MENTAL HEALTH CARE SYSTEM

A PROJECT REPORT

Submitted by

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in partial fulfillment of requirements for the award of the course

AGB1211 – DESIGN THINKING

in

ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

K. RAMAKRISHNAN COLLEGE OF TECHNOLOGY

(An Autonomous Institution, affiliated to Anna University Chennai and Approved by AICTE, New Delhi)

SAMAYAPURAM – 621 112

DECEMBER, 2024

K. RAMAKRISHNAN COLLEGE OF TECHNOLOGY (AUTONOMOUS)

SAMAYAPURAM – 621 112

BONAFIDE CERTIFICATE

Certified that this project report on **"MENTAL HEALTH CARE SYSTEM"** is the bonafide work of **ABINESH R (2303811724321007), ABISHEK M (2303811724321008), ABISHEK S (2303811724321009), ANANDHA KRISHNAN M (2303811724321013)** who carried out the project work during the academic year 2024 - 2025 under my supervision.

Signature

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Submitted for the viva-voce examination held on 5.12.24

INTERNAL EXAMINER **EXTERNAL EXAMINER**

DECLARATION

I declare that the project report on "**MENTAL HEALTH CARE SYSTEM** " is the result of original work done by us and best of our knowledge, similar work has not been submitted to "**ANNA UNIVERSITY CHENNAI**" for the requirement of Degree of **BACHELOR OF TECHNOLOGY**. This project report is submitted on the partial fulfillment of the requirement of the award of the **AGB1211 – DESIGN THINKING.**

Signature

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ABISHEK M

ABISHEK S

ANANDHA KRISHNAN M

Place: Samayapuram

Date: 5/12/2024

ACKNOWLEDGEMENT

It is with great pride that I express our gratitude and indebtedness to our institution, **"K. Ramakrishnan College of Technology (Autonomous)",** for providing us with the opportunity to do this project.

I extend our sincere acknowledgement and appreciation to the esteemed and honourable Chairman, **Dr. K. RAMAKRISHNAN, B.E.,** for having provided the facilities during the course of our study in college.

I would like to express our sincere thanks to our beloved Executive Director, **Dr. S. KUPPUSAMY, MBA, Ph.D.,** for forwarding our project and offering an adequate duration to complete it.

I would like to thank **Dr. N. VASUDEVAN, M.TECH., Ph.D.,** Principal, who gave the opportunity to frame the project to full satisfaction.

I thank **Dr.T.AVUDAIAPPAN, M.E.,Ph.D**., Head of the Department of **ARTIFICIAL INTELLIGENCE AND DATA SCIENCE**, for providing her encouragement in pursuing this project.

I wish to convey our profound and heartfelt gratitude to our esteemed project guide **Mrs.S.GEETHA M.E**., Department of **ARTIFICIAL INTELLIGENCE AND DATA SCIENCE**, for her incalculable suggestions, creativity, assistance and patience, which motivated us to carry out this project.

I render our sincere thanks to the Course Coordinator and other staff members for providing valuable information during the course.

I wish to express our special thanks to the officials and Lab Technicians of our departments who rendered their help during the period of the work progress.

VISION OF THE INSTITUTION

To serve the society by offering top-notch technical education on par with global standards.

MISSION OF THE INSTITUTION

- Be a centre of excellence for technical education in emerging technologies by exceeding the needs of industry and society.
- Be an institute with world class research facilities.
- Be an institute nurturing talent and enhancing competency of students to transform them as all- round personalities respecting moral and ethical values.

VISION AND MISSION OF THE DEPARTMENT

To excel in education, innovation and research in Artificial Intelligence and Data Science to fulfil industrial demands and societal expectations.

Mission 1: To educate future engineers with solid fundamentals, continually improving teaching methods using modern tools.

Mission 2: To collaborate with industry and offer top-notch facilities in a conductive learning environment.

Mission 3: To foster skilled engineers and ethical innovation in AI and Data Science for global recognition and impactful research.

Mission 4: To tackle the societal challenge of producing capable professionals by instilling employability skills and human values.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO 1: Compete on a global scale for a professional career in Artificial Intelligence and Data Science.

PEO 2: Provide industry-specific solutions for the society with effective communication and ethics.

PEO 3: Hone their professional skills through research and lifelong learning initiatives.

PROGRAM OUTCOMES

Engineering students will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

- **PSO 1:** Capable of working on data-related methodologies and providing industry-focussed solutions.
- **PSO2:** Capable of analysing and providing a solution to a given real-world problem by designing an effective program.

ABSTRACT

Mental Health Care System is an advanced solution aimed at improving the accessibility, diagnosis, and management of mental health issues through the integration of cutting-edge technologies like AI, machine learning, and telehealth. It provides a comprehensive platform to assess mental well-being, track emotional patterns, and deliver personalized care plans, ensuring timely intervention and support for individuals. The system collects data from self-reports, wearable devices, and behavioral patterns to identify signs of mental distress and monitor progress over time. Using machine learning algorithms, it can predict risks, recommend tailored therapies, and connect users with mental health professionals via teleconsultations. Additionally, it employs AI-driven chatbots to offer 24/7 support, providing immediate responses to users in need. Advanced analytics and visualization tools enable caregivers and clinicians to gain actionable insights, improving treatment outcomes and patient engagement. The system is designed to integrate seamlessly with existing healthcare solutions, ensuring continuity of care and enhancing collaboration between patients and providers. By leveraging technology, the Mental Health Care System reduces stigma, enhances accessibility, and promotes mental wellness, making it a crucial tool in addressing the global mental health crisis.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The Mental Health Care System is an innovative platform designed to enhance the accessibility, diagnosis, and management of mental health issues through the integration of advanced technologies such as AI, machine learning, and telehealth. This system offers a comprehensive approach to assessing mental well-being, tracking emotional patterns, and delivering personalized care plans, ensuring timely intervention and support for individuals. By collecting data from self-reports, wearable devices, and behavioral patterns, it identifies signs of mental distress and monitors progress over time. Utilizing machine learning algorithms, the system predicts risks, recommends tailored therapies, and connects users with mental health professionals via teleconsultations. Additionally, AI-driven chatbots provide 24/7 support, offering immediate responses to users in need. Advanced analytics and visualization tools enable caregivers and clinicians to gain actionable insights, improving treatment outcomes and patient engagement. Designed to integrate seamlessly with existing healthcare solutions, the system ensures continuity of care and enhances collaboration between patients and providers. By leveraging technology, the Mental Health Care System reduces stigma, enhances accessibility, and promotes mental wellness, making it a crucial tool in addressing the global mental health crisis.

1.2 PROBLEM STATEMENT

Mental health challenges are a growing global concern, yet traditional care systems fail to adequately address the complexities of timely diagnosis, personalized treatment, and continuous support. Millions of individuals struggle to access mental health care due to factors such as stigma, limited availability of professionals, and inefficient processes for monitoring and managing mental well-being. These barriers result in delayed interventions, undiagnosed conditions, and suboptimal treatment outcomes. The absence of technology integration further compounds the issue, with no mechanisms to track emotional or behavioral patterns, predict risks, or deliver tailored therapeutic recommendations in real time. Moreover, communication gaps between patients and clinicians lead to missed opportunities for early intervention and hinder the continuity of care. Without adequate tools to monitor progress or provide round-the-clock support, individuals often feel isolated in their mental health journey, exacerbating their struggles. To address these pressing challenges, there is an urgent need for a comprehensive Mental Health Care System that leverages advanced technologies such as AI, machine learning, and telehealth. This system would enable real-time monitoring of mental well-being through self-assessments, wearable devices, and behavioral analytics, empowering users and clinicians with actionable insights. Features such as AI-powered chatbots, risk prediction models, and teleconsultation platforms would ensure timely intervention and tailored care plans for every individual. By seamlessly integrating with existing healthcare infrastructure, the system would enhance collaboration between patients and providers, ensuring continuity of care. Additionally, the system’s ability to provide personalized support and reduce barriers like stigma and accessibility would foster a more inclusive approach to mental wellness. Through its innovative, technology-driven framework, the Mental Health Care System aims to revolutionize the way mental health is managed, creating a supportive, accessible, and effective solution to combat the global mental health crisis

1.3 OBJECTIVE

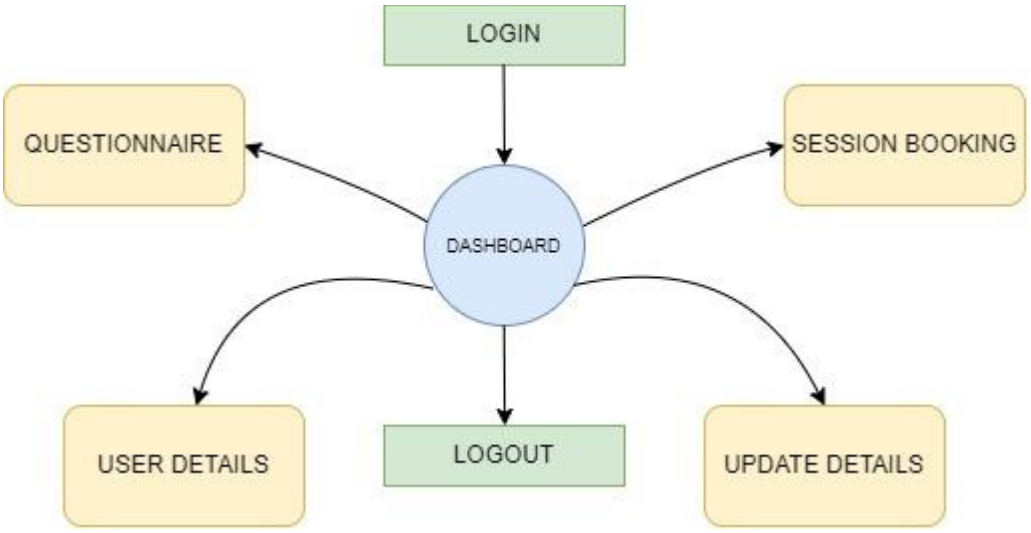
The primary objective of the Mental Health Care System is to enhance accessibility, diagnosis, and management of mental health issues through technology-driven solutions. By leveraging AI, machine learning, and telehealth, the system aims to address the limitations of traditional mental health care and provide personalized, real-time support to individuals. Specifically, the objectives include:

1. **Improving Accessibility**: Ensure mental health services are available to all by integrating telehealth consultations, AI-driven support tools, and remote assessments.
2. **Enhancing Early Diagnosis**: Utilize behavioral and emotional data to identify early signs of mental health issues and predict risks, enabling timely intervention.
3. **Providing Personalized Care**: Developing tailored therapeutic plans using advanced analytics and machine learning to meet every individual's needs effectively.
4. **Supporting Continuous Monitoring**: Bridge communication gaps between patients and clinicians with real-time insights and teleconsultation features, ensuring continuous support.

CHAPTER 2

PROJECT METHODOLOGY

2.1 BLOCK DIAGRAM



CHAPTER 3
KEY PHASES OF DESIGN THINKING

3.1 EMPATHIZE

To understand user needs, interviews and surveys were conducted with stakeholders:

- **Users:** Desired a stigma-free, accessible platform for mental health support, including tools for real-time self-assessment and therapeutic sessions.
- **Caregivers:** Needed features to monitor emotional and behavioral patterns and receive timely alerts about user progress.
- **Clinicians:** Required advanced analytics, risk prediction models, and seamless telehealth integration to enhance treatment.

Key observations:

- Users face stigma and difficulty accessing timely mental health support.
- Caregivers lack tools to track emotional changes and progress.
- Clinicians struggle with fragmented data and insufficient predictive tools.

3.2 DEFINE

Problem Statement: Users, caregivers, and clinicians face challenges in managing mental health due to limited accessibility, lack of real-time tracking, poor communication, and insufficient personalization of therapeutic tools.

3.3 IDEATE

Brainstormed features to address user needs:

- **Take Questionnaire Module:** A simple questionnaire to assess mental well-being.
- **Book Session Module:** A streamlined interface for users to book appointments with clinicians.

- **View User Details Module:** Clinicians and caregivers can access user information and progress.
- **Update User Details Module:** Allows clinicians to update user data and monitor mental health progress.

3.4 PROTOTYPE

Developed the prototype using Figma, focusing on the front-end design with the following modules:

Take Questionnaire Module:

- Designed an engaging, easy-to-use questionnaire interface to assess mental health.

Book Session Module:

- Created a simple and intuitive interface for users to schedule sessions with clinicians.

View User Details Module:

- Developed a dashboard for clinicians and caregivers to access and monitor user details and progress.

Update User Details Module:

Designed a flow for clinicians to efficiently update user information and mental health progress.

3.5 TEST

Conducted user testing to validate the prototype:

Users: Tested the ease of using the questionnaire and booking sessions.

Caregivers: Verified their ability to access and track user details.

Clinicians: Assessed the process of updating and viewing user details.

Feedback:

Improve clarity and flow of the questionnaire.

Simplify the session booking process to enhance user experience.

Provide more comprehensive tracking features for caregivers.

Iterations: Incorporated feedback to refine the app, improving usability and ensuring efficient management of mental health care.

CHAPTER 4

MODULE DESCRIPTION

4.1 TAKE QUESTIONNAIRE MODULE:

The Take Questionnaire Module allows users to assess their mental well-being through a set of questions rated on a scale of 0 to 5. The responses are analyzed to provide insights into the user's mental health status. This module offers an intuitive, user-friendly interface, enabling quick and accurate completion of the questionnaire for personalized results.

4.2 SESSION BOOKING MODULE:

- **Date Selection:** Allows users to choose specific date and time for booking a session with a clinician.
- **Session Confirmation:** Users receive a confirmation notification after booking a session.
- **Purpose:** Streamlines the session booking process, making it easy for users to schedule appointments with clinicians at their preferred date.

4.3 VIEW USER DETAILS MODULE:

- **User Information:** Displays specific user details, including name, age, phone number, address, and emergency contact.
- **Privacy & Access Control:** Ensures that only authorized clinicians or caregivers can access the details of the specific user.
- **Purpose:** Provides clinicians and caregivers with a secure and easy way to view and manage the personal information of the user, ensuring privacy and confidentiality.

4.4 UPDATE USER DETAILS MODULE:

- **User Details Update:** Allows users to update their personal details.
- **Notifications:** Users are notified when their details are successfully updated.

CHAPTER 5
CONCLUSION

The development and implementation of the Mental Health Care System app marks an important advancement in utilizing technology to enhance mental health care. The app combines key features such as a comprehensive questionnaire to assess users' mental well-being, a session booking system, and secure user detail management, providing a streamlined platform for users and clinicians alike. The questionnaire module, evaluating mental health on a scale, offers immediate feedback, encouraging proactive engagement and providing valuable data for clinicians. The session booking feature allows users to easily schedule consultations, while the View and Update User Details modules ensure privacy and efficient management of user data. Designed for simplicity, the app ensures even users with minimal technical expertise can navigate it easily. Notifications for bookings and updates further enhance user engagement by providing timely reminders. The app offers a comprehensive solution to mental health needs by making resources more accessible and tailored to individual requirements. It bridges the gap between users and clinicians, fostering continuous care and a trusting environment. By integrating technology into mental health care, the app promotes early intervention, continuous monitoring, and efficient management of mental well-being, improving mental health care delivery and leading to better outcomes for users.

REFERENCES:

FIGMA PLATFORM:

- Figma is a popular design tool used for building interactive prototypes with a collaborative interface. It allows for quick and easy design of mobile and web applications with real-time collaboration. The front-end design for the Mental Health Care System app was created using Figma's vector tools, interactive components, and prototyping features.
- Official website for Figma: Figma Official Website

LEARNING THROUGH YOUTUBE TUTORIALS

I utilized a YouTube tutorial to learn how to design interactive prototypes and app interfaces using Figma. The tutorial provided step-by-step instructions on building an app's user interface, focusing on design principles, prototyping, and interactions.

TUTORIAL DETAILS:

- **Video link: https://youtu.be/0K0yFTVfzPA**

YouTube Channel: The video was published by DesignCourse, which specializes in teaching app and web design using Figma.

This tutorial was helpful in guiding me through creating responsive, user-friendly designs for the Mental Health Care System app, ensuring seamless functionality and a positive user experience.

APPENDIX A – SCREENSHOTS