E-BOOK OF EXTENDED ABSTRACT

THE 14TH INTERNATIONAL INVENTION, INNOVATION & DESIGN COMPETITION 2025

14TH INDES 2025

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CAREBRIDGE SOLUTION

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ABSTRACT

This paper introduces CareBridge Enterprise, a web-based prototype designed to enhance access to mental health services through the integration of Artificial Intelligence (AI) and Natural Language Processing (NLP). The system supports both clients and counsellors by analysing textual input to detect emotional states, identify potential mental health concerns (e.g., anxiety or depression), and suggest suitable counselling approaches including Cognitive Behavioural Therapy (CBT), humanistic therapy, or reality therapy. Built using AI-powered NLP models, the platform recognises keywords, emotional tone, and symptomatic cues while maintaining user privacy by avoiding personal data collection. A scheduling interface also matches users with available counsellors, supporting seamless connectivity. Through real-time emotional insights and session-preparation tools, CareBridge enhances the therapeutic process while offering a scalable and privacy-conscious solution for digital mental healthcare.

Keywords: mental health, NLP, AI counselling, student wellbeing, emotion detection

1. INTRODUCTION

The global rise in mental health challenges particularly among university students and professionals has intensified the demand for accessible, responsive, and personalised counselling services. Traditional support systems frequently face issues such as long waitlists, limited counsellor availability, and generic therapeutic approaches that fail to address individuals' emotional needs in a timely manner. Although digital mental health tools have gained popularity in recent years, most lack intelligent pre-session capabilities to support users and practitioners alike. Tools offering emotional insights or therapy matching remain underdeveloped across many platforms. To address this gap, this paper introduces CareBridge, a prototype that uses AI-enhanced emotional analysis powered by NLP to bridge the accessibility and personalisation divide in digital mental healthcare. By offering real-time emotional interpretation and therapy suggestions, CareBridge aims to enrich the client–counsellor interaction from the very first session.

2. METHODOLOGY

CareBridge Enterprise was engineered using a combination of NLP algorithms trained on a large dataset of psychological and emotional language patterns. These include anonymised transcripts from therapy sessions, mental health articles, and symptom descriptors sourced from validated databases. When a user inputs text describing their feelings or current mental state, the system processes this input through the NLP engine to detect key linguistic features: tone (e.g., sadness, anger, anxiety), specific mental health keywords (e.g., "hopeless," "stressed," "can't sleep"), and overall language sentiment. Using this data, the system infers probable emotional states and suggests appropriate therapeutic approaches. For instance, a user expressing distorted thinking patterns may be recommended CBT, while someone displaying existential distress may be directed to humanistic therapy.

The platform also integrates a secure scheduling tool that connects users to licensed counsellors based on their preferred time slots and the counsellors' availability. To prioritise user privacy, all text inputs

are analysed anonymously, with no personally identifiable information (PII) collected or stored. Data security protocols are aligned with current best practices, ensuring ethical handling of sensitive data.

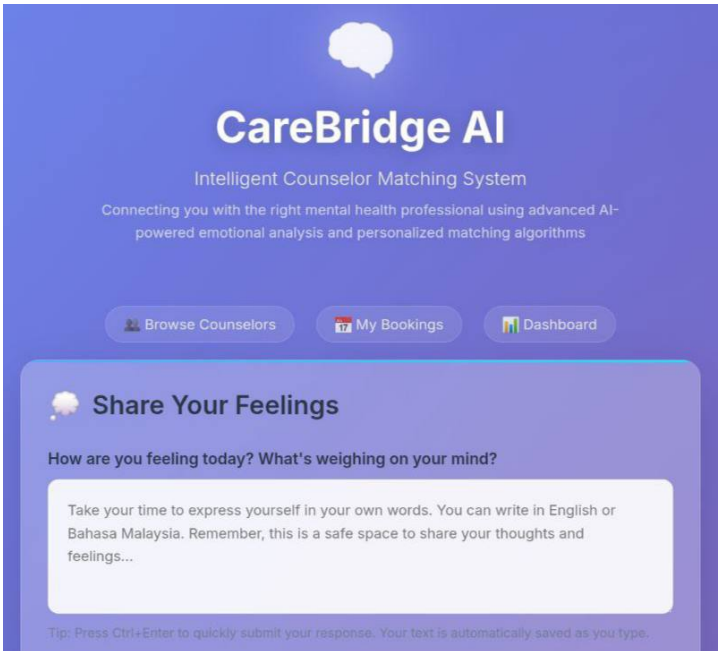

Figure 1 CareBridge AI Website Interface

3. FINDINGS

The prototype demonstrates the feasibility of integrating AI into the counselling process. Preliminary evaluations show that users found the emotional insight useful prior to sessions, while counsellors reported improved session readiness. The privacy preserving design was also well received, indicating strong user trust. The combined emotional analysis and scheduling functions position CareBridge as a scalable digital mental health tool. The development and preliminary testing of the CareBridge Solution prototype encouraging results across three main areas. First, users reported that the AI generated emotional insights were helpful in improving self-awareness and preparing them emotionally before counselling sessions.

Many felt more confident and organised in expressing their concerns to the counsellor, making the sessions more productive. Second, counsellors noted that receiving clients' presession emotional data allowed for more targeted planning, enabling them to identify appropriate therapeutic approaches ahead of time, such as Cognitive Behavioural Therapy or humanistic methods. This feature enhanced session flow and reduced the time typically spent on initial emotional assessments. Third, user feedback highlighted strong approval of the platform's privacy conscious design. Knowing that their personal data would not be stored or shared gave users a sense of safety and trust especially important for students and young adults who are often hesitant to engage with digital mental health tools. Overall, these findings support CareBridge's potential as a practical and scalable tool for enhancing emotional readiness, therapy quality, and user trust in digital counselling services.

Figure 2 QR Code for CareBridge AI Website

4. CONCLUSION

CareBridge Enterprise represents a promising advancement in the field of digital mental health solutions, combining the analytical power of AI and NLP with the human centred goals of counselling. By offering real time emotional assessment and therapist matching functionality, the platform bridges the gap between users and mental health professionals in a meaningful and technologically sound manner. Its ability to assist both clients and counsellors before therapy sessions begin makes it a unique tool in improving therapy outcomes, reducing the burden on mental health professionals, and enhancing user satisfaction. The emphasis on data privacy ensures ethical compliance and builds user trust, making the system suitable for wide adoption in educational institutions, corporate wellness programs, and public health settings. Moving forward, further development and integration with live counselling services could establish CareBridge as a standard pre counselling tool in digital healthcare ecosystems.

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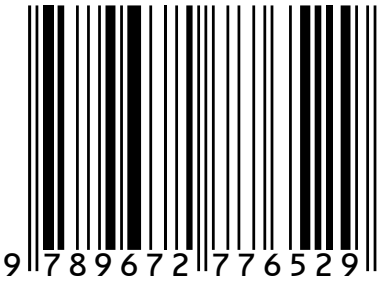

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