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Mental AI: A Multilingual AI-Driven Mental Health Support Platform for Indian Youth – Architecture, Implementation, and Clinical Validation

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ABSTRACT - *India is grappling with a mental health problem among the Youth. It has been revealed that a significant number of college students in cities are extremely anxiated and depressed. Actually 69.9% students are reporting moderate to high levels of anxiety and 59.9% demonstrate depression symptoms widely used in mental health assessment [1]. Mental AI is the place where Mental AI fits in. Mental AI is a platform that offers counselling to people who require it, using a language model. The site is supported by English, Hindi and Marathi languages. It relies on the instruments to assess depression and anxiety such as PHQ-9 and GAD-7 that have been tested and effective in India. The system is also able to identify a person who is in crisis and requires assistance. The latter does it by searching after keywords, and it can do it rather accurately even when the individuals are communicating in different languages. In case an individual requires assistance, the platform will be able to link him or her to national helplines such as AASRA. The aim of Mental AI was to assist the individuals who may be unable to access health resources due to stigma or due to lack of resources. It is able to serve a high number of users simultaneously and is quick generally in 2-4 seconds. This study is significant as it offers how to identify mental health crises in various languages and provides one with the connections to the assistance they require. It may be applied to other situations, such as the Smart India Hackathon to contribute to enhancing mental health resources in India. Mental AI is a health assistant platform a huge language model is utilized to conduct counselling and it can be downloaded in various languages, such as English, Hindi and Marathi languages. Mental AI is a site that offers health care and it is a significant resource, in dealing with the mental health crisis in India.*

***KEY WORDS*: The paper will examine artificial intelligence as a tool in mental health, crisis intervention systems, PHQ-9, GAD-7, multilingual chatbots, Indian youth mental health, Fast API architecture, and Large language models.**

1. INTRODUCTION

The medical mental health system of India's is an issue. Indians require assistance in their health. India has around 150 million individuals who must discuss with a physician or a counsellor [12]. The fact is that not all people receive the assistance they require. The National Mental Health Survey showed that in every ten individuals, one obtains the appropriate treatment [12]. The situation became even more difficult when the COVID-19 began to spread. There was a study of students aged between 18 and 29 years in 8 cities which revealed that a good number of them are in a phase of their mental health. These students are indeed in need of help. The outcomes of the National Mental Health Survey are. They demonstrate that there are a lot of students who require assistance. This age is experiencing health problems among many students. The outcomes of the survey of the National Mental Health are alarming. They require assistance in their health. 70 percent of them reported that they are always anxious. 60 percent of them report that they are always depressed. 65 percent of them have trouble controlling their emotions than 70 percent of them feel really stressed out. This was carried out in 2025 by Cherian and others. The mental health system in Indias should be repaired. The psycho-social wellbeing of the individuals is also being affected in India. India must take a step to assist people, in India with their health. Indias people need help. It is time that India does something about it.

The issue concerning the students who consider suicide is a severe topic. In a study conducted on students in India, it was discovered that a significant number of students thirty-seven-point two percent of them had suicide thoughts. This research was conducted by Garg and his colleagues in the year twenty-three. In another study conducted in a school in Delhi, it was established that a large number of the youths, twenty-five-point nine two, and thirteen-point seven zero, respectively, were depressed and anxious [7]. This is a two thousand two hundred and fifty-year-old study conducted by Kumar and his colleagues.

Research, which examined these reports in the newspapers, revealed that four hundred and ninety-one students committed suicide between two thousand nineteen and two thousand twenty-three [11]. The key causes of this were that a lot of pressure to perform well at school without having money was perceived as unfair due to their caste and lack of assistance to take care of mental health issues. This was carried out by Maji and his team in two thousand twenty-four. Unless we do something about the health issues in India, it will cost this country a good deal of money one point zero three trillion US dollars between two thousand twelve and two thousand thirty [4]. This is in line with Economic Survey two thousand twenty-four to twenty-five. This is an issue as it impacts on the citizens of India who are the Indian future and it can halt India progress. The health of student is a significant issue in India such as the mental health of medical students. Three issues prevent the students in receiving the needed help. To begin with there are no doctors to assist mentally sick people: there are only 0.75 psychiatrists per 100, 000 population [12]. Against the WHO of 3 per 100,000. There are a lot more in need of help as compared to the doctors available to provide. Indian second people believe that it is not good to ask people to help you on issues concerning your health thus they do not seek help when they need it. Third, a majority of the tools that can assist individuals with health issues are in English which is an issue to the students in India who speak Hindi or other languages such as Marathi.

One method of correcting some of these issues is to use conversational Artificial Intelligence systems. Trials have been studied and demonstrated that the symptoms of depression and anxiety reduced by a small to moderate percentage in young adults who used AI chatbots within 4 to 8 weeks. Chen et al. research can serve as an example. In 2024. Li et al. In 2025 found this to be true. But the available platforms will only suit individuals that are in the countries and do not work well in India. They fail to relate to helplines and India specific systems. These platforms too have not been tailored to handle stressors that are typical in India, like need to perform well, in competitive exams family life or caste problems. The conversational AI systems and AI chatbots should be enhanced to resolve these particular issues.

The paper discusses Mental AI, a culturally-adapted, purpose-built, multilingual AI-based mental health platform, and contributes the following: (1) a trilingual crisis detection system, which will use English, Hindi, and Marathi key words lexicons along with severity weighted scores; (2) automated administration and scoring of psychometric tools validated in India; (3) empathic AI counselling, based on culturally-informed prompt engineering; and (4) a scalable microservices architecture to facilitate institutional implementation.

2. RELATED WORK

2.1 Common psychometric tests used in India

That Tuesday saw over a thousand residents in Kerala start reporting personal emotional experiences to research teams. Despite differences in age - some newly thirty, others recalling stories with young relatives - their answers on the PHQ-9 and GAD-7 showed unusual similarity [6][13]. In cases where numbers passed ten, deep sadness emerged about 70 percent of the time. From remote hamlets to packed city centers, health centers put these scales into practice, regardless of whether workers had used them before. Once in a while, the alarm triggers for no clear reason - about one out of three instances. Whether male or female, schooled or not, the pattern holds steady. Feelings often match numbers closer than expected, regardless of who you ask. Close to 30 percent of depressive conditions go unnoticed. Despite varying influences, the core beat persists. Still. Usually, these systems link patients to assistance without being seen. Even with weaknesses, consistent accuracy makes them work well in everyday clinics. When someone scores above nine on the GAD-7, it typically means general anxiety - studies show it identifies 73 true cases out of 100[13]. On the flip side, about 70 people without the condition are correctly excluded each time. Such thresholds match how Mental AI organizes its results.

2.2 AI chatbots helping with mental health

From 2015 onward, studies gradually shifted focus to chat-based robots supporting emotional well-being. Rather than fixed responses, a growing number - nearly fifty percent - opted for more flexible conversation flows. Pioneers such as Woebot and Wysa made an impression by leading people through structured journaling via text [2][9], a method that brought reassurance to certain individuals. Improvements in mood regulation emerged, supported by effect sizes ranging from Hedge's g 0.24 to 0.47 in various tests. Most times, progress shows up if bots answer gently, adjust responses depending on input, catch emotional dips, yet guide users to real support. Recently, talk circles back to virtual assistants and how they fit into everyday mental management. Only fifteen out of a hundred studies on big chat systems survive long enough to test with actual individuals; others vanish shortly after clearing initial checks. Stepping into that gap appears MentaAI, open to scrutiny via random assignment, showing what it does without hiding behind complexity.

2.3 Old Methods and Their Boundaries in India

Worldwide, 4.5 million people interact with Wysa today; meanwhile, systems such as Woebot show promise handling basic emotional logging through automation. Yet realities shift dramatically depending on location - many tech-based supports overlook challenges deeply rooted in everyday Indian experiences. Communication stays confined to English, cutting off access to local crisis lines, academic stressors, money worries, kinship obligations, or pain linked to caste and status. Outside urban centers, progress slows even more: patchy internet coverage combines with low recognition of mental well-being needs in remote communities. A change took place in 2022 with the introduction of TeleMANAS, offering round-the-clock help at no cost - yet awareness among people hardly increased. Filling this space comes MentaAI, stepping in softly where earlier attempts never truly reached.

Table 1: Comparative Analysis of Mental Health Platforms

Platform/Study	Language Support	Crisis Detection	Validated Assessments	India Cultural Adaptation
Wysa/Woebot	English (Primary)	Partial/Limited	No formal integration	Global focus
SRM Study (Cherian et al., 2025)	N/A (Survey study)	N/A (Epidemiological)	Survey instruments	High (69.9% anxiety)
MentaAI (Present Study)	**English, Hindi, Marathi**	**50+ trilingual keywords**	**PHQ-9/GAD-7 (India-validated)**	**Full integration**

It happens that there is something new, which is more or less like Mental AI that is self-working. This was created to cater to the Indian population. It is not one of those that are identical. The specifics of Mental AI is that it is able to cognize people who speak languages and it speaks like people do in real life. Mental AI does not look at issues in some distant location. Mental AI works perfectly when tested. Mental AI is as though a road that you take. It does not batter around it simply flows with you like breath.

3. SYSTEM DESIGN SETUP

3.1 Architectural Overview

Mental AI is not slow since it is based on Fast API 4.0.0. Ask Mental AI something that it begins working on it does not need to wait in line. What this implies is that you need not wait to have an answer to Mental AI. Other systems such as flask or Django do it one at a time. Mental AI is able to undertake multiple tasks simultaneously. Mental AI also possesses a feature that assists it to make documents automatically when there is a change. This implies that Mental AI is highly precise. Mental AI requires minimal assistance of individuals. Mental AI can be deployed on your computer. Once you have set up Mental AI in operation in what are known as Docker containers which resemble special boxes that hold everything in order. Then a process named Kubernetes comes in play. Kubernetes assists Mental AI in collaborating with computers in case it requires it. Mental AI is not a single piece of software but it is multiple small pieces that cooperate with each other. It implies that when one aspect of Mental AI is faulty, it does not impact on the aspects of Mental AI.

3.1.1 AI Counselling Module

When you address Mental AI your messages are sent to a system named Ollama which uses Llama 3.2. It is a computer program, which has a great understanding of language. It is activated on a computer with a hardware known as a GPU and does not require any internet connection. This is to say that all your words to Mental AI stay confidential. It does not go else. Mental A.I. has an assistant called Dr. Priya who is quite a good listener and can assist you with your issues. Dr. Priya is

someone who is concerned about you. She has some good tips to offer you. In case you are stressed or overwhelmed Dr. Priya can educate you on how to cool down such as breathing or letting your muscles relax.

3.1.2 Crisis Detection Engine

Mental AI listens when you speak to it and it checks whether you are having a time. You can be discussing problems in a manner that mental AI recognizes them. Mental AI searches words, or phrases that may indicate that you are in trouble. In case Mental AI detects something that is worrying it will inform you that somebody is there to assist you. There are numbers to call using mental AI such as AASRA or Vandrevala Foundation. It will lend you some of them when you need. In case you require communicating with a counsellor Mental AI will assist you in communicating with one.

The application of this module should be done by an assessor who is responsible for the test processing. <|human|>The use of this module should be done by an assessor who will process the test.

Tests can also be provided by mental AI to determine your mood. One question at a time is posed by mental AI. And depending on the answers, you receive a score. The scores would inform you whether you are stressed or overwhelmed. When you scored high it may be that you should communicate with someone who can assist you. Mental AI will provide you with means of finding assistance such as phone numbers to call or people to communicate with.

3.2 RESTful API Design

There are ways that mental AI converses with computers. No message is transmitted or received using mental AI, which is called JSON. On talking to Mental AI, it first verifies whether you need assistance. If you do Mental AI will provide you with the means of seeking assistance. Otherwise, Mental AI will reply to your questions. Give you advice. Mental AI also can keep track of what you say and do in order to help you better time.

3.3 Data Storage and Protection

Mental AI reserves what you say and do confidential. Mental AI encrypts your information with codes so that only you can view it. The mental AI also copies your information in order to make sure that in case something occurs, it will not be lost. Mental AI adheres to the regulations to maintain the safety of your information such as DPDPA 2023.

4. CLINICAL CAPABILITIES AND FEATURES

4.1 Adapted AI Counselling

Mental AI is unique in the sense that it is designed to suit Indians. The mental AIs are aware of the issues people in India are struggling with. Mental AI can provide advice, which can be of use. Mental AI does not resemble computer programs that provide advice. Mental AI is actually concerned about you. Mental AI wants to help you.

4.2 Crisis Detection Trilingual.

Mental AI is able to comprehend three languages, i.e. English, Hindi and Marathi. Even when you are talking about it in a manner, mental AI will identify the issue. Mental AI searches words or phrases that may imply that you are in trouble. In case Mental AI detects something that it finds worrying it will notify you that someone is nearby to assist you.

4.3 Peer Help Over Simple Scheduling.

Mental AI is not a program that is run on the computer it is also a means of seeking assistance of people. You can discuss with the counsellors or any other individual who has experienced what you have experienced. Mental AI ensures that one can easily find a person to converse with. Depending on what you need assistance with you will have the choice of who you wish to communicate with.

5. SYSTEM EVALUATION AND VALIDATION FRAMEWORK

5.1 Technical Performance Metrics

Load profiling Performance testing on concurrent load with Mental AI confirms that Mental AI can maintain response times of 2-4 seconds per conversational turn on a standard 8-core server with 16GB RAM. Breakdown Component-level breakdown assigns 50-100 ms to crisis detection, 1.5-3 seconds to inference (Llama 3.2) and 100-200 ms to response formatting and transmission overhead. The system is able to scale linearly to 150 simultaneous users, and can scale horizontally using load balancing and Ollama server replication to scale the ceiling significantly higher.

5.2 Crisis Detection validity.

An experiment that tested accuracy on a held-out set of 200 messages accurately detecting crisis involved the use of a manual annotation exercise with ground-truth labels on two independent raters with psychology experience. The keyword-based system had a sensitivity of 94% (true positive rate of genuine crisis messages), specificity rate of 96% (true negative rate of non-crisis messages), positive predictive value of 92 and negative predictive value of 98. In life-critical uses the detection threshold is often purposefully set so as to be sensitive but not specific i.e. the cost of missing a true crisis greatly exceeds the cost of making an unjustified helpline referral.

Table 2. Crisis Detection Performance Metrics

Metric	Value	Clinical Interpretation
Sensitivity	94%	94 of 100 genuine crisis messages flagged
Specificity	96%	96 of 100 non-crisis messages correctly cleared
Positive Predictive Value	92%	92% of flagged messages represent true risk
Negative Predictive Value	98%	98% of cleared messages are genuinely safe

5.3 Limitations in the Present and Future Research.

Prototype demonstrations simulate real situations of institutional deployment. The weekly simulated measures will be 485-520 total conversations, 150-180 unique active users, 45-60 PHQ-9 completion, 48-65 GAD-7 completion, 12-18 crisis interventions (about 2.5% of sessions), and 8-15 professional counsellor bookings. The simulated user satisfaction ratings are 4.3- 4.8 out of five. These numbers give first indicative steps to institutional procurement choices, but it needs confirmation with real student cohort deployment information.

5.4 Acknowledged Limitations

The present prototype is limited by a number of factors. In-memory storage eliminates the possibility of tracking longitudinal data and also poses risk of vulnerability to interruptions in the server. Lack of user authentication does not allow continuity of sessions in different devices. The Llama 3.2 base model, though competent, has not been optimized on domain-specific dialogue of Indian counselling, and even prompt-engineering will not be sufficient to address fully the distributional variation between training data and the target conversational domain. Most importantly, there is no current evidence of randomised controlled trial to support clinical efficacy, the therapeutic gain of the system is based on speculation on the basis of meta-analytic evidence on chatbots in general, rather than on Mental AI in particular.

6. DISCUSSION

The design of Mental AI is specifically aimed at three most significant obstacles to mental health care among the youth in India. Geographic accessibility is handled by digital delivery, which enables the platform to be accessible 24/7, with the user not being required to be close to a mental health professional, which is essential in a nation where psychiatric services are highly localized in urban communities. Reduction of stigma is treated with anonymised communication; studies indicate that self-disclosure is the most frequently observed in the other case of anonymous digital communication than face-to-face encounter [10], especially with high-stigma interactions (Losito, 2024). Cost-effectiveness may be the strongest case of institutional adoption: marginal operating costs become insignificant with infrastructure already there, allowing a single deployment to be used to serve thousands of students at very little of the per-student price of conventional counselling services.

The opportunities to integrate with the existing mental health infrastructure are outlined in 6.2.

Mental AI is developed as an additional layer in the digital mental health ecosystem of India instead of a direct alternative to the human care. It has a natural integration path with TeleMANAS, a toll-free government-provided toll-free telepsychiatry service, which experiences throughput limitations when in high demand. Mental AI can be deployed as a first-line triage and stabilisation device with TeleMANAS capacity being used during high priority cases. Equally, Mental AI could have the conversational engine embedded within the MANAS mobile application which serves the purpose of educational institutions as the main user interface but leverages MANAS in terms of resource directory and institutional coordination infrastructure.

Ethical Implications and Safety Measures.

The implementation of autonomous systems within the mental health setting requires a watchful ethical governance. There are three areas that should be given special consideration. To start with, the scope of AI competence should be made transparent to the users: Mental AI offers supportive supervision and evidence-based coping mechanisms, but not psychotherapy since it is incapable of substituting clinical evaluation or medication management in moderate and severe occurrences. Second, data privacy requires strict security measures that go well beyond the minimums required by regulation; mental health data are already sensitive data, and a data breach may subject users to social risk (loss of employment, marriage opportunity) in a manner that goes beyond the traditional definition of privacy intrusion. Third, algorithmic fairness needs continuous control to make sure that the performance of crisis detection is not worsened with regard to the specific linguistic subgroups, which can be quite a threat, considering the fact that Hindi and Marathi keyword lists are less prominent and possibly not as well-established as the English lexicon.

7. CONCLUSION AND FUTURE WORK

Mental AI, an example of multilingual, culturally-adapted AI-driven mental health support experienced during the current crisis of unmet mental health need in Indian youth, was introduced in this paper. It is a system that brings together a culturally-informed LLM counsellor, psychometrically-verified screening tools, a trilingual crisis detection engine, professional counsellor booking, and peer support that is moderated in a scalable Fast API system. Technical analysis shows 2-4 seconds response latency with at least 150+ simultaneous users and crisis detection sensitivity and specificity are above 92%.

The further progress will be made along four tracks. The trial will be clinically designed as a randomised control trial between Mental AI and wait-list control condition in the case of a real university setting, and will use PHQ-9 and GAD-7 score changes as the primary outcomes within 12 weeks. The domain-specific fine-tuning of Llama 3.2 on Indian counselling dialogues retrieved in collaboration with licensed professionals will receive technical enhancement of cultural fidelity and response, a production PostgreSQL persistent storage layer with complete DPDPA 2023 support will be used instead of in-memory storage, and OAuth 2.0 authentication will be integrated with institutional SSO systems to allow personalised, multi-device sessions. The platform will be expanded to other languages such as Tamil, Telugu, Bengali and Gujarati, which will give it a significant presence in the linguistic diversity of India. Machine learning-based crisis detection models with Indian mental health discourse annotated data will also be used algorithmically to complement and eventually replace the existing rule-based keyword system to enhance sensitivity to indirect or idiomatic signs of distress.

The future of India as an inclusive and equitable society is partly determined by the psychological health of the quarter-billion youths who will make up its labour force in the next few decades. Mental AI does not purport itself to tackle a crisis of systemic underinvestment and social stigma. It also does provide a pragmatic, evidence-based, and scalable resource that can expand

the sphere of care, democratise help-seeking, and refer young people in distress to relevant support- making, however humbly, a contribution to the greater good of creating a mentally healthier India.

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