A
Mini Project Report on

Mental Health Companion
(EMOTIVATION)

Submitted in partial fulfillment of the requirements
for the degree of
BACHELOR OF ENGINEERING
IN
Computer Science & Engineering
Artificial Intelligence & Machine Learning

by

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CERTIFICATE

This is to certify that the project entitled "**MENTAL HEALTH COMPANION"** is a bonafide work of Jay Thakare(23106052), Saanj Shetty(23106070), Sneha Utekar(23106116) , Divya Patil (23106124) submitted to the University of Mumbai in partial fulfillment of the requirement for the award of **Bachelor of Engineering** in **Computer Science & Engineering (Artificial Intelligence & Machine Learning).**

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Project Report Approval

This Mini project report entitled "**Mental Health Companion"** by **Jay Thakare, Saanj Shetty, Sneha Utekar and Divya Patil** is approved for the degree of ***Bachelor of Engineering*** in ***Computer Science &Engineering***, (AI&ML) ***2024-25***.

External Examiner: _____

Internal Examiner: _____

Place: APSIT, Thane

Date:17/10/24

Declaration

We declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission hasnot been taken when needed.

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ABSTRACT

In today's complex world, mental health has become a pressing concern, with many struggling to manage stress, anxiety, and other psychological issues. This project introduces a digital mental health companion, a tool designed to provide accessible and personalized support for mental well-being. Using machine learning, natural language processing, and behavioural analytics, the companion offers real-time emotional support, coping strategies, and mental health resources.Functioning as a virtual therapist, available 24/7, it guides users through mindfulness exercises, cognitive-behavioural therapy techniques, and mood tracking.

Keywords: Mental Health Web Application, Real-Time Feedback Mechanism, Web Development Frameworks, Responsive Web Design.

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CHAPTER 1

INTRODUCTION

1. INTRODUCTION

The growing prevalence of mental health challenges has become a significant concern globally, with millions of people struggling to maintain their mental well-being in the face of stress, anxiety, depression, and other psychological issues. Despite the increasing awareness of mental health, many individuals face barriers to accessing timely and effective support, whether due to the stigma associated with seeking help, the high cost of therapy, or the limited availability of mental health professionals.

In response to these challenges, digital health solutions have emerged as a promising avenue for expanding access to mental health care. Among these innovations is the concept of a mental health companion — a digital tool designed to provide continuous, personalized support for individuals seeking to manage their mental well-being. This mental health companion acts as a virtual guide, offering users the resources, strategies, and encouragement needed to navigate their mental health journeys.

Leveraging advanced technologies such as artificial intelligence, natural language processing, and data analytics, the mental health companion can engage users in meaningful conversations, monitor their emotional states, and provide tailored recommendations based on individual needs. It functions not only as a source of immediate support during moments of distress but also as a proactive tool for building resilience and fostering long-term mental health.

By integrating seamlessly into daily life, the mental health companion empowers users to take control of their mental well-being, offering a scalable, accessible solution that complements traditional therapy. As society continues to recognize the importance of mental health, the development and adoption of such tools have the potential to significantly impact public health, making mental health support more accessible and effective for all.

Mental health challenges, including stress, anxiety, and depression, are increasingly common in today's world, yet access to timely and effective support remains limited for many. A mental health companion is a digital tool designed to address this gap by providing personalized, continuous support to individuals. Utilizing advanced technologies

like AI and natural language processing, it offers real-time emotional assistance, coping strategies, and mental health resources. Acting as a virtual guide, the companion empowers users to manage their mental well-being proactively, complementing traditional therapy and making mental health care more accessible.

Mental health companions play a crucial role in making mental health care more accessible, especially for those who may not have easy access to traditional therapy. They provide ongoing support, help in early detection of mental health issues, and empower individuals to take an active role in managing their mental well-being.

Overall, a mental health companion is an invaluable tool in promoting mental health, offering personalized support, and helping individuals navigate the challenges of mental well-being in today's fast-paced world.

It is a supportive resource designed to assist individuals in managing and improving their mental well-being. These companions can take various forms, including digital applications, wearable devices, or even trained professionals like therapists or counselors. The primary goal of a mental health companion is to provide continuous support, guidance, and tools to help users cope with stress, anxiety, depression, or other mental health challenges.

CHAPTER 2

LITERATURE SURVEY

2. LITERATURE SURVEY

2.1-HISTORY

The concept of a "mental health companion" can refer to various forms of support systems, including digital applications, therapy animals, or even human companions dedicated to helping individuals with their mental health. Here's a brief overview of the history behind the idea of a mental health companion:

1. Historical Use of Therapy Animals:
Early 20th Century: The idea of using animals as companions to support mental health dates back to the early 20th century. Sigmund Freud, the father of psychoanalysis, often had his dog present during therapy sessions, believing that the animal had a calming effect on his patients.

1940s-1950s: The formal use of therapy animals gained recognition after World War II. Animals, particularly dogs, were used to help soldiers recover from the emotional trauma of war. These animals provided companionship, helping to alleviate symptoms of PTSD, anxiety, and depression.

2. Emergence of Digital Mental Health Tools:
Early 2000s: With the advent of the internet and mobile technology, the concept of a digital mental health companion began to take shape. Early mental health websites and forums provided support and information, allowing individuals to connect with others experiencing similar challenges.

2010s: The rise of smartphones led to the development of mental health apps, offering tools for meditation, mood tracking, and cognitive behavioral therapy (CBT). These apps, such as Calm, Headspace, and Woebot, acted as companions, helping users manage their mental health on the go.

AI and Chatbots: In recent years, AI-driven mental health companions like Woebot and Wysa have emerged. These chatbots use AI to provide real-time emotional support, cognitive-behavioral techniques, and mindfulness exercises. They offer a non-judgmental, accessible form of support, particularly for those who may not have access to traditional therapy.

3. Human Companionship in Mental Health:

Peer Support Networks: Human companions, such as peer support specialists, have also played a crucial role in mental health care. These individuals, who have lived experience with mental health challenges, provide support, empathy, and guidance to others on their recovery journey.

Modern Integration: Today, the concept of a mental health companion is integrated into various forms of care, from in-person support groups to digital platforms, reflecting the evolving understanding of mental health and the importance of accessible, personalized care.

4. Recent Developments:

Increased Focus on Accessibility: With the growing recognition of mental health issues globally, there's been a push to make mental health support more accessible. This includes the development of more sophisticated AI companions, expanding the role of therapy animals, and increasing funding for peer support programs.

Pandemic Impact: The COVID-19 pandemic highlighted the importance of mental health care, leading to a surge in the use of digital companions as people sought support during isolation and lockdowns.

The concept of a mental health companion continues to evolve, with ongoing research and innovation aimed at improving the effectiveness and accessibility of these tools. Whether through animals, digital tools, or human connection, mental health companions are increasingly recognized as valuable resources in the mental health care ecosystem.

2.2-LITERATURE REVIEW

- "Conversational Agents in Mental Health: A Review of Recent Developments and Future Directions" by Aditya Nrusimha Vaidyam,Hannah Wisniewski,John David Halamka at PubMed, EmBase, PsycINFO, Cochrane, Web of Science in June 2018 .

  Description:

  The paper discusses the use of chatbots and other conversational agents in mental health. chatbots and virtual assistants, to support mental health care. These agents engage users in therapeutic conversations, offering assistance, resources, and self-care tools. Recent developments focus on enhancing natural language understanding, emotional recognition, and personalized care.

- "Digital mental health interventions for depression and anxiety in children and adolescents: A systematic review and network meta-analysis" by Susanna Lehtimaki,Katherine T Foster in April 2021.

  Description:

  Focuses on the effectiveness of digital interventions, such as mobile apps, online therapy, and computer-based programs, in managing depression and anxiety among young people. The review systematically analyzes various studies to compare the efficacy of different digital approaches.

- "Artificial Intelligence for Mental Health and Mental Illnesses." by Sarah Graham,Camille Nebeker in November 2019.

  Description:

  Explores the role of AI technologies in addressing mental health challenges. It examines how AI-driven tools, such as machine learning algorithms and natural language processing, are being used to detect, predict, and treat mental health disorders. The paper also discusses ethical considerations, such as data privacy, bias in AI models, and the potential to replace human therapists.

- "Artificial Intelligence for Mental Healthcare: Clinical Applications, Barriers, Facilitators, and Artificial Wisdom" by Ellen E. Lee,Munmun De,Choudhury,Dilip V. Jeste in PMC 2022 Sep 1.

  Description:

  It highlights clinical applications of AI, such as diagnosing mental health conditions, providing personalized treatment recommendations, and supporting patient monitoring through wearable devices and AI-driven apps. A key concept introduced is "Artificial Wisdom"—the idea that AI can move beyond simply processing information to

providing deeper, context-aware insights in mental healthcare, but only if designed with ethical considerations, empathy, and fairness in mind.

CHAPTER 3

Problem Statement

3. PROBLEM STATEMENT

In today's fast-paced world, mental health challenges such as stress, anxiety, and emotional fatigue are becoming increasingly prevalent. Many individuals, especially students and young professionals, struggle to find accessible and affordable mental health support.

The key problems addressed in this project include:

- Lack of immediate support: Many individuals lack access to immediate mental health resources that can help during emotional crises or stressful situations.
- Affordability and accessibility: Not everyone can afford or access professional counseling, making mental health care out of reach for many.
- Stigma around mental health discussions: People often hesitate to express their feelings or seek help due to societal stigma around mental health issues.
- Need for consistent emotional tracking: Tracking one's mood and emotional patterns is essential for mental health management, but many people lack the tools or awareness to do so effectively.

CHAPTER 4

Experimental Setup

4.Experimental Setup

4.1 Hardware Setup

Our Project doesn't have hardware components.

4.2 Software Setup

The development of the mental health companion web application involves several stages, utilizing various web development techniques and technologies to build an interactive and responsive platform. The current setup includes the following components:

1. Frontend Development:

HTML: The structure of the web pages is built using HTML5, which provides the basic framework and elements necessary for creating a user-friendly interface. This includes sections for user input, text content, buttons, forms, and other essential elements that enable interaction with the application.

CSS: Cascading Style Sheets (CSS) are used to design the visual aspects of the application. CSS is utilized to style the HTML components, ensuring a visually appealing and consistent design across all web pages. Techniques such as Flexbox and Grid Layout are employed to create a responsive design that adjusts seamlessly to different screen sizes.

JavaScript: JavaScript is implemented to add dynamic behavior and interactivity to the web application. Functions include form validation, dynamic content updates, and real-time user feedback. JavaScript libraries like jQuery are also used to simplify DOM manipulation and event handling, enhancing the overall user experience.

2. Backend Integration:

SQL Database: An SQL database is used as the backend to store and manage user data, including user profiles, interaction history, and assessment results. Although full backend integration is still in progress, initial steps have been taken to set up the database schema and establish connections using server-side scripting (e.g., Node.js or PHP).

3. API Integration:

API Keys Management: The project involves the use of external APIs (e.g., for sentiment analysis, mental health resources, or chatbot functionality). Secure management of API keys is critical to ensure privacy and prevent unauthorized access. Strategies for secure storage and usage of API keys, such as environment variables, are currently being implemented.

4. Server Configuration:

The application is hosted on a local server for development and testing purposes. The server

configuration allows multiple HTML pages to be served efficiently, ensuring smooth navigation and interaction. A file structure has been set up to manage assets, scripts, and stylesheets effectively.

5. Current Status and Progress:

As of now, approximately 50% of the project is completed. The frontend development is largely in place, with basic functionalities operational. Work is ongoing to finalize the backend integration with the SQL database and implement secure API handling.

Future Work:

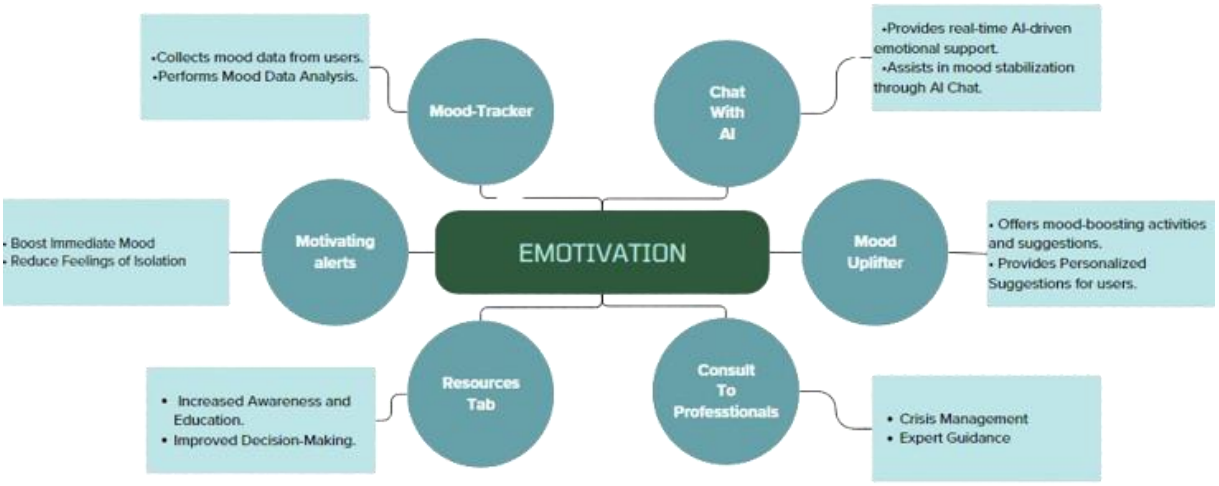
The next steps involve completing the backend integration, enhancing the security measures for API keys, and refining the server setup to handle higher traffic and multiple concurrent users effectively.

CHAPTER 5

Proposed system and Implementation

5.Proposed system and Implementation

5.1 Block Diagram:



Features in Emotivation

5.2 -Description of Diagram:

The image presents a diagram with the Emotivation platform at the center, surrounded by six interconnected components. Here's a text-based description of each element:

- Mood-Tracker

  Purpose: Collects mood data from users and performs mood data analysis to track emotional well-being.

- Chat with AI

  Purpose: Provides real-time, AI-driven emotional support and assists in mood stabilization through AI-powered chat conversations.

- Mood Uplifter

  Purpose: Offers mood-boosting activities and suggestions, providing personalized suggestions for users to help improve their emotional state.

- Consult to Professionals

  Purpose: Provides access to professional consultation for crisis management and expert guidance to address mental health concerns.

- Resources Tab

  Purpose: Increases awareness and education about mental health and helps users make informed decisions by verifying symptoms of mental stress disorders.

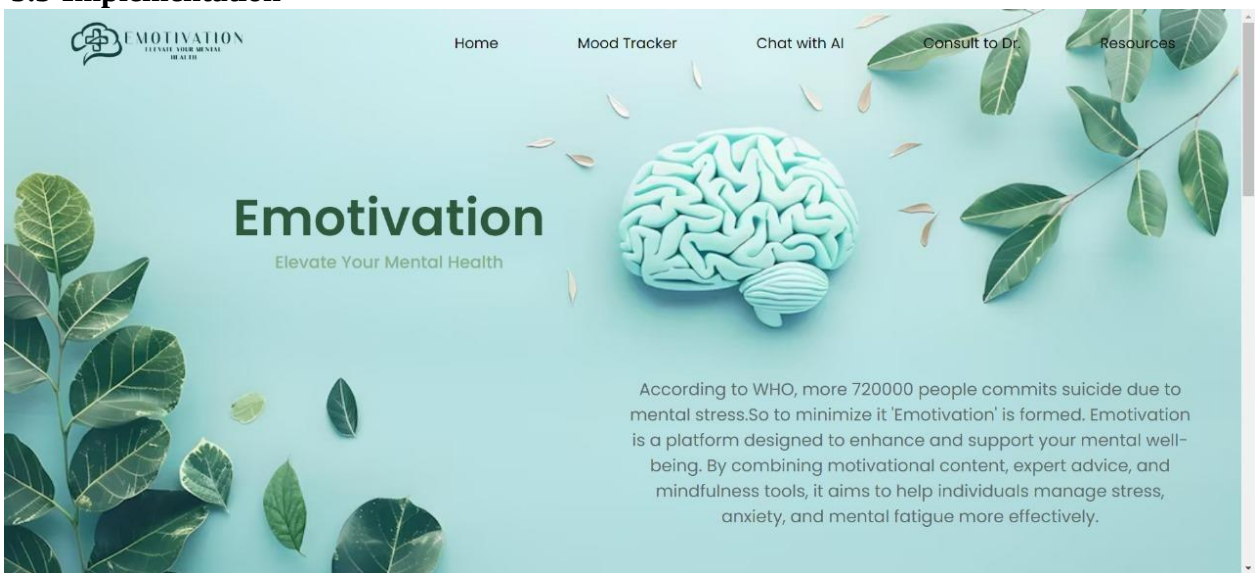
- Motivating Alerts

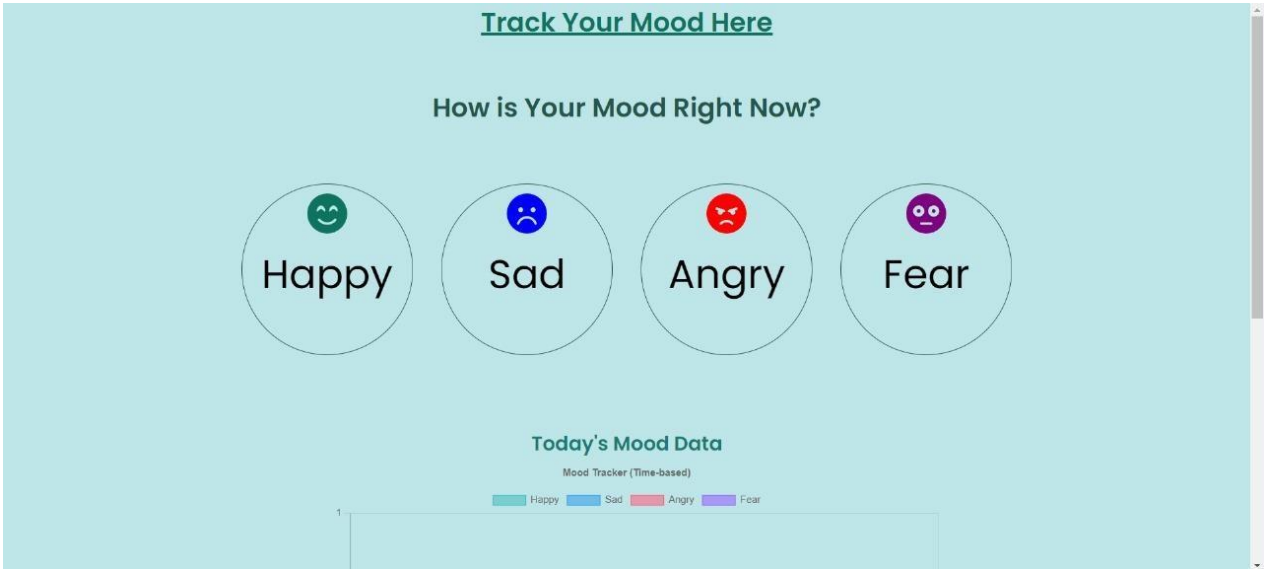
  Purpose: Boosts immediate mood and reduces feelings of isolation by sending motivational notifications and reminders.

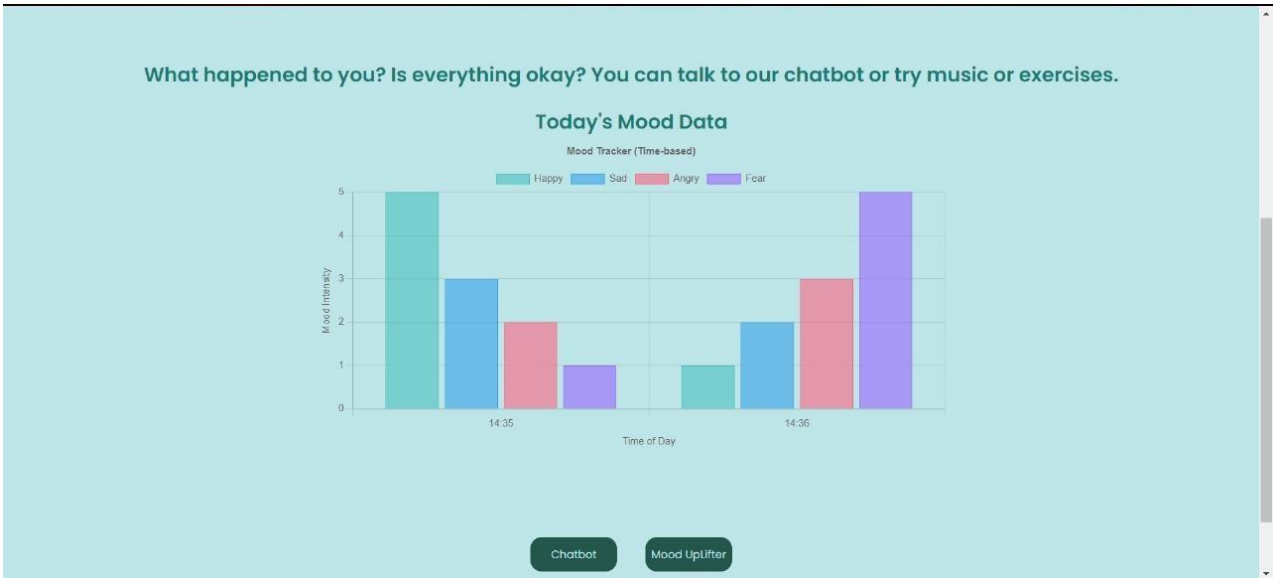
All these components work together around the Emotivation platform to offer comprehensive emotional support to users.

5.Proposed system and Implementation

5.3-Implementation

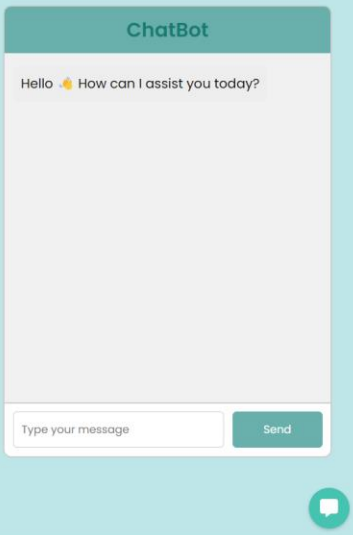






Talk to me

I am your AI assistant where you can express your feelings
And I will try to give as much as possible suggestion to your problems
Click on the chat icon to start a conversation



Resources

You can explore your symptoms here

1 in 5 adults and 1 in 6 young people experience a mental health disorder every year in the United States. May is Mental Health Awareness Month, where organizations across the country seek to spread awareness, dispel stigma, and provide help. Mental health is a widespread problem. With such prevalence in the U.S., if you don't suffer from a mental health disorder yourself, chances are you know someone who does. Provided on this guide are resources to learn more about mental health and to provide help to you or your loved ones.

Some Mental Health Disorders are:

Generalized Anxiety Disorder (GAD)

Generalized Anxiety Disorder (GAD) is characterized by persistent and excessive worry about a number of different things. People with GAD may anticipate disaster and may be overly concerned about money, health, family, work, or other issues. Individuals with GAD find it difficult to control their worry. They may worry more than seems warranted about actual events or may expect the worst even when there is no apparent reason for concern. GAD is diagnosed when a person finds it difficult to control worry on more days than not for at least six months and has three or more symptoms. This differentiates GAD from worry that may be specific to a set stressor or for a more limited period of time. GAD affects 6.8 million adults, or 3.1% of the U.S. population, in any given year. Women are twice as likely to be affected.

Obsessive-Compulsive Disorder(OCD)

Obsessive-compulsive disorder (OCD) is a long-lasting disorder in which a person experiences uncontrollable and recurring thoughts (obsessions), engages in repetitive behaviors (compulsions), or both. People with OCD have time-consuming symptoms that can cause significant distress or interfere with daily life. However, treatment is available to help people manage their symptoms and improve their quality of life.

Some Symptoms are:

- Fear of germs or contamination
- Fear of forgetting, losing, or misplacing something
- Fear of losing control over one's behavior
- Aggressive thoughts toward others or oneself
- Unwanted, forbidden, or taboo thoughts involving sex, religion, or harm
- Desire to have things symmetrical or in perfect order

Approaches to Foster a Sense of Well-being

1.Try to take a deep breath and concentrate on your feets.

2.Hold a ice cube in your hand.

3.Check yourself in the mirror.

4.Talk to our AI bot. Or a person who brings peace to you try to let it out.

5.Don't lay down on bed.

6.Wash your feets with cold water.

7.Try to hug a pelow tightly if you dont have a person.

Tunes to Promote Positive Well-being

5.4-Advantages & Application

- **Advantages:**

1. Improved Emotional Awareness

Emotivation helps users track their emotional patterns over time, allowing them to gain insights into their mental health and identify triggers, moods, and emotional states. This heightened awareness promotes self-reflection and proactive mental well-being.

2. Personalized Support

With AI-driven chat capabilities, users receive real-time, personalized emotional support based on their moods and responses. This allows for tailored suggestions, motivation, or advice without needing constant human intervention.

3. Easy-to-Use Mood Tracking

The Mood Tracker feature simplifies emotional monitoring by providing a user-friendly interface that makes it easy for anyone to record and understand their emotional health trends.

4. On-Demand Mood Refresh

Users can instantly access mood-refreshing activities, such as positive affirmations, music, or exercises, to uplift their spirits at any time. This feature helps users manage stress or negative emotions quickly and effectively.

5. Accessibility and Convenience

The platform is accessible 24/7, providing mental health resources to users whenever and wherever they need support, unlike traditional therapy or counseling, which may have limitations in availability.

6. Stigma-Free Interaction

Many people hesitate to seek mental health support due to the stigma surrounding therapy or counseling. With Emotivation, users can privately manage their mental health without the fear of judgment or stigma.

7. Data-Driven Insights

Emotivation collects emotional data from users, enabling AI to provide trends, insights, and actionable recommendations. Users benefit from a data-driven approach to their mental health improvement.

❖ **Application**

1. Personal Mental Health Management

Individuals can use Emotivation to manage and track their emotional well-being on a daily basis. This helps users monitor their stress, anxiety, or happiness levels and make adjustments to their lifestyle based on insights.

2. Educational Institutions

Schools and universities can integrate Emotivation as part of their mental health programs for students, offering support during stressful periods such as exams, transitions, or personal challenges. It helps students build emotional resilience.

3. Workplace Wellness

Companies can adopt Emotivation as part of their employee wellness initiatives. By encouraging employees to monitor their mental health, organizations can promote a healthier work environment, reduce burnout, and increase productivity.

4. Telehealth Support

Emotivation can be used alongside telehealth services to supplement traditional therapy. Users can track their emotional states and share insights with healthcare professionals to enhance the overall treatment process.

5. Community Support Groups

Mental health organizations or support groups can use Emotivation to create a more structured system for individuals seeking regular emotional check-ins

6. Mental Health Awareness Campaigns

Emotivation can be part of larger mental health awareness campaigns, encouraging users to be proactive in managing their mental well-being. It can also be a tool for spreading awareness about the importance of emotional tracking and wellness.

7. Crisis Management and Stress Relief

During difficult life events or crises, such as loss, illness, or trauma, Emotivation offers users a tool to manage overwhelming emotions and find activities to refresh and stabilize their mood.

8. Counseling and Therapy Support

Emotivation can be used as a supplemental tool by counselors and therapists to track their clients' emotional progress between sessions.

CHAPTER 6

Conclusion

6.Conclusion:

Emotivation is a comprehensive platform designed to prioritize and enhance mental well-being through its innovative features like the Mood Tracker, AI Chat, and Mood Refresher. By offering personalized and accessible mental health support, it empowers users to take charge of their emotional health in a convenient and stigma-free environment. With its diverse applications, ranging from personal mental health management to organizational and telehealth support, Emotivation holds the potential to revolutionize how individuals and communities approach mental wellness. In an era where mental health is increasingly recognized as essential, Emotivation offers a timely and effective solution for improving quality of life.

References

- “Conversational Agents in Mental Health: A Review of Recent Developments and Future Directions” by Aditya Nrusimha Vaidyam,Hannah Wisniewski,John David Halamka at PubMed, EmBase, PsycINFO, Cochrane, Web of Science in June 2018 .

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