

Development of Mental Health Website and securing the chat application using 4X4 Hill Cipher Technique

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Abstract— Mental health is a vital aspect of overall well-being that encompasses emotional, psychological, and social factors. It affects how individuals think, feel, and behave, and can impact their ability to cope with daily challenges, maintain relationships, and achieve their goals. Mental health disorders, such as depression, anxiety, and bipolar disorder, are prevalent and can have a significant impact on a person's quality of life. Effective prevention, early intervention, and treatment of mental health issues can improve outcomes and reduce the burden on individuals, families, and communities. However, stigma and lack of access to care continue to be significant barriers to seeking and receiving adequate mental health support. To overcome such mental health Problem, we have built a mental health website using the 4x4 Hill Cipher technique implemented in the chat application, where we have initiated the chat between the psychiatrist and the user when the user wishes for the conversation with the professional. And the communication between the psychiatrist and the user is very much secured and safe because of the use of the 4x4 Hill Cipher Network Security Technique.

We made sure the website follows two-step authentication technique for the login setup when the user registers for the first time in the website. We also have a set of questions that the user can answer to calculate his mental health status, and the score obtained is then put into other constrains by the psychiatrist develop a method for themselves to deal with the patient.

Keywords—Chat application, Network Security, 4x4 Hill cipher, Student, Health, stress.

I. Introduction

Mental Health is one of the important aspects of a physical well-being. Just like another disorder, being is not well mentally should also be treated with care and concern. Moreover, in today's world we can see people with lots of mental health problems and which are not addressed, and not cared. Whereas very few people who could afford consulting a psychiatrist get themselves checked and treated for their mental disorder. Most individuals are prone to stress while some are affected by depression due to various reasons and factors. There by which In 2011 An administrative panel of World Health Organization (WHO) declared that by 2030 depression will be the chief source of world wide disease burden. There has to be a fundamental change to incorporate the mental fitness outline of an affected individual by healthcare providers and it will be made obligatory in the approaching years to deliver

In[2] Asma UI Hussna. have applied some AI models and also some Machine learning models to the data they collected from a respective website and used some classifiers to predict the mental health. They used five different classifier models to predict optimal accuracy including two different Explainable AI (XAI) techniques as it increases trust in the system.

In[3] Priyanka Kugapriya. has used some modern technological concepts to help Women overcome their mental health problems in the day-to-day basis. To do they planned to develop a Chatbot that uses some ML/AI concepts to detect real time problems and provide solution for it. It also does facial recognition system and also Recommendation system that helps in recommending the most appropriate counselor for the user based on his state.

In[4] Aanchal Bisht. have worked upon analyzing the data and providing better predictions used from best Machine Learning algorithms that suit their concepts. To do this they created a question set of 26 questions which was made answered by a set of students and then they stored the data in the database for

improved medication and also promotes speedy recoveries. Similarly, to aid this cause of concern we have planned For our project, we have planned to build mental health, where we focus more on the chat application, which can be used by the psychiatrist and the user who is affected by some mental health issue. The messages or chat between the psychiatrist and the user is full secure as we have used 4x4 hill cipher technique for security purpose.

II. Related work

In[1] Vedit Laijawala. has used various machine learning algorithms to find accurate relations with respect to the parameters to the data in the dataset that they collected. They label encoded the data for much better predictions. And used this labeled data which is exposed to some Machine Learning techniques to find the accurate mental health state on each and every individual.

better prediction using ML algorithms.

In[5] Dian Rachmawati. Have discussed some important aspects of using 4x4 Hill Cipher technique that stands for its high network security. They used symmetrical 4x4 Hill cipher technique which has a fast-processing time relatively.

III. Implemented System

Based on the above survey, we have designed a website as main goal of having an actual conversation between the psychiatrist and the user regarding the mental health issues. The conversations are encrypted using 4x4-hill cipher network security technique. The website is built using basic web technologies such as HTML, CSS and JavaScript and server connectivity using PHP. The main target audience are the students aged between 12 and 25.

As we can see from the survey, many students go through a lot of mental health issues that are not noticed and not spoken/shared with others. Such problems could be shared with a professional in the website that will be

anonymous, and the solution that is expected will be professional and feasible. Therefore, we have built a website that is simple and feasible to use by anyone.

The users are supposed to register their account in the website by providing their name, age, gender, email id and they can create their own password during registration process. Once after the registration is done, the website directs to another window where the user is supposed to answer a set of questions to determine the mental health condition of the user based on the score they receive. These questions were chosen from multiple sources and also framed by our team based on the survey we did. After answering the questions, the website redirects to the home page, where the website welcomes the user with the name

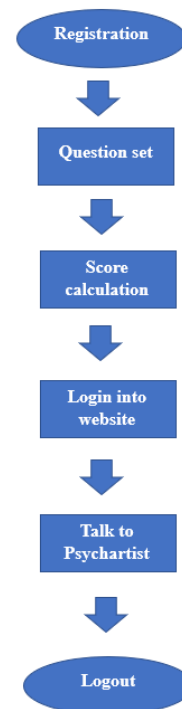
that they provided followed by their score for the questions they answered and also the result. The result says whether the user requires the mental health consultations from an actual psychiatrist or no. The results are determined based on the score they obtain. The results are displayed based on some specific criteria.

The website also contains some guidelines about:

Some self-care tips and techniques that can be practiced to overcome the mental health issues.

Some common myths and reality about the people opinion towards mental health and how to manage stress and anxiety in school, college, workplace or any other public place and Tips and strategies for managing the stress. Apart from all these when the user feels that they require some guidelines and consultations, then there is an option "Talk with Psychiatrist" in the navigation bar. When user clicks on it, a chat box opens where user can communicate with an actual psychiatrist on the other end through texts. The psychiatrist will not be aware of who the user is. This is because the user might be not be interested in disclosing their identity as they consider that having mental health issues in a student is a serious thing. As the website mainly focuses on the secured communication the text conversation happening between the user and the psychiatrist is encrypted using a 4x4-hill

cipher algorithm. It is an enclosed conversation occurring only between the user and the psychiatrist. The website is designed in a user-friendly way where it makes the user to feel that the website is been built for his own individual. It also contains an email service where user can send an email to the psychiatrist for any other confidential communications.



Flowchart: Overview of the project

We had also gathered some students to make a trail demonstration to check how feasible the website is to use. We had observed that we were able to achieve what we had planned. The students were afraid about their details and conversation would be stolen. But the users need not to worry as the details and the conversations are highly secured.

To store the details and the messages, MySQL database website, it fetches the name of the user from the data provided by the user itself. There is no any requirement of user verification or validation as it makes more complex for accessing the website. The website "talkwithpsychiatrist" is designed in such a way that any user can use it no matter what is the age. As an additional feature there is also an Inbuilt chat bot where it also provides some tips

and guidelines to handle the stress and overcome mental health issues. The tips, guidelines, techniques and the inbuilt chat bot is alone enough of features to overcome mental health issues by practicing it periodically. But the main feature “Talk with Psychiatrist” chat box is a high feature where the user can access to have a mental health consultation with an actual professional psychiatrist.

IV. Results And Analysis

We asked few students to use our website, and based on the data we received we made sure if our website is working.

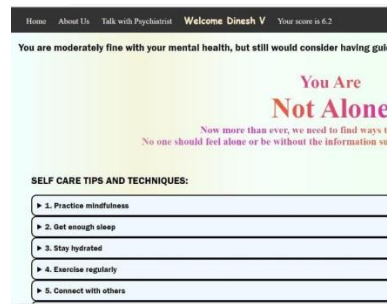
As mentioned earlier, we let the user answer few sets of questions. Where we have assigned few scores for each option in the question set. After the user submits the question set after answering the questions, the score is displayed to the user. Later when the user login into the website the user can see his/her score in the website along with the result initiated with respect to the score obtained during the answering session. And also, the home page contains some selfcare tips and techniques that a user can follow in order for some self-treatment needed. Apart from

this there are some Article and blogs that we have added in the home page to know more about some other techniques regarding on how to handle one’s mental health.

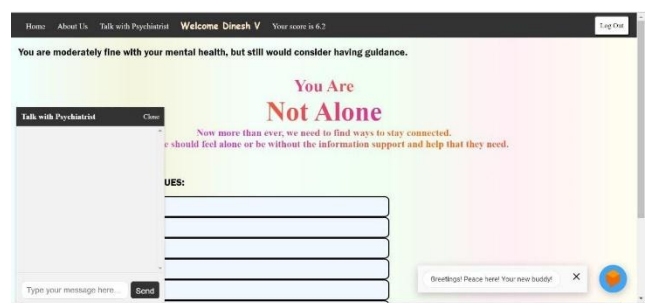
Login Form

New User? [Register your account](#)

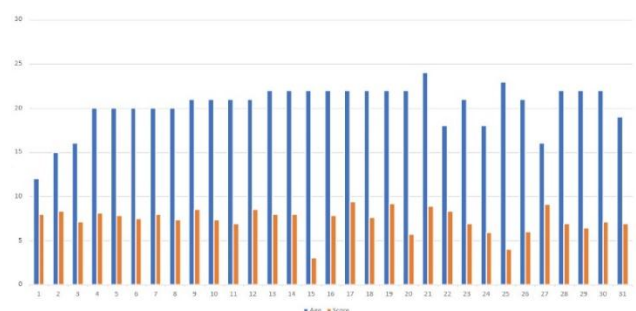
i. Login page



ii. Home page – Score display and Self-care tips and techniques – User side view of the website



iii. Home page after the chat box pops up



iv. Bar graph indicating the rise in the mental health issues with respect to the age

Issues with respect to the age



v. Psychiatrist side view of the website

V. Conclusion And Future Work

The average of the mental health scores has helped us to reach the conclusion that a good number of the youth population is facing mental health related problems. The mind is one of the most powerful organs in the body, regulating the functioning of all other organs. When our minds are unstable, they affect the whole functioning of our bodies. Being both physically and emotionally fit is the key to success in all aspects of life. Tools like chatbot are helpful in getting people to talk about One of the major reasons for the rise of mental health issues in young adults is the pressure to succeed in various aspects of life. Young adults are expected to excel academically, have an active social life, and excel in their careers. However, the expectations and demands placed on them can lead to feelings of stress, anxiety, and depression. Additionally, social media has created a culture of comparison and unrealistic expectations that can contribute to mental health issues.

The 4x4 hill cipher-based cipher is helpful in early intervention to prevent long term consequences and get support for young adults. Furthermore, parents, family members, and friends can support young adults by providing a safe and non-judgmental space for them to discuss their mental health concerns. Encouraging them to seek professional help when needed and being aware of the signs of mental health issues can also make a significant difference.

In conclusion, mental health issues are a growing concern in young adults, and it is important to address these issues through education, support, and treatment.

The COVID-19 pandemic has highlighted the importance of mental health in young adults. The pandemic has disrupted the lives of young adults, causing many to experience isolation, anxiety, and depression. As the world continues to recover from the pandemic, it is important for mental health services to be made more widely available to young adults, particularly those who have been most affected by the pandemic.

In order to address the future scope of mental

health issues in young adults, a multi-faceted approach is necessary. This includes increasing access to mental health services, improving mental health literacy among young adults, and reducing stigma surrounding mental health issues. It is also important to invest in research that can help us better understand the underlying causes of mental health issues in young adults, as well as effective treatments and prevention strategies.

In conclusion, the future scope of mental health issues in young adults is a complex and multifaceted issue that requires attention and action from all stakeholders. By prioritizing mental health and investing in effective solutions, we can help ensure that young adults have the support they need to lead healthy and fulfilling lives.

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