmosphere that is sensitive to the particular requirements of every student, going above and beyond conventional counseling paradigms. The following are the future enhancement work:

- The datasets that the bots uses can be expanded even more for the chatbots to answer more queries.
- Enable the use of the bot in different language.

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