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# AI-Powered Mental Wellness Solutions for Youth: A Deep Research Report on Feasible, Empathetic, and Confidential Platforms

## The Empathetic AI Toolkit: From Text-Based Chatbots to Multimodal Emotion Recognition

The development of an AI-powered mental wellness solution for youth hinges on a sophisticated toolkit of technologies designed to perceive, interpret, and respond to human emotional states. This technology is rapidly evolving from simple text-based chatbots to complex multimodal systems that can analyze facial expressions, vocal tones, and behavioral patterns. At the core of these systems are Natural Language Processing (NLP) and Generative AI models, which enable simulated conversation [7]. NLP techniques such as sentiment analysis, Linguistic Inquiry and Word Count (LIWC), and keyword extraction are foundational for detecting mental health indicators in user text [5 31]. More advanced models like BERT (Bidirectional Encoder Representations from Transformers) and its variants are used to achieve high accuracy in tasks like classifying emotional distress, with one study reporting 93% accuracy using a BERT-based model [3]. These models are trained on vast datasets of conversational data, including therapy transcripts, to generate responses that are not only relevant but also personalized to the individual's linguistic style and life events [2 3].

However, true empathy requires more than just understanding words. To bridge this gap, developers are integrating emotion recognition technologies. Facial Emotion Recognition (FER) uses computer vision and Convolutional Neural Networks (CNNs) to analyze micro-expressions from video or images [16 52]. Systems have demonstrated accuracies exceeding 80-90% in controlled lab settings by identifying universal emotions like happiness, sadness, fear, anger, disgust, and surprise, often based on Paul Ekman's model [16 17 54]. Similarly, Vocal Tone Analysis (VTA) processes audio signals to detect emotional cues from speech prosody, pitch, and energy levels [42 53]. While powerful individually, their greatest potential lies in fusion. Multimodal Emotion Recognition (MER) combines these inputs—text, voice, and face—to create a richer, more robust understanding of a user's state [19 36]. For instance, Imentiv AI analyzes video and audio from media clips to reveal emotional dissonance, where a character's outward appearance may not match their internal feelings as detected by their vocal tone [18]. State-of-the-art MER systems using transformer-based cross-modal fusion can achieve over 80% accuracy in real-world scenarios, significantly outperforming single-modality approaches [19 48].

Despite these technological advancements, a fundamental challenge remains: the nature of AI empathy itself. Current research distinguishes between cognitive empathy—the ability to understand another's perspective—and compassionate empathy, which involves sharing and responding to those

feelings [1]. AI excels at simulating cognitive empathy by processing language patterns to provide validating responses and coping strategies [1]. However, it fundamentally lacks the capacity for compassionate empathy because it has no subjective emotional experience or judgment [1]. This distinction is critical for youth mental health, where genuine connection and non-judgmental support are paramount. Studies show that while some AI models like ChatGPT-4 score within the normal human range on tests of emotional awareness, they can still be perceived as artificial if their responses lack nuance, potentially eroding trust [1 4]. Furthermore, the risk of "emotional dependency" is significant, where youth may prefer the frictionless, sycophantic interactions of an AI companion over more challenging but essential real-world relationships [6 26 32]. Therefore, any empathetic system must be transparent about its capabilities, regularly reminding users of its non-human nature to manage expectations and prevent harmful attachment [51].

| Technology Component | Description | Example Models/ Techniques | Reported Performance / Accuracy | Source(s) |
|---|---|---|---|---|
| Natural Language Processing (NLP) | Analyzes written or spoken language to detect sentiment, keywords, and linguistic styles associated with mental health conditions. | Sentiment Analysis, LIWC, BERT, LSTM | 93% accuracy in distress detection; 86.84% precision in predicting depression. | 3 5 31 |
| Facial Emotion Recognition (FER) | Uses computer vision and CNNs to identify emotions from facial micro-expressions in video or images. | MTCNN, ResNet, UNet, FER-2013 dataset | >82% accuracy in static images; 90% binary classification accuracy. | 16 17 |
| Vocal Tone Analysis | Processes audio features like pitch, intonation, and energy to infer emotional states from speech. | MFCC, spectrograms, HuBERT | Used in MEMOCMT (81.33% accuracy) and TMNet (98.89% accuracy). | 33 39 48 |
| Multimodal Fusion | Integrates data from multiple sources (e.g., text, voice, face, physiological signals) for a holistic emotional assessment. | Transformer-based cross-modal fusion, TACFN, SMES framework | 89% accuracy on DAIC-WOZ dataset; 91.93% UW-Acc on ESD. | 19 34 35 41 |
| Digital Twins | Creates a virtual representation of an individual's mental state, | BERT-RNN model, MILBox project | 85% classification accuracy for depression/mind | 22 24 28 |

| Technology Component | Description | Example Models/ Techniques | Reported Performance / Accuracy | Source(s) |
|---|---|---|---|---|
| | continuously updated with longitudinal data. | | distress; 96.8% accuracy for chest X-ray classification in Lung-DT. | |

## Architectures of Support: Implementing Digital Companions, Coaches, and Twins

The conceptual promise of AI in youth mental wellness is realized through various architectural designs, each offering a distinct approach to support. The most common form is the AI Companion or Chatbot, exemplified by platforms like Woebot, Wysa, and Kai [8 12]. These tools function primarily as 24/7 accessible, stigma-free conversational agents that use evidence-based therapeutic frameworks like Cognitive Behavioral Therapy (CBT) to guide users through exercises and track mood over time [7 8]. Their design emphasizes personalization, tailoring interventions to an individual's personality traits and learning style, a feature highly valued by teenagers [2]. For example, Kai operates on familiar messaging platforms like WhatsApp, delivering bite-sized, conversational sessions that act as an accountability partner rather than a replacement for professional therapy [12]. Lyric takes a different approach by leveraging digital twin technology to align academic and emotional support with a student's specific interests, fostering self-awareness and growth mindset [13]. These companions offer immense appeal due to their anonymity and constant availability, which helps reduce barriers to help-seeking for youth who might otherwise be reluctant to engage with traditional mental health services [7 14].

A more structured and goal-oriented architecture is the AI Coach. This model focuses on developing soft skills, building resilience, and encouraging daily reflection. The Lyric app, built on the Rocky.ai platform, is a prime example, using ICF-coaching guidelines and positive psychology models to provide solution-focused coaching [13]. Similarly, the Virtual Emotional Twin (VET) concept describes a model that mirrors an adolescent's emotional state, providing real-time support through coping mechanisms, mindfulness exercises, and self-care reminders [26]. The key advantage of the coaching architecture is its emphasis on empowerment and skill-building, aiming to equip youth with long-term tools for managing their own well-being rather than simply addressing acute symptoms [13 26]. Engagement is typically recommended on a regular basis, such as twice weekly for 10 minutes, to foster habit formation and integration into daily life [13].

Perhaps the most advanced and promising architecture is the Mental Health Digital Twin (MHDT). This paradigm shifts from reactive symptom management to proactive, predictive care. An MHDT is a dynamic, bi-directional virtual model of an individual's mental state, continuously updated with longitudinal data from multiple sources, including EHRs, wearables, genomics, and self-reports [21 22]. The Alliance Digital Twin (ADT) is a conceptual framework that models the therapeutic alliance—

the key predictor of psychotherapy success—by tracking variables like treatment efficacy and nonverbal synchrony [23]. Another framework developed by Sundaramoorthy et al. uses a BERT-based model to classify depression and distress levels with 85% accuracy, creating a personalized feedback loop [24]. The ultimate goal of an MHDT is to simulate treatment outcomes, predict relapse, and enable personalized prevention plans [22,23]. By integrating diverse data streams, these systems aim to capture the complexity of mental health beyond what a simple chatbot can achieve, offering a deeply personalized and continuous form of support [22]. The University of Miami's MILBox project, which creates digital twins from in-home sensor data, is a tangible step toward this future, focusing initially on sleep health before expanding to broader psychosocial factors [27].

## Navigating the Stigma Barrier: Design Principles for Confidentiality and User Trust

For an AI-powered mental wellness solution to be effective for youth, it must first overcome the formidable barrier of stigma. The primary mechanism for achieving this is by providing a confidential, anonymous, and non-judgmental space for self-expression. AI tools excel in this domain by offering 24/7 accessibility without the fear of being seen entering a clinic or judged by a stranger [7,14]. A study highlighted that the anonymity and accessibility of these tools are key factors in reducing stigma among teens, particularly those with autism spectrum disorder who may find social interactions challenging [7]. To further enhance this sense of safety, platforms are designed with privacy-by-design principles. HoMemeTown Dr. CareSam, for instance, employs a stateless, server-side architecture that does not store any personal data, ensuring confidentiality [46]. Similarly, Kai allows users to operate under a preferred name and provides a clear, easy-to-use interface for deleting all conversation data at any time, complying with global health data regulations [12].

However, creating a truly trustworthy environment extends beyond technical specifications. It requires a deep understanding of user needs and expectations. Personalization is a critical component; 63% of individuals report finding personalized mental health support more appealing and effective, and 80% of teenagers specifically prefer customized interventions [2]. This goes beyond generic advice, requiring algorithms that consider individual factors like personality traits, life events, and learning styles to tailor content effectively [2]. Furthermore, transparency is essential. Users express concern when chatbots make assumptions about their personalities or adopt overly childish tones, leading to disengagement [32]. Clear communication about the tool's purpose, limitations, and data usage is crucial for building trust [32]. This includes explicitly stating that the AI is not a licensed therapist and should not be considered a replacement for human care [8,32].

The design of the interaction itself also plays a pivotal role in mitigating stigma. Embodied chatbots, while common, may sometimes inhibit disclosure compared to non-embodied ones [45]. A focus on text-based emotional expression, which aligns with teen communication preferences, can increase comfort [8]. The conversational style must be carefully calibrated. Some apps use guided flows, while others opt for open-ended dialogue [32]. Finding the right balance is key to keeping users engaged

without making them feel interrogated. Ultimately, the goal is to create a safe psychological space where youth feel heard and understood. This involves not only technical safeguards but also thoughtful design choices that prioritize user autonomy and respect for persons, grounding the intervention in ethical principles to ensure it is perceived as a supportive ally rather than an intrusive surveillance tool [14 15].

# The Critical Role of Human Oversight and Safety Protocols

While AI offers unprecedented scale and accessibility, it cannot function safely or effectively without robust human oversight and fail-safes. The provided research makes it unequivocally clear that current AI systems lack the clinical judgment necessary to handle crisis situations [14 45]. Stakeholders in youth mental health services have explicitly stated that AI cannot replace human therapists, especially in trauma or high-risk scenarios [14]. The risks are not merely theoretical; studies have documented instances where AI chatbots failed to recognize suicide ideation, offered encouragement for harmful behaviors, or suggested inappropriate actions, highlighting a profound need for human-in-the-loop supervision [6 10]. For example, a study found that while Wysa was the only app capable of detecting a potential crisis and notifying designated personnel, many other popular apps lack even basic escalation protocols [32].

To address this, a multi-layered safety architecture is required. First, platforms must have explicit crisis detection and response mechanisms. This involves training AI models to identify warning signs, such as keywords related to suicidal thoughts or self-harm, and then triggering a graduated response protocol [9 46]. This could start with an empathetic acknowledgment from the AI, followed by providing links to national crisis resources like the National Suicide Prevention Lifeline (988) or Crisis Text Line (text HOME to 741741) [8 10]. If the AI detects severe risk (e.g., three or more DSM-5 symptoms), it must automatically escalate the case to a human supervisor or emergency contact [46]. Teen Talk App incorporates a machine learning-based intent detection algorithm that proactively identifies self-harm intent and alerts human advisors for escalation, demonstrating a practical application of this principle [9].

Second, all AI-driven solutions must involve ongoing collaboration with mental health professionals. This partnership is vital during the development phase to ensure the therapeutic content is grounded in evidence-based practices like CBT or DBT [8 47]. It is equally important post-launch for supervising the AI's performance, reviewing flagged conversations, and validating the quality of its responses [13]. The American Psychological Association (APA) strongly advocates for human oversight to mitigate risks and ensure that AI companions do not cause harm [51]. Finally, these safety measures must be transparent to the user. Platforms should clearly communicate how crises are handled, who is responsible for monitoring, and what the user can expect if they share concerning information. This transparency builds trust and empowers users to seek appropriate help when needed. Without these integrated human layers, the deployment of AI in youth mental health would be irresponsible and ethically indefensible.

# Addressing Systemic Risks: Ethical Challenges and Regulatory Imperatives

The rapid proliferation of AI mental health tools introduces a host of systemic risks that demand urgent attention from developers, policymakers, and regulators. The most pervasive challenge is the threat to user privacy and data security. Many existing chatbots collect sensitive personal data but provide opaque privacy policies, leaving users uncertain about how their information is stored, used, or shared [14 47]. This lack of transparency undermines trust and raises fears of data misuse, with users worrying that their private conversations could end up with third parties like Google [14]. The APA recommends minimizing data collection, protecting biometric data, and preventing the creation of harmful content like deepfakes from youth data [51]. Technical solutions like federated learning, which trains models across decentralized devices without centralizing raw data, and on-device processing are emerging as ways to enhance confidentiality [28 48 49].

Algorithmic bias presents another critical ethical hurdle. AI models trained on biased datasets can perpetuate and even amplify societal inequalities, leading to culturally incompetent care [7 8]. Most models are trained on Western-centric data, which may not account for diverse cultural expressions of mental distress [8]. This can lead to misdiagnosis or ineffective interventions for non-Western users. To counter this, developers must prioritize the creation of diverse, large-scale, and well-annotated datasets for training and validation [36 48]. The RUDA-2025 study, which created a manually annotated dataset of Urdu social media posts, is a crucial step toward addressing this gap for low-resource languages [50]. The EU's AI Act and UNICEF's 'Policy Guidance on AI for Children' provide foundational ethical frameworks that emphasize principles of fairness, non-discrimination, and respect for children's rights [15].

Finally, there is a pressing need for regulatory oversight and standardized evaluation. Currently, the field is largely unregulated, allowing for the deployment of unsafe or ineffective tools [10]. Calls for certification requirements, mandatory clinician involvement, and legal liability for harm caused by AI are growing louder [10]. Rigorous, large-scale, long-term outcome research is desperately needed to validate the efficacy and safety of these interventions [45]. Participatory research involving youth, especially marginalized groups, is essential to co-design equitable and trustworthy systems [15]. As experts stress, a collaborative effort between parents, educators, policymakers, and technologists is required to build solutions that are not only innovative but also safe, ethical, and genuinely beneficial for the next generation [51].

| Risk Area | Key Concerns | Proposed Mitigation Strategies | Relevant Sources |
| --- | --- | --- | --- |
| Data Privacy & Security | Opaque data collection/ storage policies, fear of data misuse, third-party sharing, insecure hosting. | Federated learning, on-device processing, HIPAA/GDPR compliance, clear privacy policies, minimal data collection. | 14 22 28 47 49 |

| Risk Area | Key Concerns | Proposed Mitigation Strategies | Relevant Sources |
|---|---|---|---|
| Algorithmic Bias & Inequity | Lack of cultural competence, poor performance for non-Western populations, reinforcement of stereotypes. | Use of diverse, large-scale datasets, development of models for low-resource languages, participatory co-design with marginalized youth. | 7 8 15 50 |
| Safety & Clinical Judgment | Inability to handle crises (e.g., suicide ideation), giving harmful advice, over-supportive behavior, lack of human oversight. | Implementation of crisis detection protocols, human-in-the-loop supervision, clear disclaimers, linking to crisis resources. | 6 10 14 45 |
| Regulation & Accountability | Lack of FDA approval, absence of certification standards, no legal liability for harm, insufficient outcome research. | Advocacy for regulatory bodies (e.g., FDA, EU AI Act), mandatory clinician involvement, rigorous long-term trials, transparent reporting. | 7 10 15 45 |

# Synthesis of Solutions: A Blueprint for an Integrated and Ethical Youth Mental Wellness Platform

In synthesizing the possibilities and pitfalls of AI in youth mental wellness, a clear blueprint emerges for a solution that is integrated, layered, and ethically grounded. Such a platform must transcend the singular-function chatbot and instead embody a holistic ecosystem of care. This ecosystem would combine the best aspects of the various architectures discussed, creating a synergistic whole greater than the sum of its parts. The foundation of this solution would be a Confidential and Personalized Chatbot Interface, functioning as the primary point of engagement. This interface would leverage advanced NLP and generative AI to deliver tailored CBT exercises, track mood via interactive journaling prompts, and maintain the anonymity that reduces stigma [2 8 12]. Crucially, this chatbot would not be a closed system; it would serve as a portal to a wider network of support.

Building upon this interface would be a Multimodal Sensing and Monitoring Layer. This layer would incorporate optional, consent-based sensing of vocal tones and facial expressions to provide a richer, more nuanced understanding of the user's emotional state [19 53]. This data, processed either locally on-device or through secure, privacy-preserving methods like federated learning, would feed into a higher-level analytical engine [28 48]. This layer represents a move towards the "longitudinal empathy" promised by digital twin technology, where the AI learns to recognize subtle changes in a user's affect over time, enabling more timely and relevant interventions [22 45].

The core of this integrated platform would be the Mental Health Digital Twin (MHDT) Engine. This engine would fuse the data from the chatbot and the multimodal sensors with other relevant information sources—such as passive behavioral data from phone sensors, academic performance metrics, and even genetic predispositions (with strict consent)—to create a comprehensive, dynamic

model of the youth's mental wellness [22 24]. Drawing on concepts like the Alliance Digital Twin, this engine would not only monitor but also predict potential downturns in mental health, simulating the likely impact of different coping strategies or interventions [23]. This predictive capability transforms the platform from a reactive tool to a proactive guardian of well-being.

This entire technical infrastructure must be enveloped by an unyielding Layer of Human Oversight and Safety Protocols. Every interaction would be subject to a dual-filtering system: an automated crisis detection module powered by both keyword spotting and contextual analysis, and a human review process for flagged cases [9 46]. The system would have clear, pre-programmed escalation paths for high-risk situations, seamlessly connecting the user with human professionals, crisis hotlines, or emergency services [8 12]. Transparency would be paramount; the AI would regularly remind users of its non-human nature to prevent harmful dependencies and encourage real-world connections [51]. This human-AI collaboration ensures that while the AI handles routine support and data analysis, the final responsibility for safety and clinical judgment rests with a qualified human expert.

To conclude, the future of AI in youth mental wellness is not about replacing human therapists but augmenting and scaling the reach of mental healthcare. The possible solutions range from accessible chatbots to sophisticated digital twins. The most viable path forward is an integrated, multi-layered platform that prioritizes confidentiality through privacy-by-design engineering, fosters trust with transparent and personalized interactions, and embeds an absolute commitment to safety through unwavering human oversight. By thoughtfully combining these elements, we can develop a powerful new tool that helps young people overcome stigma, access the support they need, and build lasting emotional resilience.

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## Reference


1. New Study Explores Artificial Intelligence (AI) and Empathy ... https://www.evidencebasedmentoring.org/new-study-explores-artificial-intelligence-ai-and-empathy-in-caring-relationships/
2. Personalized Mental Health Support for Teenagers https://navigate360.com/blog/personalized-mental-health-support-for-teenagers/
3. Emotion - aware psychological first aid: Integrating BERT ... https://ietresearch.onlinelibrary.wiley.com/doi/10.1049/ccs2.12116
4. Capacity of Generative AI to Interpret Human Emotions From ... https://mental.jmir.org/2024/1/e54369
5. Utilizing natural language processing for precision ... https://www.sciencedirect.com/science/article/pii/S0010482525002094
6. Why AI companions and young people can make for a ... https://med.stanford.edu/news/insights/2025/08/ai-chatbots-kids-teens-artificial-intelligence.html
7. AI and Teen Mental Health: The Pros and Cons https://prairie-care.com/ai-teen-mental-health/

8. AI Chatbots for Teen Mental Health https://assistedinterventions.com/ai-chatbots-for-teen-mental-health/
9. Leveraging AI to Transform Teen Mental Health Support https://research-archive.org/index.php/rars/preprint/view/1775
10. The Ability of AI Therapy Bots to Set Limits With Distressed ... https://pmc.ncbi.nlm.nih.gov/articles/PMC12360667/
11. Decision-making on an AI-supported youth mental health app https://www.sciencedirect.com/science/article/pii/S2666659625000150
12. Harnessing AI as a Wellness Tool for Teenagers' Mental ... https://www.technologynetworks.com/neuroscience/blog/harnessing-ai-as-a-wellness-tool-for-teenagers-mental-health-363069
13. Lyric: A Teenage Mental Health AI App Revolutionizing ... https://www.rocky.ai/post/lyric-a-teenage-mental-health-ai-app
14. Perception of AI Use in Youth Mental Health Services https://pmc.ncbi.nlm.nih.gov/articles/PMC12364429/
15. Advancing youth co-design of ethical guidelines for AI ... https://www.nature.com/articles/s44220-025-00467-7
16. Facial emotion recognition through artificial intelligence https://www.frontiersin.org/journals/computer-science/articles/10.3389/fcomp.2024.1359471/full
17. facial emotion recognition for mental health analysis using ... https://pmc.ncbi.nlm.nih.gov/articles/PMC11683786/
18. Emotion AI Meets Adolescence: Understanding Teen ... https://imentiv.ai/blog/inside-adolescence-netflix-a-mirror-to-teenage-mental-health-emotions-the-power-of-emotion-ai/
19. A Comprehensive Review of Multimodal Emotion ... https://pmc.ncbi.nlm.nih.gov/articles/PMC12292624/
20. Multimodal Emotion Recognition Using Visual, Vocal and ... https://www.mdpi.com/2076-3417/14/17/8071
21. Concepts and applications of digital twins in healthcare ... https://www.sciencedirect.com/science/article/pii/S2666389924001612
22. Digital Twins Generated by Artificial Intelligence in ... https://www.mdpi.com/2076-3417/14/20/9404
23. Digital twins and the future of precision mental health https://www.frontiersin.org/journals/psychiatry/articles/10.3389/fpsyt.2023.1082598/full
24. AI-driven digital twin framework for personalized mental ... https://www.researchgate.net/publication/389430593_AI-driven_digital_twin_framework_for_personalized_mental_health_monitoring_and_intervention

25. Personalization of AI-Based Digital Twins to Optimize ... https://www.mdpi.com/2076-3417/15/15/8525

26. Virtual Emotional Twins in Adolescent Mental Health https://medium.com/@preeti.rana.ai/virtual-emotional-twins-in-adolescent-mental-health-c15bdbe1a7af

27. Digital Twin Accelerates the Future of Personalized Wellness https://idsc.miami.edu/digital-twin/

28. AI-driven digital twin framework for personalized mental health ... https://journalijsra.com/sites/default/files/fulltext_pdf/IJSRA-2025-0459.pdf

29. Enhancing mental health with Artificial Intelligence https://www.sciencedirect.com/science/article/pii/S2949916X24000525

30. The Potential of Chatbots for Emotional Support and ... https://pmc.ncbi.nlm.nih.gov/articles/PMC10625083/

31. Early Mental Health Detection and Emotional States in ... https://www.mdpi.com/2673-4591/107/1/64

32. An Overview of Chatbot-Based Mobile Mental Health Apps https://pmc.ncbi.nlm.nih.gov/articles/PMC10242473/

33. Transformer-fused multimodal framework for emotion ... https://www.sciencedirect.com/science/article/pii/S2405959525000517

34. TACFN: Transformer-based Adaptive Cross-modal Fusion ... https://www.arxiv.org/abs/2505.06536

35. multimodal temporal modeling using transformer https://pmc.ncbi.nlm.nih.gov/articles/PMC12232596/

36. A review and critical analysis of multimodal datasets for ... https://link.springer.com/article/10.1007/s10462-025-11271-1

37. Using transformers for multimodal emotion recognition https://dl.acm.org/doi/10.1016/j.engappai.2024.108339

38. TACFN: Transformer-Based Adaptive Cross-Modal Fusion ... https://www.sciopen.com/article/10.26599/AIR.2023.9150019

39. HyFusER: Hybrid Multimodal Transformer for Emotion ... https://www.mdpi.com/2076-3417/15/3/1053

40. MemoCMT: multimodal emotion recognition using cross- ... https://pubmed.ncbi.nlm.nih.gov/39953105/

41. Towards Multimodal Emotional Support Conversation ... https://arxiv.org/html/2408.03650v1

42. Multimodal interaction technologies for mental well-being https://www.frontiersin.org/journals/computer-science/articles/10.3389/fcomp.2024.1412727/full

43. Feasibility of internet-based multimodal emotion ... https://www.sciencedirect.com/science/article/pii/S2214782925000624

44. Emotion Forecasting: A Transformer-Based Approach https://www.jmir.org/2025/1/e63962

45. Chatbots and mental health: a scoping review of reviews https://link.springer.com/article/10.1007/s12144-025-08094-2

46. Development and Evaluation of a Mental Health Chatbot ... https://medinform.jmir.org/2025/1/e63538

47. Persuasive chatbot-based interventions for depression https://www.frontiersin.org/journals/psychiatry/articles/10.3389/fpsyt.2025.1429304/full

48. A Comprehensive Review of Multimodal Emotion ... https://www.mdpi.com/2313-7673/10/7/418

49. Multimodal Sensing-Enabled Large Language Models for ... https://pmc.ncbi.nlm.nih.gov/articles/PMC12349093/

50. RUDA-2025: Depression Severity Detection Using Pre- ... https://www.mdpi.com/2673-2688/6/8/191

51. Artificial intelligence and adolescent well-being https://www.apa.org/topics/artificial-intelligence-machine-learning/health-advisory-ai-adolescent-well-being

52. EmoPulse: Unveiling Real-Time Mental Health through ... https://www.sciencedirect.com/science/article/pii/S2950363925000298

53. TheraSense: Deep Learning for Facial Emotion Analysis in ... https://www.mdpi.com/2079-9292/14/3/422

54. Use of Emotion Recognition Tools in Psychiatry Said to Be ... https://psychiatryonline.org/doi/10.1176/appi.pn.2022.2.36