BrahmaX 1.0

The Creation of Tomorrow
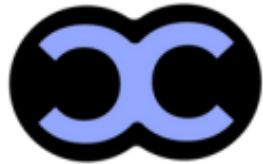
Profile Overview

- **Theme** - Healthcare

- **Problem Statement Title**- AI Driven Early detection of Mental

  Health Condition

- **Team ID** - (As per Unstop registration)
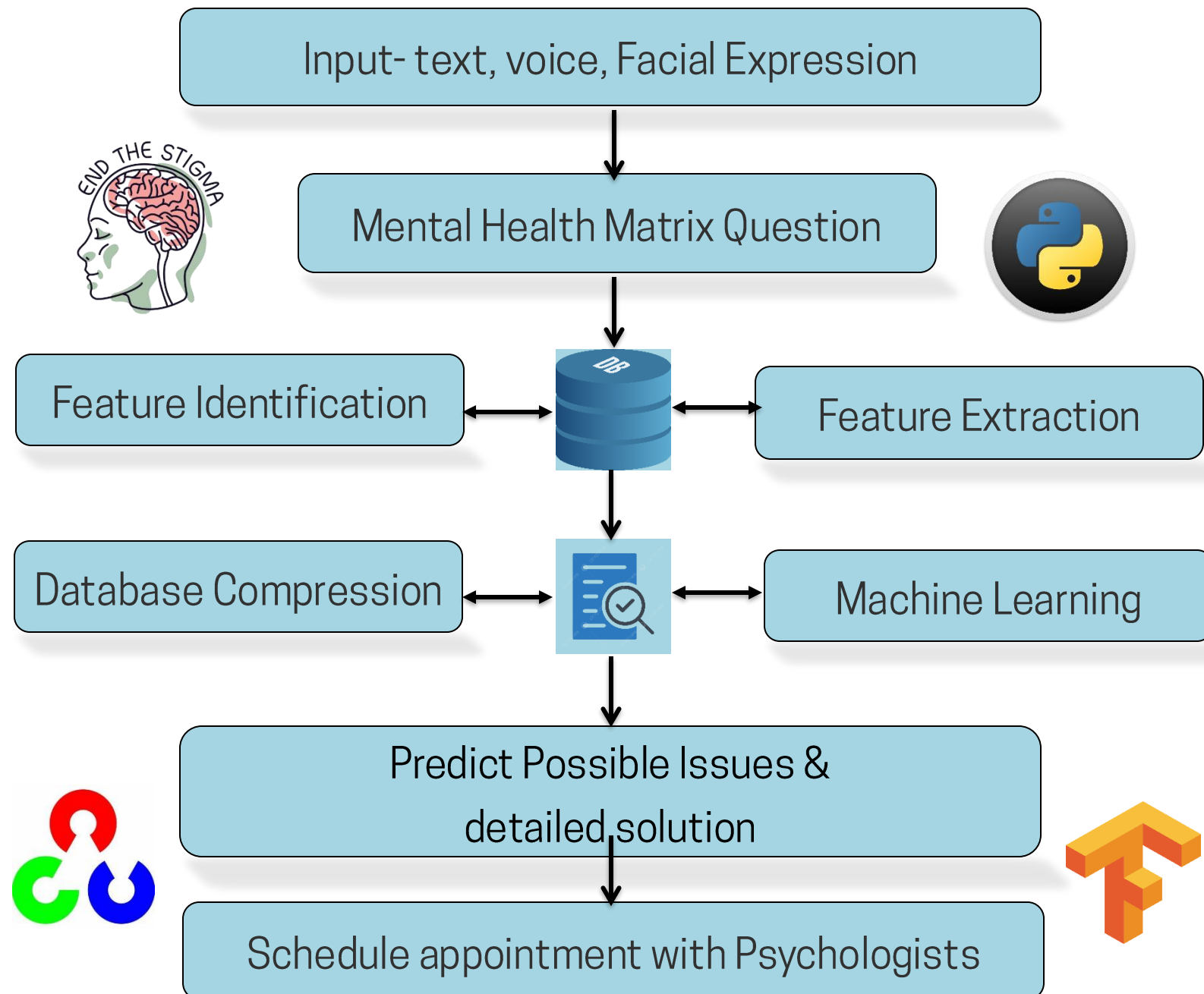
- **Team Name** - Innovatrix

IDEA TITLE

- **Aim:** To detect & aware about early signs of mental health condition in run time using AI powered solution (accuracy > 80%) with voice, text & facial expression analysis which save lives & promotes well being.
- Over 70 million Indians face the mental health disorder & they ashamed to share their thoughts & problems and also, fear to leak their private information, hence we provide more accurate, accessible, affordable & secured AI powered solution.

| Existing Solution	Proposed Solution
It is Text-only NLP chatbot with scripted dialogue & highlights keywords from forms like PHQ-9. Limited to chat.	Multimodal AI: It understands both text, voice, Front camera for current facial expression plus schedules live appointments with psychologist.
It has Very limited availability, highly expensive & limited features.	Our solution has Broad access, cost efficient pricing model & many advanced features.
It is Complex & lengthy procedure also it may fail to deliver timely & accurate guidance.	It has simple & clear UI also works on AI based responses with high accuracy, scalability & highly trained AI model.
It Buillt & trained outside India on foreign datasets hence lack of local regulatory approvals.	Our Indian model trained on domestic data, pursuing legal authorization from MoHFW, National Telemedicine Service & research institutes.
Existing Solutions: Wysa, weobot. **Woebot Health** **wysa**	Our Proposed solution: Make a Healthy Brain.

Technical Approach

Flowchart of proposed solution

Input- text, voice, Facial Expression

↓

Mental Health Matrix Question

↓

Feature Identification ← DB → Feature Extraction

↓

Database Compression ← → Machine Learning

↓

Predict Possible Issues & detailed solution

↓

Schedule appointment with Psychologists

Tech Stack

Frontend	React.js (web Tech.)
Voice Input & Analysis	Web Speech API (Google), Browser & Librosa
Facial Expression	Mediapipe & OpenCV
Front Camera Access	Webcam.js
Database & Dataset	MongoDB, PostgreSQL & DAIC-WoZ
Framework & training	TensorFlow & LSTM, REST API
Backend & API	AWS & FASTAPI

Prototype
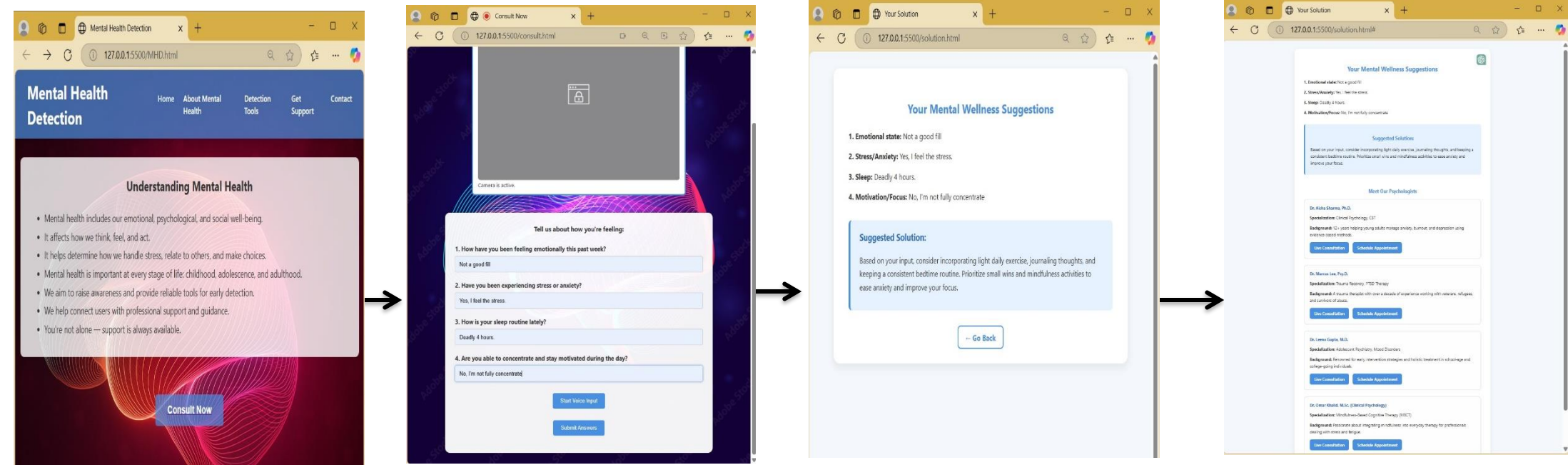
FEASIBILITY AND VIABILITY

Feasibility:

- Assess technical & practical implementation.

- Use existing tech stack which is scalable via cloud.

Challenges & Risks:

- User information is sensitive & must protected.

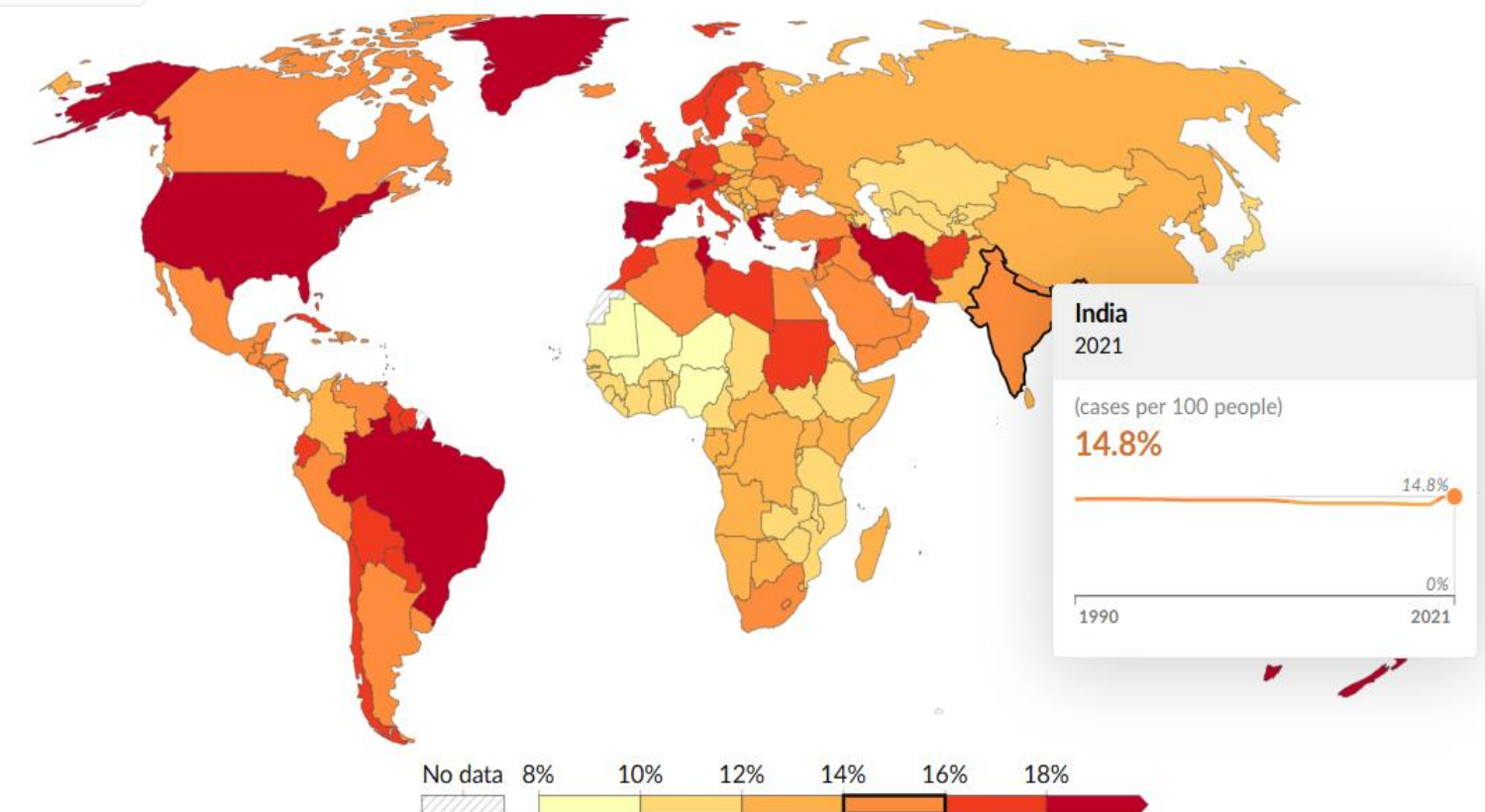- A model might perform differently for different group, age & area of living.

Mitigation Strategies:

- We provide the surety of protect user data.

- We Train on Diverse Dataset for the bias regularity.

Share of population with mental health disorders, 2021

This includes depression, anxiety, bipolar, eating disorders, and schizophrenia.

Table   Map   Chart

India
2021

(cases per 100 people)
14.8%

14.8%

0%

1990   2021

No data 8%   10%   12%   14%   16%   18%

BrahmaX 1.0

IMPACT AND BENEFITS

Target Audience Impact:

- Mainly used by all peoples suffer from mental health issues as well as used by mental health experts, Doctors & must be used by students.

Key Benefits:

- Social: From anywhere & anytime we can check our mental health which may reduces harmony in society.

- Economic: Our solution save the money before it is too much serious.

- Environmental: It is fully digital & if public stay good

Long-Term Value:

- In future may detect other conditions like bipolar disorder/OCD.

- It Learn & improve from the real feedback from user.

- It can be integrate with the telehealth apps for Scalability.

REFERENCES

- S. Hamdoun, R. Monteleone, T. Bookman and K. Michael, "AI-Based and Digital Mental Health Apps: Balancing Need and Risk," in IEEE Technology and Society Magazine, vol. 42, no. 1, pp. 25-36, March 2023, doi: 10.1109/MTS.2023.3241309.

- Thakkar, A., Gupta, A., & Sousa, A. D., "Artificial intelligence in positive mental health: a narrative review," Frontiers in Digital Health, 2024: 6, https://doi.org/10.3389/fdgth.2024.1280235.

- Image ; David Novillo-Ortiz2 RT-CAOIAM-MAOINA-MAOILLAOIVTAO. Methodological and Quality Flaws in the Use of Artificial Intelligence in Mental Health Research: Systematic Review. JMIR mental health. 2023;10. https://doi.org/10.2196/42045

- V. Mody and V. Mody, "Mental Health Monitoring System using Artificial Intelligence: A Review,"2019 IEEE 5th International Conference for Convergence in Technology (I2CT), Bombay, India, 2019, pp. 1-6, doi: 10.1109/I2CT45611.2019.9033652.

- Olawade DB, Wada OZ, Odetayo A, David-Olawade AC, et al. Enhancing mental health with Artificial Intelligence: Current trends and future prospects. Journal of Medicine, Surgery, and Public Health. 2024;3. https://doi.org/10.1016/j.glmedi.2024.100099

- Mansoor, M. A., & Ansari, K. H., "Early Detection of Mental Health Crises through Artifical-Intelligence-Powered Social Media Analysis: A Prospective Observational Study," Journal of Personalized Medicine, 2024: 14(9), 958–958, https://doi.org/10.3390/jpm14090958.

- Mirko Casu, Triscari, S., Battiato, S., Guarnera, L., & Caponnetto, P., "AI Chatbots for Mental Health: A Scoping Review of Effectiveness, Feasibility, and Applications," Applied Sciences, 2024: 14(13), 5889–5889, https://doi.org/10.3390/app14135889.