Assignment Title: MindCare

Reported by: Group-5

Group Members:

- Pann Su Khine
- Pau En Piang
- Shwe Sin Moe
- Wanna Myo Min
- Ye Bhone Lin

I. Literature Review

Introduction

In Myanmar today, people face countless challenges due to political crisis, civil war, climate disasters like floods, storms, and earthquakes. These long and difficult situations cause stress, fear, and hopelessness for people of all ages. Even children and elders experience mental pressure, often without realizing it.

Because of internet shutdowns, limited education, and lack of awareness, most Myanmar people cannot access mental health care or professional support. Our project MindCare aims to help by using technology to support people's mental well-being in the Burmese language, in a way that is simple, private, and friendly.

We also plan to make MindCare more than just a chatbot. It will understand the user's emotions from their voice, face, and text, and gently guide them toward awareness, relaxation, or professional help when needed.

A literature review is important to understand what has already been studied about mental health, chatbots, emotion detection, and low-resource language AI, and to find where we can improve or create new value for Myanmar.

Existing Studies and What We Learned

1. Mental Health and Stress in Crisis Countries

Many studies and WHO reports show that people who live in unstable or war-torn areas often suffer from depression, anxiety, or trauma. Myanmar's situation is similar — long-term conflict, financial hardship, and natural disasters have created serious emotional burdens. Research proves that early detection and community-based support can greatly help reduce mental health problems.

We should build a system that is simple to use, available in Burmese, and able to detect early signs of emotional distress — even before users ask for help.

2. Digital Mental Health Tools

Chatbots and mobile apps like Woebot and Wysa have shown that AI can support people's mental health by chatting and providing coping tips. In some countries, simple SMS or voice-based systems (IVR) were used to reach users without internet.

We can make a chatbot that speaks Burmese, works with text, voice, and face, and can also run in low-internet environments. Instead of giving medical advice, MindCare can focus on empathy, emotion detection, and safe conversation.

3. Screening and Emotional Detection

Tools like PHQ-9 and GAD-7 are used worldwide to detect depression and anxiety. Studies show that combining these tools with AI emotion recognition from voice and facial expressions can increase accuracy. Some researchers use tone of voice, facial movement, and words together to understand user emotion.

We can train models to detect stress or sadness from voice tone, facial expression, and text sentiment — and give simple emotional feedback.

4. Technology for Low-Resource Languages

AI models like mBERT, and XLM-R can be fine-tuned for languages like Burmese. Because Burmese datasets are small, using transfer learning and LoRA fine-tuning helps us adapt large models to our language with less computing power.

We can fine-tune open-source models to understand Burmese text and speech, using small but real local data that we collect from surveys and voice samples.

5. Privacy and Ethics

Studies remind that mental health data must always be private. Users should feel safe to talk about their feelings without fear of exposure or judgment. All data must be anonymous, and crisis cases must be handled carefully.

We will collect data only with consent, store it safely, and build clear crisis-handling plans (e.g., showing hotline numbers when serious distress is detected).

Conclusion

From all these studies, we learned that digital mental health tools can help millions — but Myanmar still has no system like this in Burmese.

MindCare aims to be that first step: a local, emotional, and safe digital support tool that understands Burmese people's voices, faces, and words, and gently connects them with self-care or professional help.

II. Data Research

Introduction

Data is the heart of our project. Without real data, the model cannot understand human emotions or language. Because mental health is sensitive, we collect and use data carefully and ethically.

We already collected 20 responses from a Google Form about people's mental health, which will help us start training our first prototype model. As our project grows, we plan to collect more text, voice, and face data with proper consent.

Our Data Sources

Type	Source	Format	Purpose
Survey Data	Google Form (20 responses)	CSV	Understanding general emotional trends and early text data for model fine-tuning
Voice Samples	Local Burmese speakers	WAV / MP3	Emotion detection model (voice tone, pitch, speed)
Facial Images / Videos	Collected with consent	Image / Video	Detecting emotion from facial expressions
External Datasets	Open WHO & Kaggle data	CSV / JSON	Comparing emotional trends and validating model predictions

Data Analysis (Current Stage)

Right now, our dataset is small, but it already shows that:

- Most people report feeling tired, sad, or stressed.

- Texts often contain words like "ဆင်းရဲ," "ပင်ပန်း," and "မကြာခဏငို" (meaning tired, sad, or crying often).

- Voice samples with slower tone and lower pitch usually come from people reporting anxiety.

This early insight motivates us to collect more data and include multi-modal emotion signals — not just text.

Conclusion

Our first 20 responses already prove that Myanmar people are emotionally affected by their surroundings.
By expanding this dataset carefully, MindCare will be able to learn real emotional patterns from Burmese people and respond with empathy, not just generic answers.

III. Technology Review

Introduction

MindCare uses modern AI technologies to detect, understand, and respond to human emotions.
We are still learning, but step by step we are exploring transformers, fine-tuning, Docker, and AI deployment.

Technology Overview

Component	Tool	Purpose
Transformer Models (LLMs)	HuggingFace Transformers	Understand Burmese text and chat naturally
Fine-tuning Method	LoRA / Transfer Learning	Adapt large models with small datasets
Facial Emotion Model	OpenCV / DeepFace	Detect user emotion from camera
Backend API	FastAPI	Connect AI models with front-end

Component	Tool	Purpose
Containerization	Docker	Deploy all services easily and consistently
Frontend	Streamlit / React	Simple interface for users and admin dashboard

Why These Tools Are Right

- Open-source: free and accessible for students and small teams.

- Low-resource friendly: LoRA fine-tuning allows model training even on a laptop or free GPU.

- Scalable: Docker and FastAPI make it easy to deploy later.

- Language adaptable: all tools can handle Burmese with customization.

Learning Progress

- We have started learning about transformers — how models like GPT or BERT work.

- We understand the theory of fine-tuning — training existing models on small, focused data.

- We are learning Docker to build reproducible environments for model deployment.

This learning process is a big part of our project journey — understanding both technology and its human purpose.

Future Plan

We will:

1. Fine-tune a small bilingual transformer on our Burmese data.

2. Build an emotion detection pipeline using text + voice + face.

3. Design a simple interface to show emotional results (color scale, emoji, or text feedback).

4. Gradually integrate everything into one application — MindCare AI.

Conclusion

MindCare combines technology and empathy to support Myanmar people's mental well-being. By using AI in a careful and ethical way, we hope to help people recognize their emotions and feel less alone — even in hard times. Our journey has just started, but each small learning step, from fine-tuning transformers to collecting voices, brings us closer to a meaningful goal: A Burmese AI companion that listens, understands, and cares.