SMART INDIA HACKATHON 2025

- **Problem Statement ID –**25092
- **Problem Statement Title-**Development of a Digital Mental Health and Psychological Support System for Students in Higher Education
- **Theme-**MedTech / BioTech / HealthTech
- **PS Category-** Software
- **Team ID-**
- **Team Name** – DevStorm

Team Members	
Aryan Kothawde (Team Leader)	Dishita Patil
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Sanvi Nyati	Varad Palod

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Proposed solution

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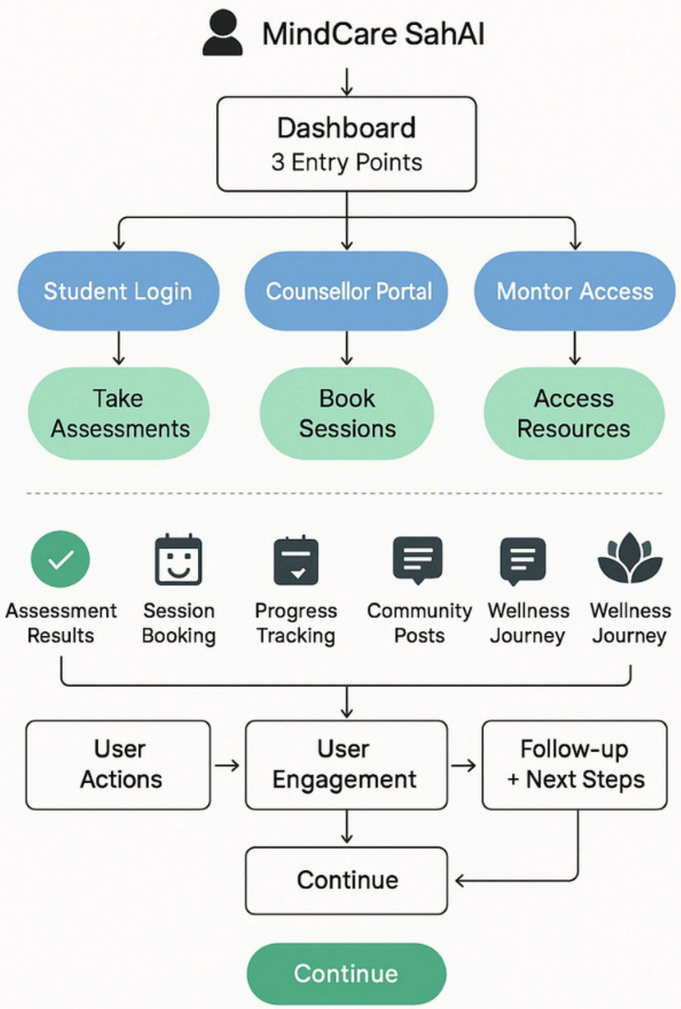
Workflow Architecture



AI-Guided First-Aid Support
- Emotion recognition with voice & text sentiment analysis
- Personalized coping strategies with trend tracking
- Real-time AI crisis escalation

Confidential Counselling Access
- Blockchain-secured anonymous booking system
- Virtual counselling rooms (chat/audio/video)
- Smart reminders & follow-up tracking

Psychoeducational Resource Hub
- AR/VR-based relaxation experiences
- AI-curated personalized content playlists
- Regional language & voice-based navigation

Peer Support Platform
- Gamified 'Wellness Buddy Points' system
- AI moderation for safe peer discussions
- Tiered support: self-help → peer → counsellor → professional

Admin & Policy Dashboard
- Heatmaps of stress hotspots (anonymized data)
- Predictive analytics for exam stress & burnout
- AI-driven policy recommendations

Extra Innovation Layers
- Wearable device integration (stress/heartbeat data)
- Voice journaling with AI insights
- Reward system with badges & perks for wellness activities

❋ Innovativeness ❋

Multi-Role Access – Secure logins for teachers, counsellors & students with personalized dashboards.
Smart Dashboard – Tracks login/meditation streaks, assessments & sessions with gamified progress.
Confidential Support – 24×7 private chat/venting with AI + counsellor escalation.
Wellness Tools – Meditation, music, routine management & psycho-educational resources.
Community Hub – Safe peer forum & direct counselling session booking

- **Community Hub – Safe peer forum & direct counselling session booking.**
- **AR/VR Experiences – Immersive meditation, stress-relief, and focus environments.**
- **Sound Monitoring – Decibel-based stress detection for early intervention.**

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FEASIBILITY AND VIABILITY

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Potential Risks	Strategies
Data Privacy & Confidentiality	End-to-end encryption, anonymization of reports, role-based access control
Over-reliance on AI Chatbot	Hybrid model: AI first-aid support + escalation to human counsellor
Low Student Adoption due to Stigma	Anonymous access, gamified wellness streaks, regional language support
Misinformation / Misuse in Peer Forum	Trained peer moderators, keyword-based content monitoring, escalation system
Limited Counsellor Availability	Smart scheduling, integration with national helplines (KIRAN 1800-599-0019)

Feasibility

- Accuracy: Standard screening tools (PHQ-9, GAD-7, GHQ)
- User Adoption: Anonymous, multilingual, stigma-free
- Data Security: Encrypted communication & anonymized analytics
- Operational Fit: Easy integration with college counselling cells

Viability

- Cost Efficiency: Open-source stack reduces costs
- Sustainability: Low-maintenance, scalable model
- Impact: Early detection & improved student well-being
- Data-Driven Insights: Trend analytics for admin
- National Scalability: Adaptable for UGC/AICTE policies

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IMPACT AND BENEFITS

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Benefits

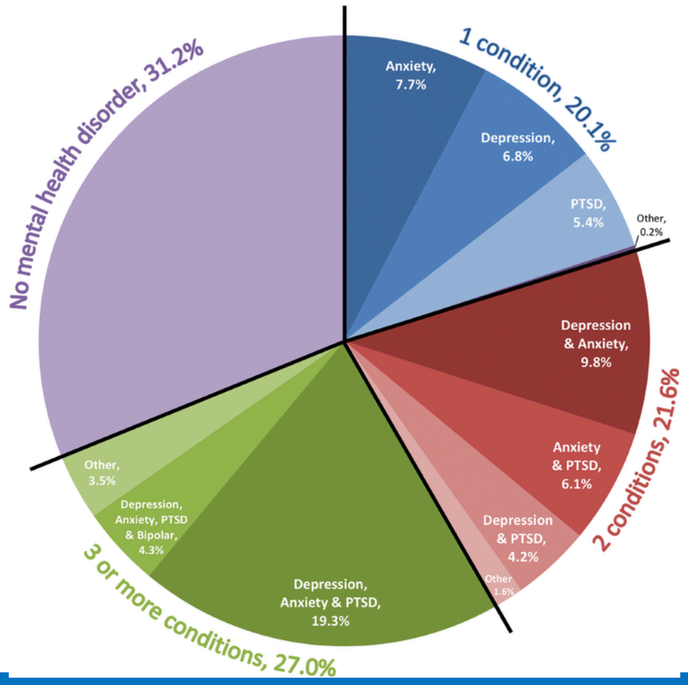
- Accessible Support – 24/7 help via chatbot, meditation hub, and venting hall.
- Confidentiality – Anonymous sharing & secure bookings build trust.
- Holistic Wellness – Covers mental health, physical health (diet), and emotional resilience
- Data-Driven Insights – Admins/teachers can detect trends early.
- Community Engagement – Peer support system builds solidarity among students.

Impacts

- Institutional Strengthening – Colleges can build policies and support systems backed by real data
- Reduced Stigma & Dropouts – Students more likely to seek help without fear of judgment
- Improved Mental Health – Lower stress, anxiety, and depression among students.
- Better Academic Performance – Focus, concentration, and productivity improve

Scalability

- API Integration – Easily connects with existing college ERP, LMS, or attendance systems.
- Partnership-Friendly – Can collaborate with NGOs, health startups, and counselling networks.
- Data Expansion – More users = richer analytics for policy-making & research.
- Customizability – Institutions can enable/disable features as per their needs.
- Cross-Platform Growth – Works on web, mobile, and can extend to wearable devices for real-time tracking.



Technical Approach

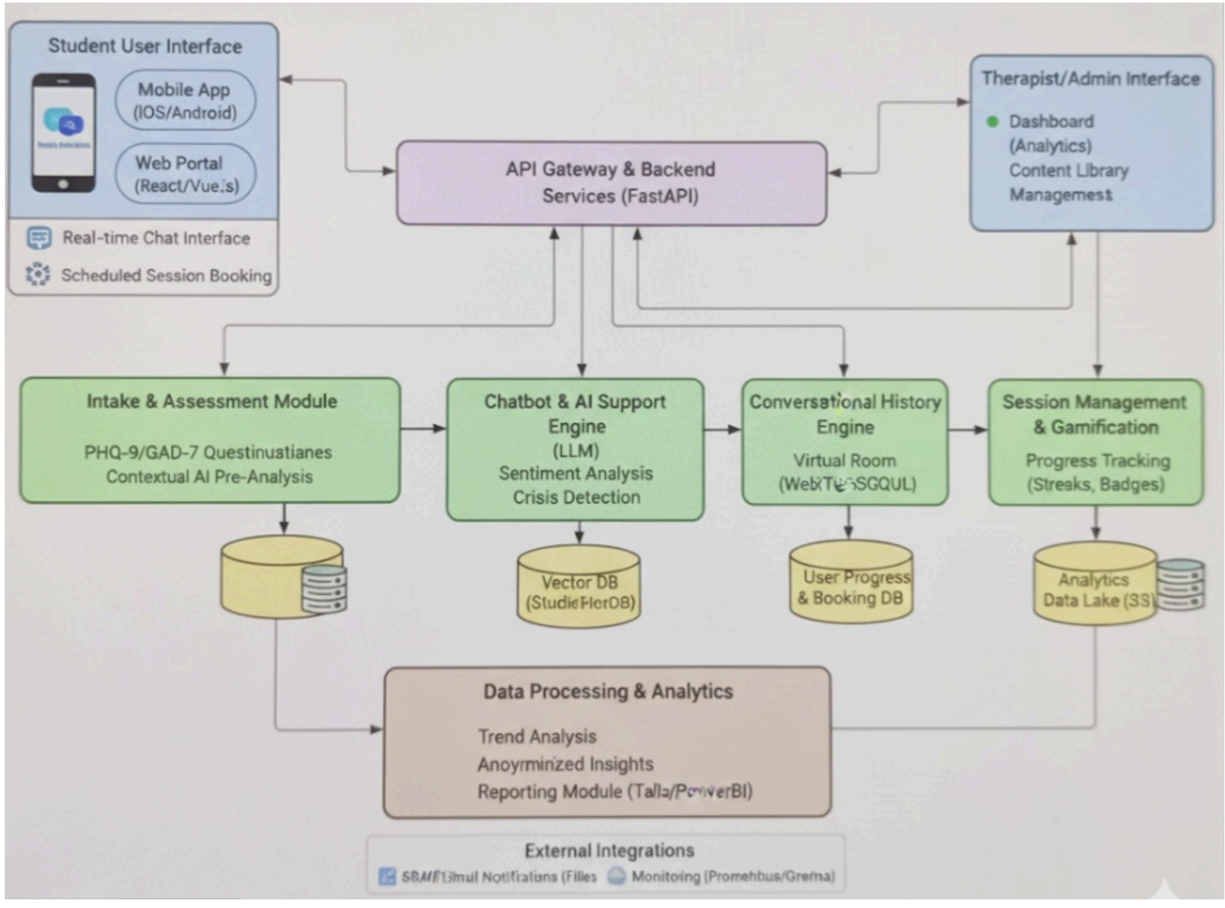
AI & Chatbot:
AI Dost Chatbot – LangChain + Llama 3.1 (Ollama), Gemini LLM , Pipecat ,
Stress Index – Python (Pandas, NumPy)
Recommendation System – Python (dict logic) + Streamlit Sidebar
Voice Adaptation – STT-Vosk , TTS-Coqui(XTTS3-V2)
sentiment-hugging face model (tabularisai multilingual-sentiment-analysis)

Backend:
Flask Framework used as a lightweight backend for APIs and business logic
Werkzeug Security used for hashing and secure handling of sensitive data

Database:
SQLite used as a lightweight, portable database for student profiles,
test scores,and chat logs

Frontend:
HTML, CSS, JavaScript used as core web technologies
React.js used to build an interactive, responsive UI with modular components

System Architecture



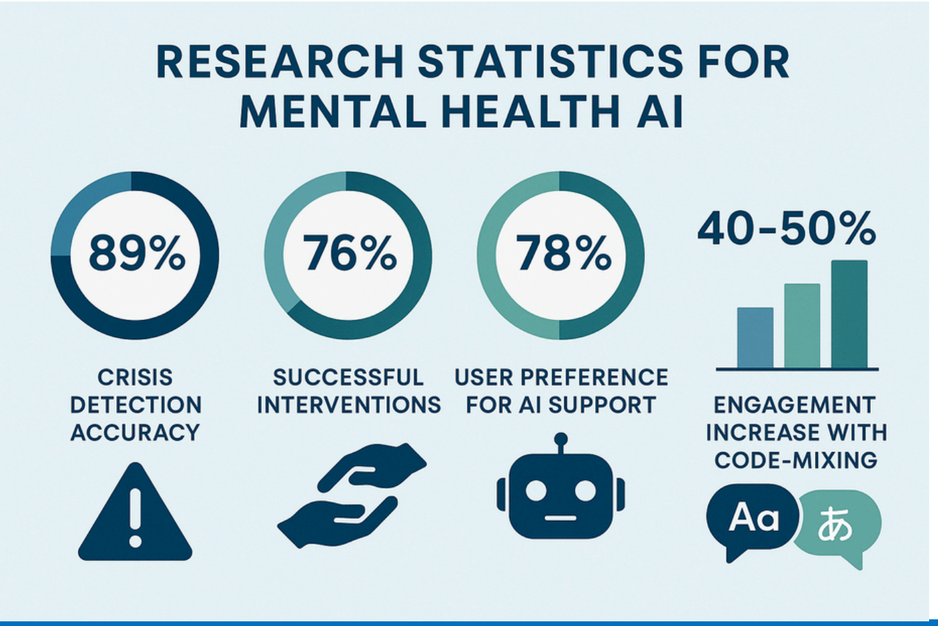
RESEARCH AND REFERENCES

Documentaions

- Transformers (HuggingFace) for NLP & Crisis Detection
- Sentiment Analysis with spaCy and TextBlob
- Twilio for SMS/Email Alert Integration
- Firebase for Real-Time Engagement Tracking
- Bootstrap & Jinja2 for Rapid Prototyping
- NaturalLanguageToolkit

Research Papers

- Digital mental health interventions in colleges (PMC12215113, 2024)
- Crisis detection NLP and suicide prevention (PMC12362262, 2025)
- AI for Emotional Support in Indian Youth (IEEE 2025)
- Peer-to-peer support for depression (JMIR, 2024)
- Code-mixing in Hinglish chatbots (CSCW 2020)



Insightful

- Dr Rakesh Belgudri
- Dr. Sakshi Somani
- Shalu Ramnani (PICT counsellor)
- Mustufa Trunkwala(Atlan)
- Tejas Thorat (Barclays)

Prototype

Github