

Project Report Format

1. INTRODUCTION

1.1 Project Overview

My project is about predicting if a user needs to consult medical professional or not based on inputs and showing how much risk he's at based on risk assessment score

1.2 Purpose

Now a days tech workers are more prone to be stress and workload in the mean time they're neglecting their mental health and it bursts out if not took care,so mental health predictor shows how much risk he is at and precautions to be taken care.

2. LITERATURE SURVEY :

2.1 Existing problem

The existing landscape of mental health assessment tools reveals a gap in personalized and user-centric solutions. Current methodologies often lack the nuance required to provide individualized risk assessments, relying on generic approaches. Additionally, accessibility and user-friendliness are areas where some existing tools fall short, hindering widespread adoption

2.2 References

2.3 Problem Statement Definition

In the realm of mental health assessment, there exists a critical need for a predictive tool that not only evaluates an individual's risk of requiring professional assistance but also addresses the shortcomings of current methodologies. The lack of personalized risk assessment tools tailored to user-specific contexts and the limited accessibility of such tools pose significant challenges.

So our project aims to address individual risk assessment score and precautions to be taken care

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas

<https://drive.google.com/drive/folders/18779GqHf9wk6XDfevWLoNYx5m3s2Zmq5?usp=sharing>

3.2 Ideation & Brainstorming

<https://drive.google.com/drive/folders/18779GqHf9wk6XDfevWLoNYx5m3s2Zmq5?usp=sharing>

4. REQUIREMENT ANALYSIS

4.1 Functional requirement

User Input Interface:

The system shall provide a user-friendly interface to input relevant personal information, including age, gender, geographical location, and employment details.

Risk Assessment Algorithm:

The application shall incorporate a robust risk assessment algorithm that analyzes user input to predict the likelihood of requiring mental health treatment.

Privacy Measures:

The system shall implement stringent privacy measures to safeguard user data, ensuring compliance with data protection regulations.

Output Visualization:

A clear and concise visualization of the risk assessment results shall be presented to the user, indicating the level of risk and the necessity for professional consultation.

4.2 Non-Functional requirements

Performance:

The system shall process user input and provide risk assessment results within a reasonable time frame, ensuring a responsive user experience.

Security:

Robust security measures shall be in place to protect user data, including encryption during data transmission and secure storage practices.

Scalability:

The system architecture shall be designed to accommodate potential future enhancements and increased user loads without compromising performance.

Usability:

The application shall be intuitively designed, with a user interface that is accessible to individuals with varying levels of technological proficiency.

Reliability:

The system shall consistently produce accurate and reliable risk assessments, minimizing false positives and false negatives in predictions.

5. PROJECT DESIGN

5.1 Data Flow Diagrams & User Stories

<https://drive.google.com/drive/folders/18779GqHf9wk6XDfevWLoNYx5m3s2Zmq5?usp=sharing>

5.2 Solution Architecture

<https://drive.google.com/drive/folders/18779GqHf9wk6XDfevWLoNYx5m3s2Zmq5?usp=sharing>

6. PROJECT PLANNING & SCHEDULING

6.1 Technical Architecture

<https://drive.google.com/drive/folders/18779GqHf9wk6XDfevWLoNYx5m3s2Zmq5?usp=sharing>

6.2 Sprint Planning & Estimation

<https://drive.google.com/drive/folders/18779GqHf9wk6XDfevWLoNYx5m3s2Zmq5?usp=sharing>

6.3 Sprint Delivery Schedule

<https://drive.google.com/drive/folders/18779GqHf9wk6XDfevWLoNYx5m3s2Zmq5?usp=sharing>

7. CODING & SOLUTIONING (Explain the features added in the project along with code)

7.1 Feature 1

This is trained model data preprocessed by removing unnecessary columns and separating target variable , encoding through label encoder and trained using RandomForest classifier

and tuned using adaBoost and deployed using flask.

7.2 Feature 2

Picked some important columns which decide majorly if a user prone to mental health issue and mapped based on values and calculated risk assessment score through cumulative score

7.3 Database Schema (if Applicable)

8. PERFORMANCE TESTING

8.1 Performace Metrics

```
✓ [73] print(accuracy_score(y_test, RandomForest_pred))
```

→ 0.768

```
✓ [120] print(classification_report(y_test, RandomForest_pred))
```

	precision	recall	f1-score	support
No	0.73	0.83	0.78	123
Yes	0.81	0.71	0.76	127
accuracy			0.77	250
macro avg	0.77	0.77	0.77	250
weighted avg	0.77	0.77	0.77	250

```
✓ [0s] pd.crosstab(y_test, RandomForest_pred)
```

col_0	No	Yes
treatment		
No	102	21
Yes	37	90

9. RESULTS

9.1 Output Screenshots

How Are you feeling today :)?

Age

Gender

Select a Country:

Select a State:

Are You Self-employed?

Select Company Size:

Select Company Size:

Select Company Size:

Are you doing any Remote work?:

Are you working in tech company?:

Are you having benefits in company?:

Do you know the options for mental health care your employer provides?:

Has your employer ever discussed mental health as part of an employee wellness program?:

Does your employer provide resources to learn more about mental health issues and how to seek help?:

Is your anonymity protected if you choose to take advantage of mental health or substance abuse treatment?:

How easy is it for you to take medical leave for a mental health condition?:

Do you think that discussing a mental health issue with your employer would have negative consequences?:

Do you think that discussing a physical health issue with your employer would have negative consequences?:

Would you be willing to discuss a mental health issue with your coworkers?:

Would you be willing to discuss a mental health issue with your direct supervisor(s)?:

10. ADVANTAGES & DISADVANTAGES

Advantages:

Early Intervention:

The predictor enables early identification of individuals at risk, facilitating timely intervention and mental health support.

Accessibility:

As an online tool, it provides accessible mental health assessment to a wide audience, overcoming barriers associated with physical consultations.

Privacy Preservation:

Users can assess their mental health privately, encouraging more candid responses and reducing the stigma often associated with seeking help.

User Empowerment:

Empowers individuals to take proactive steps towards their mental well-being, fostering a sense of control over their health.

Disadvantages:

Database: Model doesn't have database to store user information

Algorithmic Bias:
The risk assessment algorithm may inadvertently exhibit bias, impacting the accuracy of predictions and potentially leading to unequal treatment recommendations.

Limited Context:

The predictor may lack the nuanced understanding of individual circumstances, potentially overlooking specific contextual factors that influence mental health.

Dependency on User Input:

Accuracy is contingent on truthful and accurate user input, which may be influenced by user subjectivity or willingness to disclose sensitive information.

Over-Reliance on Technology:

Users might overly rely on the tool, neglecting traditional and more comprehensive mental health assessments conducted by healthcare professionals.

Ethical Concerns:

The use of predictive technology in mental health raises ethical concerns regarding privacy, consent, and the responsible handling of sensitive user data.

11. CONCLUSION

The mental health predictor represents a significant step towards leveraging technology for proactive mental well-being. By providing accessible and early risk assessment, it empowers individuals to prioritize their mental health. However, careful attention must be given to ethical considerations, algorithmic biases, and the tool's limitations. Continued refinement, incorporating user feedback and advancements in mental health research, is essential. As technology evolves, striking a balance between innovation and ethical responsibility will be pivotal for the sustained impact of mental health predictors. Ultimately, this project contributes to the ongoing conversation about mental health in the digital age, aiming to bridge gaps in accessibility and promote a holistic approach to mental well-being.

12. FUTURE SCOPE

Integration of Real-time Data: Incorporating real-time data sources, such as wearable devices or social media analytics, to provide a more dynamic and accurate assessment of an individual's mental health.

Personalized Interventions: Developing a feature that suggests personalized interventions or coping strategies based on the user's assessment, promoting proactive mental health management.

Machine Learning Refinement: Continuously refining the machine learning model by incorporating more diverse datasets and leveraging advanced algorithms to improve prediction accuracy and reduce biases.

Global Accessibility: Expanding the tool's reach to a global audience by incorporating multilingual support and considering cultural nuances in mental health perceptions and practices.

Collaboration with Mental Health Professionals: Establishing partnerships with mental health professionals to ensure the predictor aligns with clinical standards and can serve as a supplementary tool in conjunction with professional care.

User Education and Awareness: Implementing features to educate users about mental health, reduce stigma, and increase awareness of available resources, fostering a supportive community.

Continuous User Feedback: Implementing mechanisms for users to provide feedback, ensuring the tool evolves based on user experiences and remains relevant to their evolving needs.

13. APPENDIX

Source Code

GitHub & Project Demo Link

Vamsi917

<https://drive.google.com/drive/folders/18779GqHf9wk6XDfevWLoNYx5m3s2Zmq5?usp=sharing>