DBP Wellness Bot

July 8, 2025

1 Executive Summary

This is a technical breakdown for the development of a prototype AI wellness chatbot that will guide users through structured interactions under the guiding principles of a neuroscience based method called Dual-Brain Psychotherapy (DBP). The goal is to deliver a compliant, scalable, and secure prototype within 6–8 weeks of commencement of work.

2 Requirements

2.1 Business Requirements

The list of business requirements as identified from the Vision brief are highlighted below:

BR.1. Non-Clinical emotional wellness chatbot designed for individuals, void of diagnostic or therapeutic language, and emphasizing on emotional wellness support, where the tone of communication is always companion-style. The chatbot must operate within wellness framing to avoid regulatory obligations such as FDA approval.

BR.2. Be able to distinguish between mature and stressed conversational states (mindful states), and use guided logic to explore emotional shifts through structured conversations based on Dual-Brain Psychology. Visual cues or face tracking features from camera feed would be taken to assist in conversation flow and emotional state recognition.

BR.3. Conversation flows must follow a consistent structure: Bot Introduction → Visual Activation Guidance → Dialogues (Stressed Mind → Mature Mind) → Integration Prompts → Closing. All prompts must reinforce self-agency and emotional validation.

BR.4. The system must structure user dialogue transcripts into logic sequences and provide the ability to save or export these for journaling or self-reflection.

BR.5. Prototype must have a lightweight web-based interface with several screens (Welcome, Check-in, Dialogue, Reflection, etc.), all connected via a persistent navigation bar. It should be mobile-friendly and responsive. The interface will support camera and storage permissions for handling of visual data.

BR.6. An interactive avatar will be present to visually represent the companion-style chatbot. The chatbot avatar component will be capable of performing core companion functions, such as basic facial expressions, subtle animations, and conversation related movements. Avatar responses will be synchronized with the tone and content of the chatbot's dialogue.

2.2 Functional Requirements

The list of functional requirements as identified from the Vision brief are highlighted below:

FR.1. UI to have screen for welcoming/on-boarding.

FR.2. UI to have screen for daily emotional check-in. The user must be able to select their current emotional state from a predefined list.

FR.3. UI to have screen for lateral/visual view instructions provided through avatar.

FR.4. UI to have dialog screen, differentiating between different mind states (Stress/Mature). This will prompt the user with 2–3 emotional questions (FR.4.1/FR.4.2). There will be logic sequences / prompts to switch between mind states (FR.4.3). After both, must prompt the user to reflect on what was heard and felt (FR.4.4). Where applicable, prompts will be given through avatar.

FR.5. UI to have Navigation bar for integrating between all screens.

FR.6. UI to have Include disclaimer notifications.

FR.7. Core logic engine (DBP module) must support structured dual-perspective conversations, using tagged logic flows, transitions, and emotional framing rules. Queues to control the avatar will be passed from here.

FR.8. The user must be able to save the session into a local or cloud-based journal.

FR.9. A component for admin settings will be provided.

FR.10. Face tracking engine will be configured to interact with camera data and acquire facial and gesture features.

	BR.1	BR.2	BR.3	BR.4	BR.5	BR. 6
FR.1	X				X	
FR.2	X				X	
FR.3	X	X	X		X	X
FR.4	X	X	X		X	X
FR.5	X				X	
FR.6	X				X	
FR.7	X	X	X			X
FR.8				X		
FR.9					X	
FR.10	X		X			X

2.3 Non-Functional Requirements

The list of non-functional requirements as identified from the Vision brief are highlighted below:

NF.1. System must ensure user data integrity and confidentiality, especially when users journal or reflect on emotional states.

NF.2. To have a language safety layer for enforcing wellness-safe phrasing and reinforcing self-agency.

NF.3. To have enforcent of non-clinical language in conversations.

NF.4. UI must be clean, intuitive, and accessible, with responsive layout optimized for both mobile and desktop.

NF.5. System should maintain response time under 2-3 seconds per interaction for smooth user experience.

NF.6. Be modular enough to support integration to wearable technology / brain-sensing tools in later stages.

	BR.1	BR.2	BR.3	BR.4	BR.5	BR. 6
NF.1	X			X		
NF.2	X		X			
NF.3	X	X	X			X
NF.4					X	X
NF.5	X	X	X		X	X
NF.6					X	

2.4 Technology Stack

	Functional Req. #										Non-Functional Req. #					
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6
HTML/CSS	X	X	X	X	X	X			X	X				X		
React/Vue.js/Flutter	X	X	X	X	X	X			X	X						
GPT/Langchain				X											X	
Node.js							X			X						
Python							X									
Firebase/NoSQL								X		X	X					
OAuth/Firebase											X					
Spacy												X	X			
Regex													X			
Async															X	
Websockets/API																X
Face/Gesture API										X	X				X	
Avatar API			X	X			X			X				X	X	

3 Timeline

The execution of the work packages would be:

	Week #							
	1	2	3	4	5	6	7	8

WP1. Planning & Specification	X	X	X					
WP2. UI/UX Design	X	X	X	X				
WP3. Bot Logic Integration		X	X	X	X			
WP4. Frontend Development		X	X	X	X	X		
WP5. Journal & Save Feature			X	X	X	X		
WP6. Language Safety Layer				X	X	X		
WP7. Avatar Functions Module		X	X	X	X		X	
WP8. Face/Gesture Recognition Module		X	X	X	X		X	
WP9. Admin Module		X			X	X		
WP10. Integration and Navigation					X	X	X	
WP11. Testing & Quality Assurance					X	X	X	X
WP12. Deployment & Handover						X	X	X

4 Focal Person Contact

For any further details, collaboration may be made with Dr. Omar Khan on omar.khan@nu.edu.pk