



PROJECT PHASE -1

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AI-Enhanced Cloud-Based Mental Health Support Platform for Students: Integrating Real-Time Mood Tracking, Personalized Interventions and Interactive Relaxation Games

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Abstract

This project aims to develop a cloud-based mental health support platform that integrates AI-driven real-time mood tracking with personalized interventions for students. Using emotion detection and predictive algorithms, the platform suggests interactive relaxation games to improve student's emotional well-being.

Key Components:

- Real-time emotion tracking
- AI-based mood prediction
- Personalized support and recommendations
- Relaxation games integration

Introduction

- **Context:**

Mental health issues among students are increasing due to academic pressure and social challenges. A digital platform providing timely emotional support can help address these problems.

- **Objective:**

To develop a platform that detects students' emotional states and offers personalized interventions in real-time using AI technologies.

- **Importance:**

This helps tackle mental health issues by promoting healthier ways to handle stress.

Literature Survey

Paper No	Paper Title	Year of Publication	Problem Statement	Their Solution (with Technology Used)	Drawbacks (Identify Gaps)	Future Advancements
1	Real-Time Classroom Behaviour Analysis for Enhanced Engineering Education: An AI-Assisted Approach	2024	Monitoring classroom behavior in real time for improved education outcomes.	AI-assisted behavior analysis with real-time insights.	Limited to specific educational contexts.	Expand to different educational environments and improve emotion detection accuracy.
2	Big Data Analytics on Social Networks for Real-Time Depression Detection	2022	Identifying depression through social network data.	Big Data Analytics and sentiment analysis for depression detection.	Accuracy can be compromised by noisy data.	Integration with additional psychological assessments for better accuracy.
3	Trends, Technologies, and Key Challenges in Smart and Connected Healthcare	2021	Challenges in implementing smart and connected healthcare systems.	Overview of key technologies and trends in healthcare systems.	Lacks specific technical solutions for real-time health monitoring.	Explore AI-based real-time healthcare monitoring solutions.
4	Real-Time Attention Monitoring System for Classroom: A Deep Learning Approach for Student's Behavior Recognition	2023	Detecting students' attention levels in real-time in classrooms.	Deep learning models for behavior recognition in educational settings.	Focuses on visual cues only, lacking emotional aspects.	Include emotional recognition for more accurate engagement detection.
5	Assessing the Role of Artificial Intelligence in the Mental Healthcare of Teachers and Students	2023	AI-based mental health monitoring for teachers and students.	AI algorithms assessing mental health and providing recommendations.	AI recommendations can lack human emotional intelligence.	Integrating human-AI hybrid models for improved emotional understanding.

6	A Real-Time Learning Analytics Dashboard for Automatic Detection of Online Learners' Affective States	2023	Monitoring learners' affective states during online Learning.	Real-time analytics dashboard for emotion detection using affective computing.	Limited to specific online learning environments.	Extend applicability to broader e-learning platforms and hybrid models.
7	Facial emotion recognition based real-time learner engagement detection system in online learning context using deep learning models	2022	Detecting learner engagement through facial emotion recognition in online learning.	Develop learning models for facial emotion recognition.	Does not account for environmental distractions or engagement fluctuations.	Incorporate environmental factors and engagement shifts for real-time adjustments.
8	Using sentiment analysis to evaluate qualitative students' responses	2022	Evaluating students' responses using sentiment analysis techniques.	Sentiment analysis algorithms to determine the tone of responses.	May misinterpret neutral or ambiguous responses.	Improve algorithms to handle nuanced and complex sentiments.
9	AI-based adaptive personalized content presentation and exercises navigation for an effective and engaging E-learning platform	2022	Providing personalized content for improved e-learning engagement.	AI-driven personalized content recommendations for e-learning.	May not adapt well to diverse learning styles.	Refine algorithms to better match individual learner profiles and needs.
10	Experiences of Users with an Online Self-Guided Mental Health Training Program Using Gamification	2023	Enhancing mental health programs through gamification.	Self-guided mental health program with gamified	Lacks real-time monitoring of mental health progress.	Integrate real-time feedback mechanisms for mental health tracking.

Research Gap

Identified Gaps:

- ❑ Existing solutions don't offer real-time interventions.
- ❑ Limited integration of AI for emotion prediction and gaming.
- ❑ No comprehensive platform that combines tracking, personalized interventions and stress-relief games.

A system that not only tracks mood but also recommends personalized interventions and interactive relaxation games based on real-time emotional shifts.

Problem Statement



Problem Statement: Enhancing student mental health systems by integrating real-time engagement, mood tracking through emotion recognition, machine facial learning-based prediction, and personalized mood interactive support.

Objective: Build an AI-enhanced cloud platform that tracks emotions and offers immediate, personalized interventions including relaxation games.

Proposed Methodology

Facial Emotion Recognition for Real-Time Mood Tracking:

- **Facial Expression Analysis:** The platform utilizes **computer vision** to analyze student's facial expressions through **webcams or mobile cameras** identifying key emotions like happiness, sadness, anger, fear and stress.
- **Emotion Labels:** The system assigns labels (e.g., happy, neutral, stressed) to indicate the student's current emotional state based on the analysis.

Machine Learning for Mood Prediction:

- **Data Collection:** Historical mood data and behavioral factors are collected.
- **Pattern Learning:** ML algorithms analyze time-series data to identify trends and detecting moods.
- **Mood Prediction:** Using **supervised learning models**, the system predicts future emotional states based on past data.

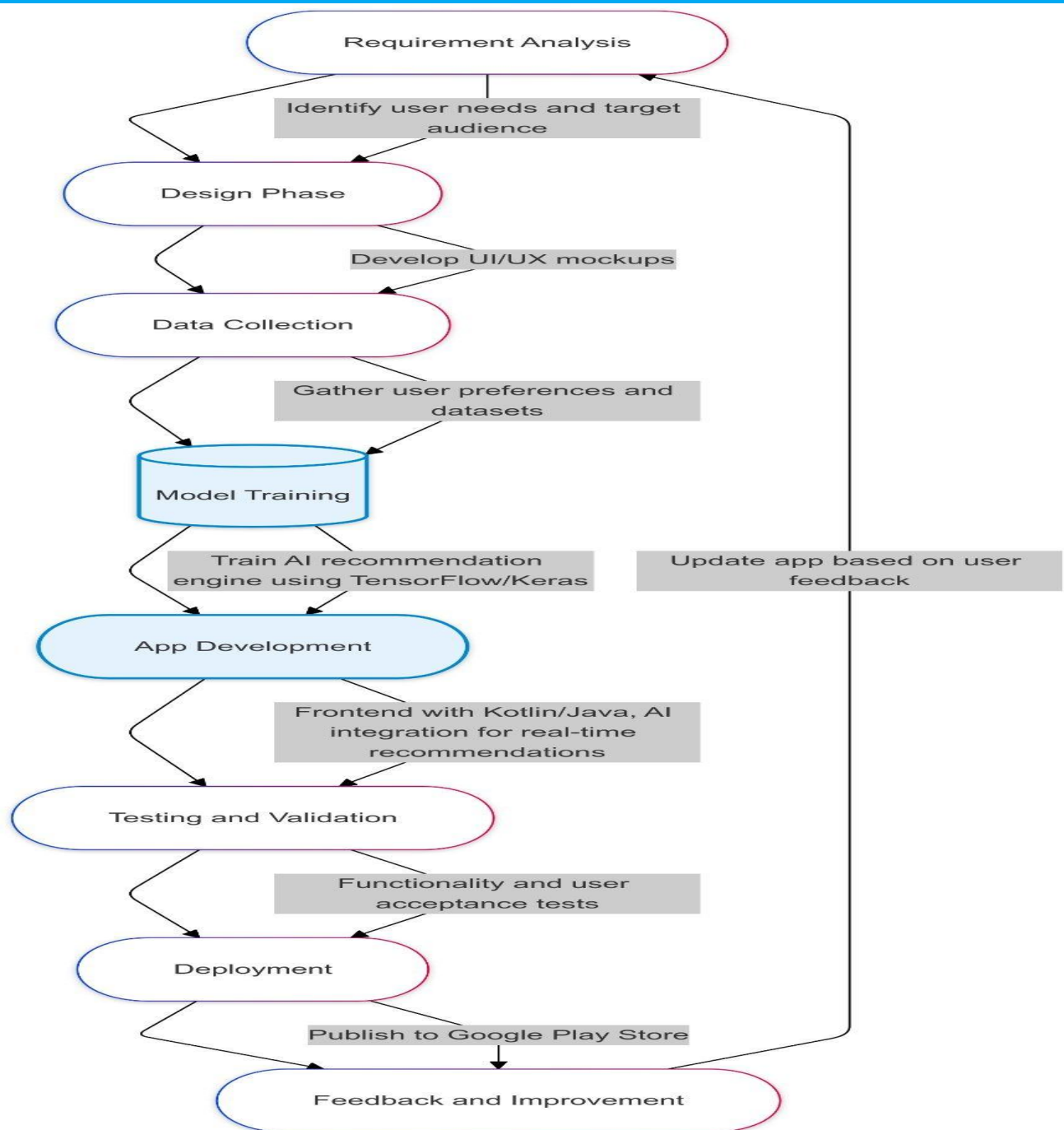
Eg-(Recurrent Neural Networks (RNNs) or Long Short-Term Memory (LSTM))

Personalized Interventions and Recommendations:

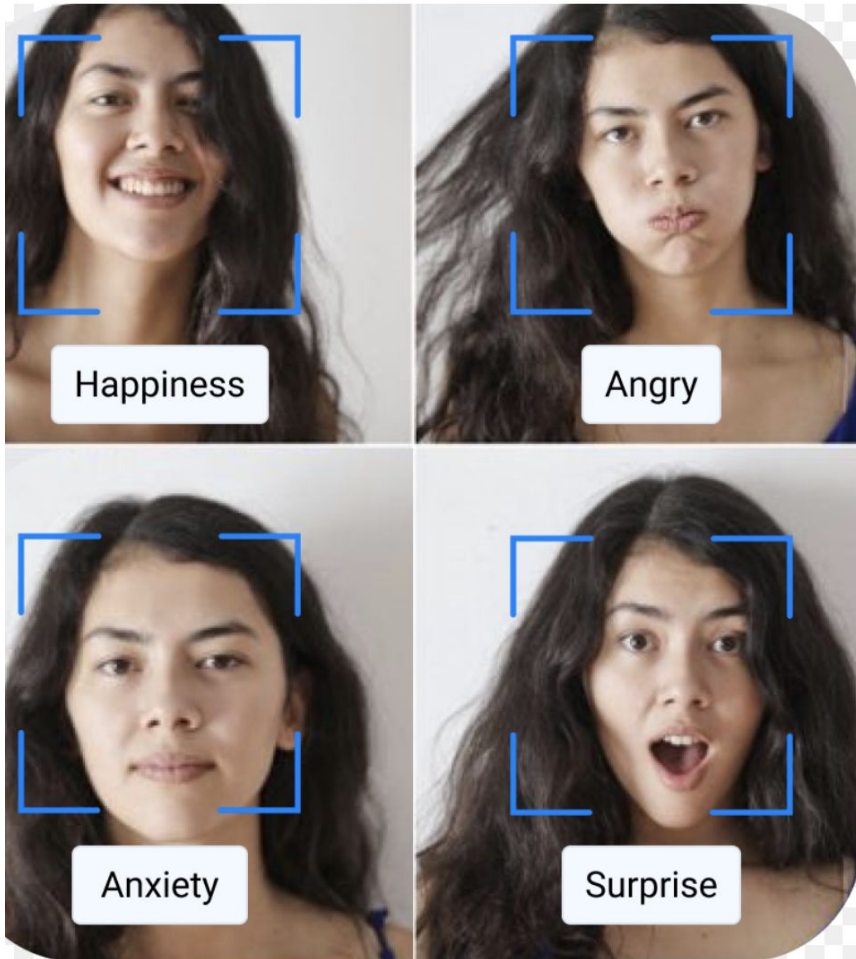
- **AI-Driven Support:** The platform recommends personalized interventions (e.g., relaxation games) based on real-time mood and predictions.
- **Relaxation Games:** Interactive games are suggested to alleviate stress, tailored to the student's mood.
- **Continuous Feedback Loop:** Real-time emotion monitoring adjusts interventions as needed.

Cloud Infrastructure and Deployment:

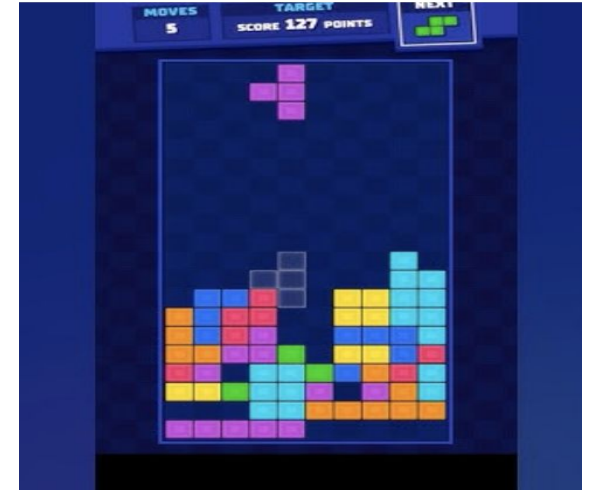
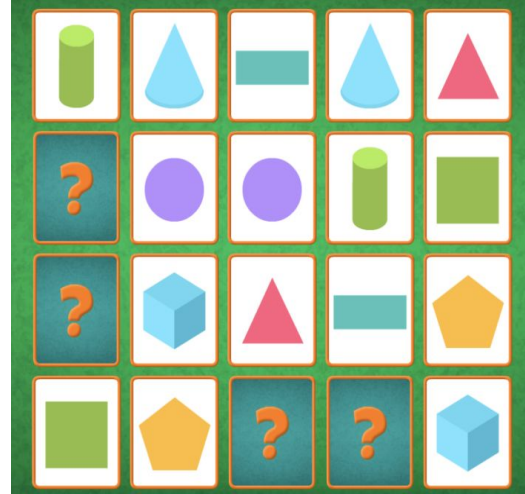
- **Cloud-Based Deployment** - The platform will be fully deployed on the cloud, utilizing Amazon Web Services (AWS) to manage its infrastructure and functionality for seamless performance and scalability.



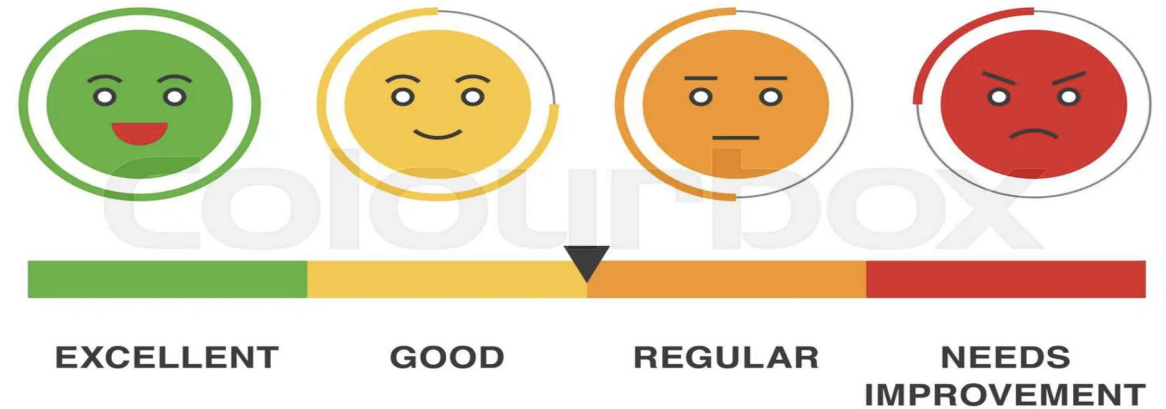
FEATURES INTEGRATED



**Facial Emotion Recognition
for Real-Time Mood Tracking**

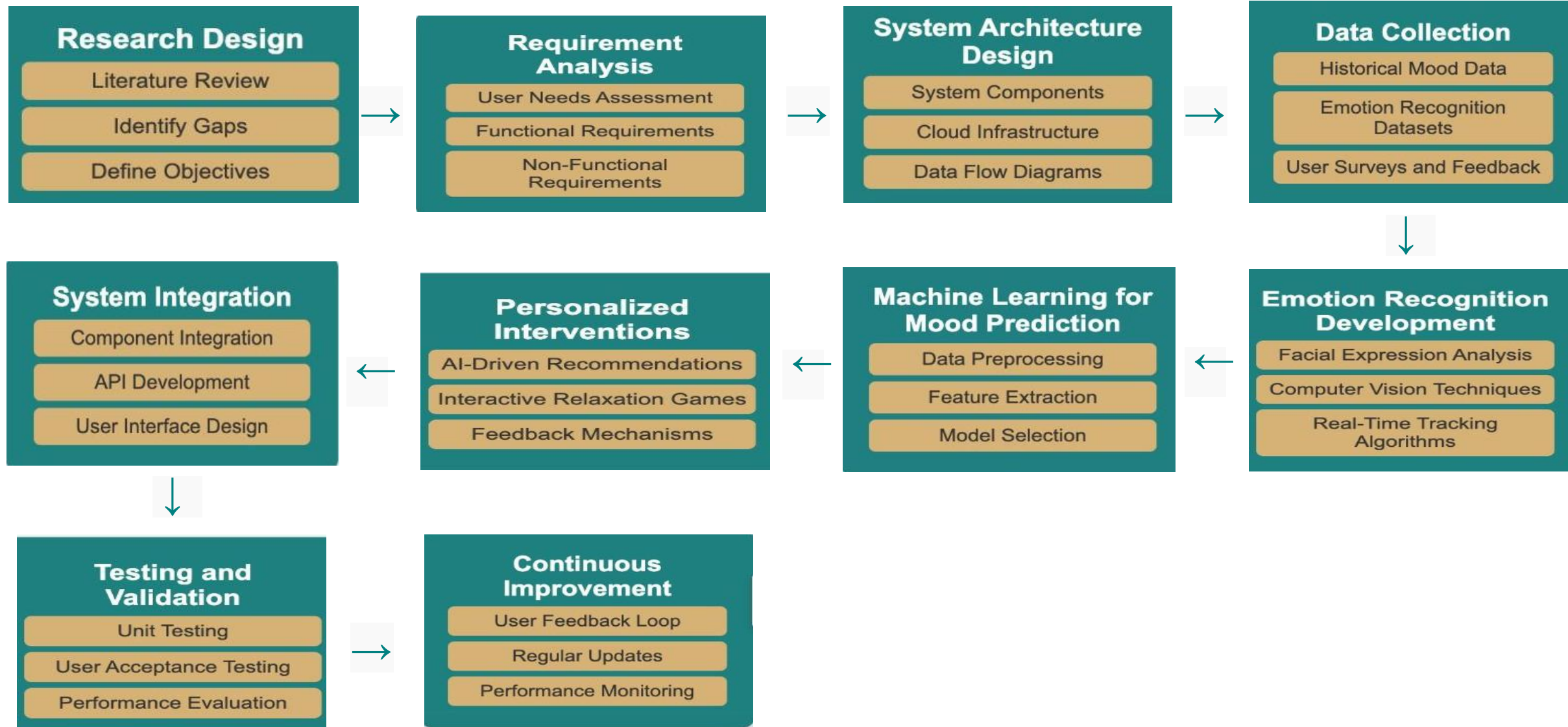


**Personalized Relaxation
Games**



Pattern Learning

Roadmap



Conclusion

This AI-powered cloud platform delivers real-time emotional support to students helping reduce stress through facial emotion recognition, mood prediction and personalized interventions like relaxation games. By leveraging AI and cloud technologies, it offers scalable, continuous feedback, ensuring students receive timely and tailored support to improve their mental well-being.

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**THANK
YOU**