BE Project: Presentation on,
Mental Health Detection

By,

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Introduction to topic

- Mental health is a crucial aspect of overall well-being, and its early detection and intervention play a pivotal role in preventing severe mental health issues.
- This system presents an innovative approach to mental health detection using machine learning (ML) techniques.
- The system categorizes users into three levels: low, medium, and high, based on their mental health status, allowing for personalized recommendations to improve their mental state

Literature Survey

Sr.no	Title	Author	Published	Year	Technology	Limitation
1	Towards Developing An EMR in Mental Health Care for Children's Mental Health Development among the Underserved Communities in USA	Kazi Zawad Arefin et	Amity International Conference on Artificial Intelligence (AICAI)	2021	Php	High Costing and not user friendly
2	The Need for an Adaptive Sociotechnical Model for Managing Mental Health in a Pandemic	Braden Tabisula	2nd International Conference on Artificial Intelligence	2022	Web based system	Low Performance

Sr.no	Title	Author	Published	Year	Technology	Limitation
3	The promotion effect of innovation and entrepreneurship education on medical students' mental health based on stepwise regression	Jinping Liu et	6th International Conference on Cyber and IT Service Management (CITSM)	2021	Desktop software	Complex
4	Smartphone Addiction and Mental Health Wellbeing Among Indonesian Adolescents	Muhammad Arsyad Subu	Proceedings of the International Conference on Artificial Intelligence and Smart Systems	2023	Orcale	Just a theory

Motivation

The motivation behind this groundbreaking project lies in the urgent need to prioritize mental health as an integral component of an individual's overall well-being. Mental health is a cornerstone of a high-quality life, yet its early detection and intervention have often been challenging. Recognizing this, our project harnesses the power of machine learning to revolutionize the way we approach mental health assessment

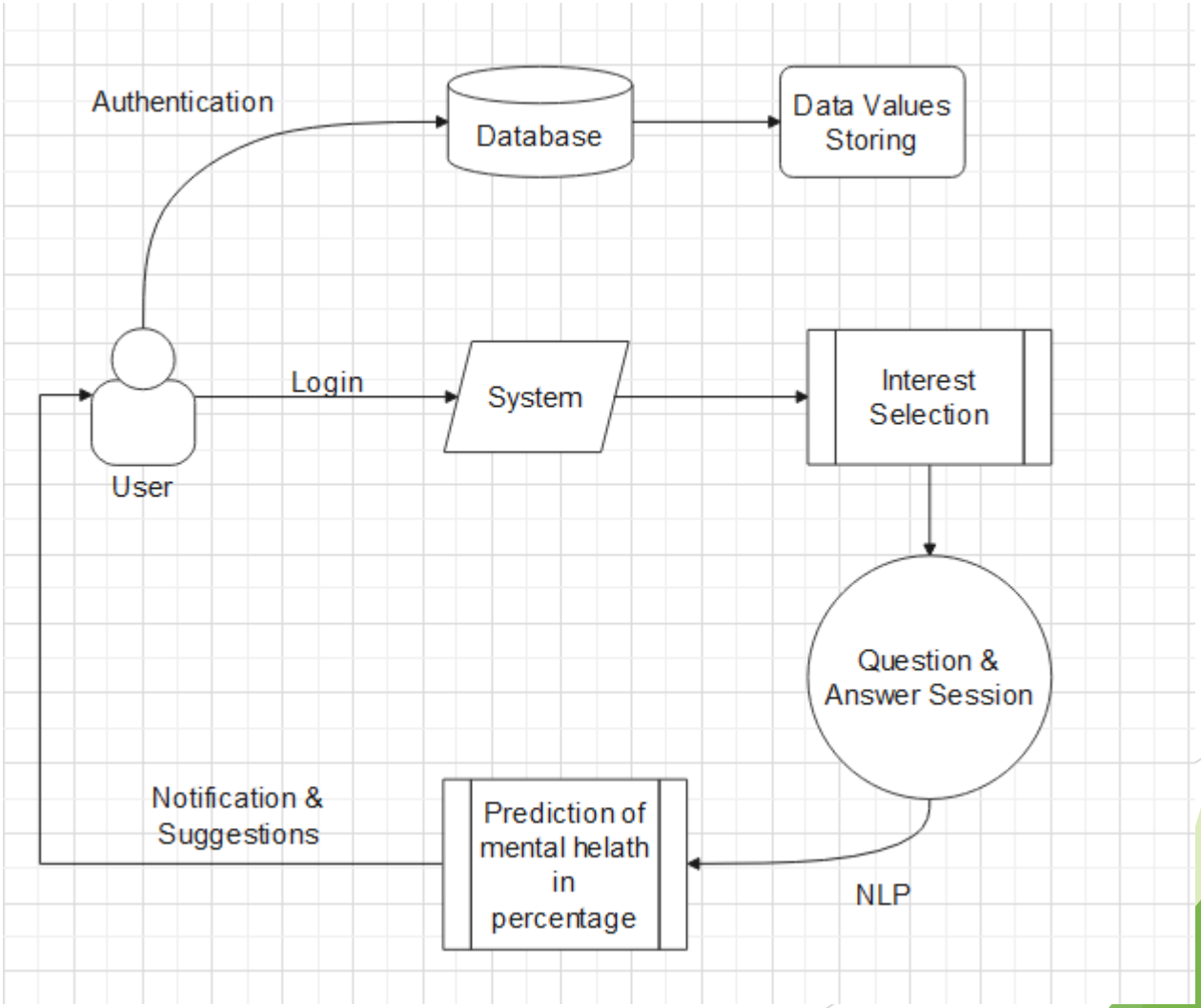
Problem Statement

The existing methods for detecting and addressing mental health issues face substantial challenges, including subjectivity, limited accessibility, and stigma associated with seeking professional help. Despite the growing recognition of the importance of mental health, there remains a significant gap in early detection and personalized intervention strategies. To address these challenges, there is a pressing need for an innovative solution that leverages machine learning techniques to objectively assess individuals' mental health status and provide personalized recommendations.

Objective

1. To Develop a machine learning model for accurate mental health assessment.
2. To Create a user-friendly interface for individuals to answer multiple-choice questions
3. To Categorize users into low, medium, and high mental health levels based on assessment results.
4. To Provide personalized recommendations and resources to improve mental wellbeing.

System Architecture



Mathematical Model

- **System Description:**

S = (I,O,F)

Where,

S: System.

I = {UL, SQ} are set of Inputs

Where,

- UL: User Login
- SQ: Survey Questions

F = {A, ULA} are set of Function

Where,

A: Authentication

ULA: User Level Allocation

O = {N,R} are set of Output

Where,

N: Notification

R: Recommendation

Success Conditions:

Proper database , Dataset

Failure Conditions:

No database, Internet connection

Details of Modules

Model 1 Model 2 Model 3

User Registration and Profile Management Module

- This module allows users to create accounts and manage their profiles. It collects basic user information, such as age and gender, which can be used to personalize the mental health assessment and recommendations.

- Input :
  - User-provided registration details (username, password).User-provided profile information (age, gender)

- Output :

  User profiles with stored registration and personal information

Mental Health Assessment Module

- This module is at the core of the system, presenting users with multiple-choice questions related to various aspects of mental health. The answers to these questions are used to assess the user's mental health status.

- Input:
  - User responses to assessment questions.

- Output:
  - User's mental health score and category.

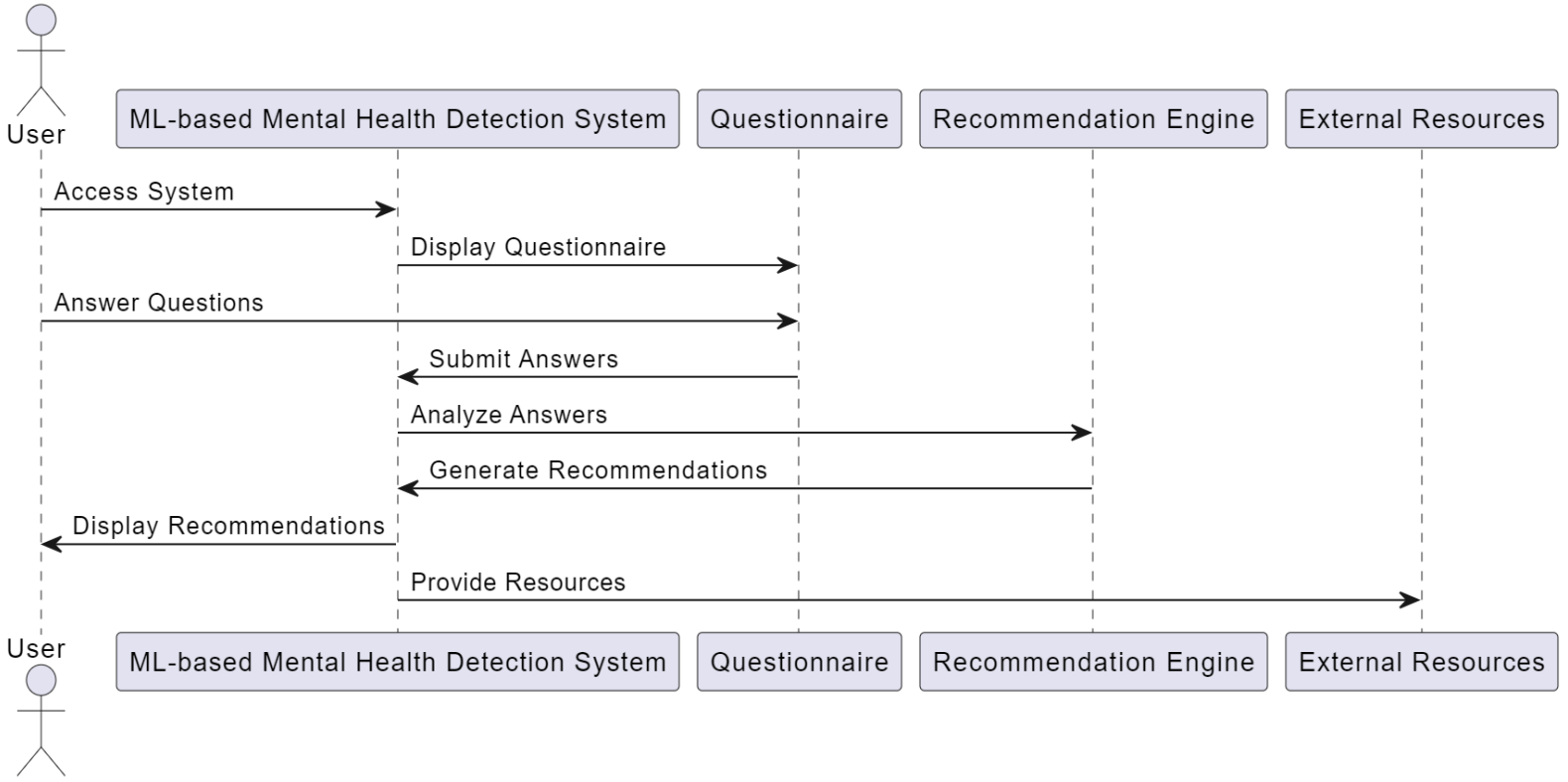
Categorization and Recommendation module

- This module uses machine learning to categorize users into low, medium, or high mental health levels based on their assessment scores. It then generates personalized recommendations and provides access to relevant mental health resources.

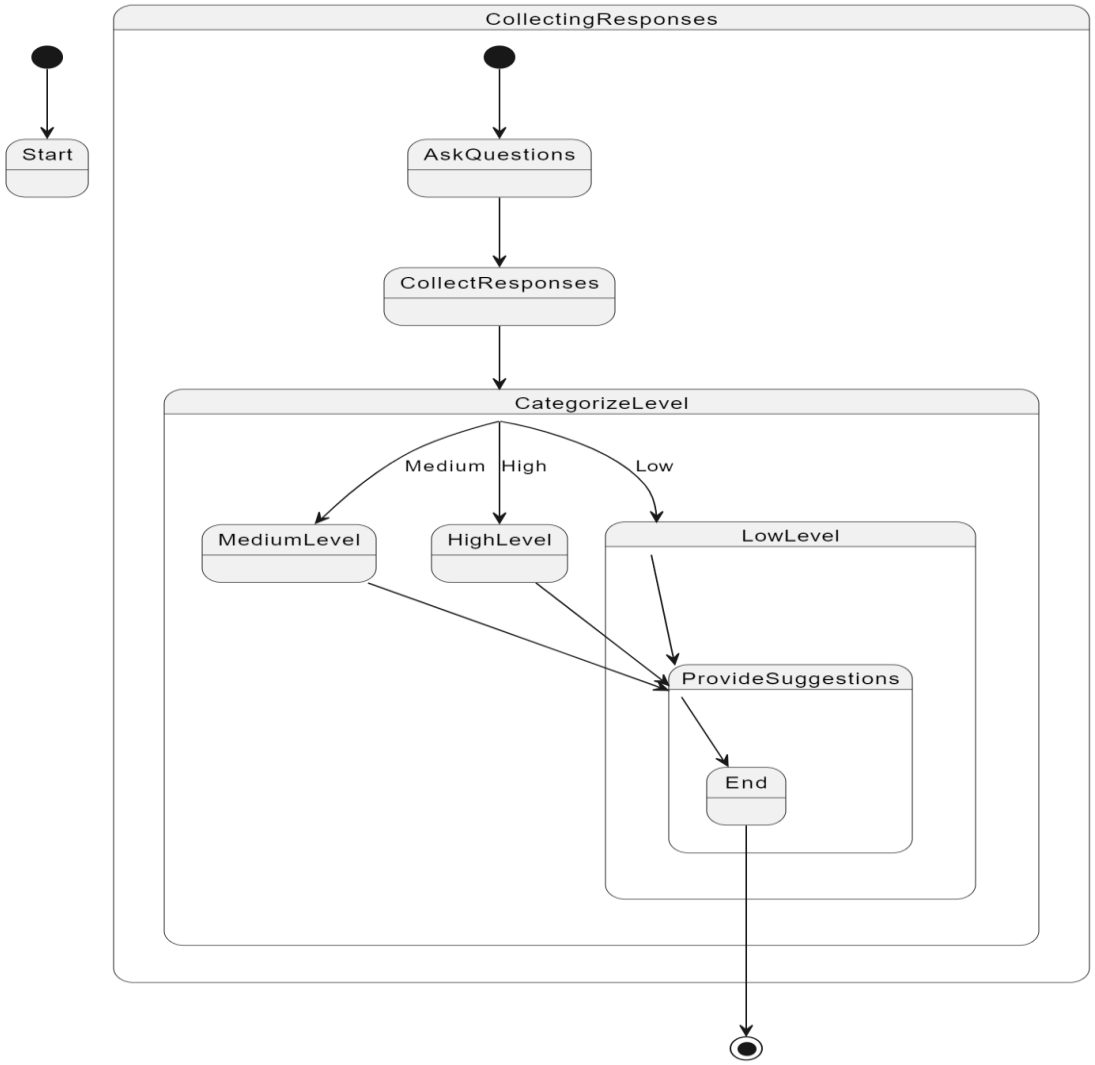
- Input :
  - User’s mental health score.

- Output :
  - Categorized mental health status, personalized recommendations, and access to resources.

Sequence Diagram



State Transition Diagram



Plan for Next Semester

- GUI Working
- Database Connectivity
- Module completion
- Testing
- Run the Whole Project

Conclusion:

In conclusion, the application of machine learning in the field of mental health detection and support holds immense promise. By automating the assessment of individuals' mental health levels through carefully designed questions and offering personalized recommendations and resources, this technology can contribute significantly to early intervention and improved well-being. However, it is crucial to approach the development and deployment of such systems with great care, ensuring data privacy, ethical considerations, and the incorporation of mental health professionals' expertise.

References:

1. Kazi Zawad Arefin, Towards Developing An EMR in Mental Health Care for Children's Mental Health Development among the Underserved Communities in USA, 2021 IEEE 45th Annual Computers, Software, and Applications Conference (COMPSAC).
2. Braden Tabisula, The Need for an Adaptive Sociotechnical Model for Managing Mental Health in a Pandemic, 2022 IEEE International Conference on Digital Health (ICDH)
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5. V.L. Patel, J.F. Arocha and A.W. Kushniruk, "Patients' and physicians' understanding of health and biomedical concepts: relationship to the design of EMR systems", Journal of biomedical informatics, vol. 35, no. 1, pp. 8-16, 2002.

Thank You