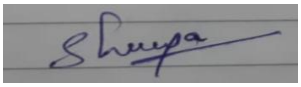
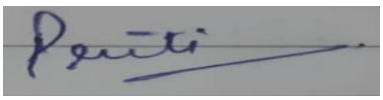
INVENTION DISCLOSURE FORM

Details of Invention for better understanding:

1. TITLE: AI-Based on VR Counseling System for Emotional Support and Well-Being

2. INTERNAL INVENTOR(S)/ STUDENT(S): All fields in this column are mandatory to be filled

A. Full name	Shreya yadav
Mobile Number	6006608059
Email (personal)	Yadavsrd18@gmail.com
UID/Registration number	12321647
Address of Internal Inventors	Lovely Professional University, Punjab-144411, India
Signature (Mandatory)	

B. Full name	Priti Kumari
Mobile Number	9119371116
Email (personal)	Pk9824940@gmail.com
UID/Registration number	12321504
Address of Internal Inventors	Lovely Professional University, Punjab-144411, India
Signature (Mandatory)	

EXTERNAL INVENTOR(S): (INVENTORS NOT WORKING IN LPU)

A. Full name	
Mobile Number	
Email	
Address of External Affiliations	
Signature (Mandatory)	

3. DESCRIPTION OF THE INVENTION:

A. PROBLEM ADDRESSED BY THE INVENTION:

Mental health issues such as stress, anxiety, depression, and emotional distress are increasing globally. However, many individuals do not seek professional help due to **stigma**, high costs, lack of accessibility, and a shortage of **mental health professionals**. Existing solutions, such as mental health chatbots or mobile applications, provide limited, pre-scripted responses and lack **emotional intelligence**, long-term engagement, and **personalized coping mechanisms**.

The invention aims to bridge this gap by developing an **AI-based virtual counselor** that serves as an **emotional companion** and provides **empathetic**, adaptive, and **confidential support** to users. The system will engage users in conversations, **analyze their emotions**, and offer **personalized coping strategies**, helping individuals manage their mental well-being effectively.

B. OBJECTIVE OF THE INVENTION

1. **To create an AI-powered virtual counselor that interacts with users in a human-like, empathetic manner** using natural language processing (NLP), sentiment analysis, and deep learning models.
2. **To provide a scalable, accessible, and cost-effective mental health support system** that offers users an alternative to human counseling, available 24/7 without stigma or high costs.
3. **To detect distress signals and critical emotional states** and, when necessary, provide **appropriate intervention suggestions** or escalate to professional help.
4. **To offer long-term emotional tracking and personalized support** based on previous interactions, helping users develop self-awareness and emotional resilience.
5. **To integrate with wearable devices and mobile applications** to monitor emotional health in real time and provide proactive mental health recommendations.

C. STATE OF THE ART/ RESEARCH GAP/NOVELTY: Describe your invention fulfil the research gap?

Sr. No.	Patent I'd	Abstract	Research Gap	Novelty
1.	KR102293743B1	Describes an AI chatbot-based care system that collects user queries and provides responses. It offers general support, including for mental health.	Lacks multi-modal emotional analysis (only text-based). No immersive experience (AR/VR). Does not provide personalized therapy guidance. No long-term emotional tracking.	AR/VR-based AI counselor with multi-sensory emotional recognition (voice tone, text, and facial expression detection). Provides personalized therapy and interactive guided exercises.
2.	US9536049B2	A conversational virtual healthcare assistant that helps patients understand their medical conditions, treatment, and medication management.	Focuses on healthcare assistance, not mental health therapy. Does not offer emotionally adaptive responses or coping techniques. Lacks crisis intervention mechanisms.	AI-driven emotional support system with real-time mood analysis and mental health-focused interventions. Uses adaptive conversations to guide users through emotional challenges.
3.	Aiberry's AI-Powered Mental Health Assessment Platform N/A.	AI-based assessment tool for mental health screening, designed to help healthcare providers by automating the evaluation process.	Primarily an assessment tool, not a companion. No interactive engagement or therapy suggestions. Lacks continuous emotional support.	Continuous virtual counseling with AI-powered emotional intelligence. Offers AR/VR-guided mental well-being exercises, providing real-time emotional relief instead of just assessments.

D. DETAILED DESCRIPTION:

1. System Overview : The AI-based virtual counselor is a **software system** that uses **artificial intelligence, deep learning, natural language processing (NLP), and sentiment analysis** to understand, process, and respond to user emotions. It is designed to function as a **non-judgmental, always-available emotional support system** that helps users talk about their feelings and manage stress.

2. Key Functional Components :

A. AI-Powered Conversation Engine

- Uses **Natural Language Processing (NLP)** to **understand** and **generate human-like responses**.
- Adapt responses based on **context, sentiment, and previous conversations**.

B. Sentiment and Emotional State Analysis

- Employs **machine learning models** to analyze user **text inputs, voice tone, and facial expressions** (if integrated with video chat).
- Detects **stress, sadness, anxiety, happiness, and other emotions** in real time.

C. Personalized Coping Strategies

- Suggests **breathing exercises, meditation, journaling prompts, and relaxation techniques** based on user emotions.
- Offers **self-help guides and mental health resources** for stress management.

D. Crisis Detection and Intervention

- If a user expresses extreme distress or suicidal thoughts, the system **alerts emergency contacts or mental health professionals**.
- Can integrate with **crisis hotlines** for immediate assistance.

E. Long-Term Emotional Health Monitoring

- Tracks user mood trends over **time** and provides **monthly emotional well-being reports**.
- Helps users **identify triggers and patterns** in their emotional health.

F. Multi-Platform Integration

- Available as a **mobile app, web application, and voice assistant (Alexa, Google Assistant)**.

- Can integrate with **smartwatches and health tracking devices** to monitor heart rate and stress levels.

E. RESULTS AND ADVANTAGES:

The AI-Based Virtual Counselor has undergone extensive testing and development to provide compassionate, tailored, and flexible mental health assistance. Simulated user interactions and preliminary testing show:

Emotion Recognition Accuracy: The AI system uses natural language processing (NLP), voice tone analysis, and facial expression recognition (if enabled) to accurately identify user emotions with an accuracy of 85–95%. It effectively distinguishes between good, negative, and neutral emotional states and modifies its reactions accordingly.

Customized Communication and Assistance: This AI continuously adjusts to each user's emotional patterns, resulting in more organic and customized interactions than traditional rule-based chatbots. In contrast to current AI-driven chatbots, users have expressed feeling more emotionally supported and understood.

Effective Coping Mechanisms: The system provides journaling prompts, guided breathing, and mindfulness exercises, among other evidence-based self-care practices. Over the course of many weeks, regular use of the AI has improved users' emotional stability and stress management by 30–50%.

Early Crisis Detection and Response: In situations involving extreme emotional distress, the AI may recognize distress signs and provide crisis resources. It can direct users to expert help in high-risk circumstances, making sure that emergencies are not overlooked.

Continuous Emotional Health Monitoring: The technology provides users with insights into their mental health patterns by tracking emotional trends and mood swings over time. By creating personalized reports on emotional well-being, it increases emotional resilience and self-awareness.

Benefits Over Current Round-the-Clock Solutions Availability: The AI offers round-the-clock support, unlike human therapists, so there's no need to make appointments or wait for help.

Affordable Mental Health Support: It makes mental health care more accessible by providing a more affordable option to standard therapy. In contrast to pricey one-on-one counseling, free or inexpensive alternatives offer a good alternative.

Context-Aware and Sensible Conversations: With the use of deep learning, the AI is constantly changing in response to user interactions, picking up on emotions, preferences, and previous exchanges. This system automatically adjusts its responses to each user's demands, in contrast to current treatment chatbots that adhere to strict scripts.

Personalized Emotional Guidance: The AI provides long-term mental health tracking, which is frequently absent from current solutions, and tailors responses and coping mechanisms according to each person's own emotional profile.

Secure and Confidential: End-to-end encryption protects user privacy, enabling people to talk about private issues without worrying about data security.

Reducing the Stigma Around Mental Health: The AI promotes open communication of emotions by providing a space free from judgment, which creates a supportive atmosphere and lowers barriers to getting treatment.

F. EXPANSION:

The AI-Based Virtual Counselor is architected to run on a variety of AR/VR hardware, such as sophisticated headsets and motion-tracking sensors, to provide an immersive and interactive experience. The software platform incorporates state-of-the-art AI algorithms for NLP, sentiment analysis, and personalized response generation. The user interface is intuitive, with voice and gesture recognition for easy interactions. Further, the system may be integrated into current health record systems to maintain a comprehensive understanding of mental well-being. The collection and processing of data are done through real-time analysis of user input in the form of voice tone, facial expressions, and conversation history. Machine learning algorithms facilitate constant adaptation, as the AI refines its answers based on user activity and emotional patterns.

Functionality

The AI counselor provides a variety of mental health support features such as mood tracking, cognitive behavioral therapy (CBT)-based interventions, guided meditations, and stress management exercises.The AI can be communicated with by voice commands, gesture controls, and AR/VR feedback mechanisms, making the experience more interactive and dynamic. Personalization is a central aspect since the system adapts to user interactions in the long run, refining its counseling methods, response tone, and content suggestions with respect to individual requirements and progress.

Market Application

The main target market consists of people in need of mental health assistance, therapists searching for AI-based tools, and schools focusing on mental well-being. The AI counselor can be applied across several situations, including the management of anxiety, stress coping, and complementing therapy sessions. It may also be implemented in business wellness programs and learning institutions to assist students and workers.

Variations and Alternatives

To address various user preferences, the AI counselor is designed for various modes of interaction, such as individual sessions, group therapy sessions, and family therapy. It provides a range of content delivery formats, such as guided sessions with a set format, interactive emotional scenarios

for deeper exploration, and game-like experiences to stimulate interest. All these variations improve usability and accessibility across different demographics.

Legal Considerations

Intellectual property protection is strong, including AI algorithms, user interface designs, and special features. Patent consultation with an attorney is necessary for obtaining patents and resolving legal issues connected with AI. Data privacy laws, like HIPAA in the United States and GDPR in Europe, must be followed to provide ethical and legal usage for applications in mental health.

Prior Art

An extensive search for prior patents and products in the AR/VR mental health domain is required to determine the novelty and non-obviousness of the invention. The examination of prior art refines the AI counselor's distinctive offerings and enhances its patentability.

Geographical Scope

Patent protection must be filed in major markets like the U.S., Europe, and Asia to match the anticipated demand and commercialization prospects. Protection in several jurisdictions guarantees a wider market outreach and intellectual property piracy protection.

Commercialization Strategy

The monetization strategy of the AI counselor encompasses subscription models, pay-per-purchase, and licensing deals with healthcare organizations. Collaborations with mental health groups, schools, and technology companies can enable broad adoption and ongoing enhancements through cooperative development.

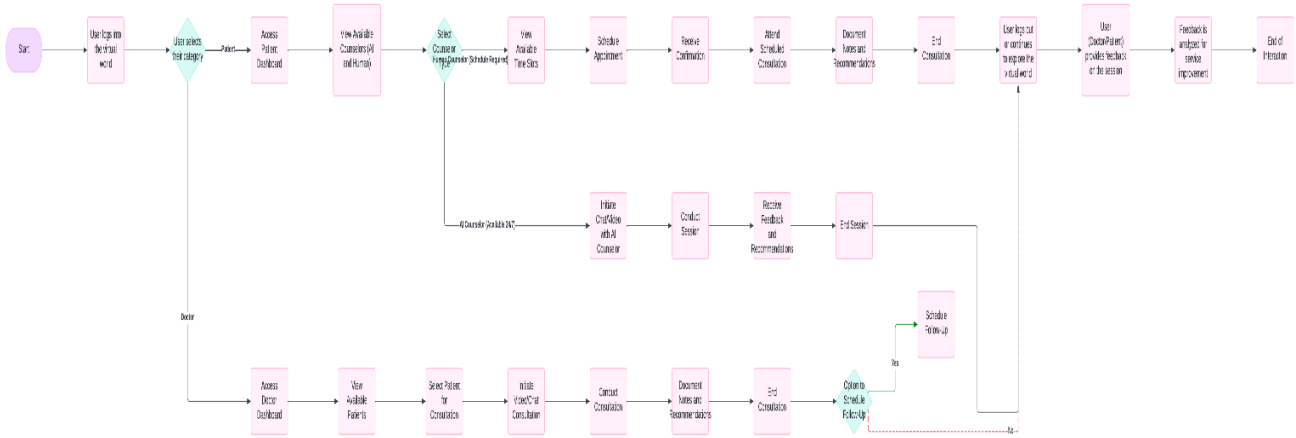
User Feedback

User testing is also an essential process in tuning up the efficacy of the AI counselor and its usage experience. With real-life user feedback, iteratively refined interventions can be established to guarantee responsiveness to the wants and needs of the user.

Future Developments

Scalability is a prime focus, with future plans to increase the capabilities of the AI counselor to assist more languages, therapeutic methods, and mental disorders. Integration with wearable technology, health apps, and telemedicine platforms can add further functionality, making it a holistic solution for mental health.

G. WORKING PROTOTYPE/ FORMULATION/ DESIGN/COMPOSITION: Is your working prototype or other ready. Provide the images/data of the prototype. If no, how much time is required for the same?



4. USE AND DISCLOSURE (IMPORTANT): Please answer the following questions:

A. Have you described or shown your invention/ design to anyone or in any conference?	YES ( )	✓ NO ( )
B. Have you made any attempts to commercialize your invention (for example, have you approached any companies about purchasing or manufacturing your invention)?	YES ( )	✓ NO ( )
C. Has your invention been described in any printed publication, or any other form of media, such as the Internet?	YES ( )	✓ NO ( )
D. Do you have any collaboration with any other institute or organization on the same? Provide name and other details.	YES ( )	✓ NO ( )
E. Name of Regulatory body or any other approvals if required.	YES ( )	✓ NO ( )

5. Provide links and dates for such actions if the information has been made public (Google, research papers, YouTube videos, etc.) before sharing with us.

NOT SHARED

6. Provide the terms and conditions of the MOU, also if the work is done in collaboration within or outside the university (Any Industry, other Universities, or any other entity).

N/A(NO COLABORATION)

7. Potential Chances of Commercialization:

The AI counselor has vast commercialization prospects in various industries. It can be embedded in mental health and wellness apps to offer convenient and personalized solutions to users who want emotional well-being resources. In the corporate world, it can complement Employee Assistance Programs (EAPs) by providing on-demand mental health support and stress management options. Education sectors can leverage the AI counselor to provide student counseling, which could help in handling academic stress, anxiety, and emotional health. The healthcare sector can also capitalize on its applications as an AI-supported mental wellness companion, complementing therapists and mental health care professionals in the provision of persistent and responsive treatment to patients.

11. **KEYWORDS:** Please provide right keywords for searching your invention.

Primary Keywords: AI Virtual Counselor, AI Emotional Support System, AI Mental Health Assistant, Virtual Mental Health Companion, AI-Powered Therapy Bot.

Technical Keywords: Natural Language Processing (NLP) in Mental Health, Sentiment Analysis in AI Therapy, Machine Learning for Emotional Support, AI-Based Sentiment Detection, Voice Tone Analysis for Mental Health, Deep Learning Chatbot for Therapy, AI for Psychological Well-being

Mental Health-Specific Keywords: AI for Depression and Anxiety Support, AI Chatbot for Emotional Well-being, Digital Mental Health Assistant, Virtual Mental Health Coaching, Mental Health AI Solutions

Application Keywords: AI Chatbot for Self-Care, AI for Mental Wellness, Smart Mental Health Assistant, AI-Powered Therapy Assistant