SAFETY AND SERVICES IN INSTITUTES

A PROJECT REPORT

Submitted by

NANDHINI K (203811724322075)

NEKASHRI S (230381172432276)

NITHYAPRIYA S (2303811724322079)

PADMAPRIYA S (2303811724322080)

in partial fulfilment 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

SAFETY AND SERVICES IN INSTITUTES

A PROJECT REPORT

Submitted by

NANDHINI K (203811724322075)

NEKASHRI S (230381172432276)

NITHYAPRIYA S (2303811724322079)

PADMAPRIYA S (2303811724322080)

in partial fulfilment 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 **"SAFETY AND SERVICES IN INSTITUTES"** is the bonafide work of **NANDHINI K (203811724322075) , NEKASHRI S (203811724322076), NITHYAPRIYA S(203811724322078), PADMAPRIYA S (203811724322075)** who carried out the project work during the academic year 2024 - 2025 under my supervision.

Signature

Dr. T. AVUDAIAPPAN M.E.,Ph.D.,

HEAD OF THE DEPARTMENT,

Department of Artificial Intelligence,

K. Ramakrishnan College of Technology,

Samayapuram, Trichy -621 112.

Signature

Mrs. JOANY FRANKLIN M.E.,

SUPERVISOR,

Department of Artificial Intelligence,

K. Ramakrishnan College of Technology,

Samayapuram, Trichy -621 112.

Submitted for the viva-voce examination held on 06.12.24

INTERNAL EXAMINER **EXTERNAL EXAMINER**

DECLARATION

I declare that the project report on "**SAFETY AND SERVICES IN INSTITUTES**" 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

NANDHINI K

NEKA SHRI S

NITHYAPRIYA S

PADMA PRIYA S

Place: Samayapuram
Date: 06/12/2024

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 acknowledgment and appreciation to the esteemed and honorable 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. JOANY FRANKLIN 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

Safety and service excellence are vital in designing user-centric solutions that address complex challenges across industries. This project employs a human-centered approach, integrating empathy-driven research, collaborative ideation, and iterative prototyping to enhance safety, accessibility, and service delivery. By leveraging data-driven insights, interdisciplinary collaboration, and emerging technologies such as AI and IoT, the approach ensures scalability, adaptability, and regulatory compliance. Proactive risk mitigation strategies, user education, and continuous feedback loops further refine the solutions, fostering trust and inclusivity. Additionally, it emphasizes the integration of predictive analytics to anticipate challenges, the use of modular design principles for flexibility, and a commitment to environmental sustainability in solution development. This methodology transforms intricate systems into secure, seamless, and user-friendly experiences, prioritizing well-being and satisfaction while addressing real-world needs.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Creating safe and efficient services is essential in today's dynamic and interconnected world, where user expectations are constantly evolving. This project explores a human-centered approach to problem-solving, focusing on enhancing safety and optimizing service delivery across various domains. By analyzing user behaviors, identifying pain points, and fostering collaboration among stakeholders, innovative solutions are developed to address real-world challenges. The goal is to design systems that not only minimize risks and enhance user satisfaction but also ensure accessibility, inclusivity, and scalability, ultimately contributing to a more secure and seamless service experience.

1.2 PROBLEM STATEMENT

Schools and colleges often face challenges in ensuring student safety and delivering efficient services due to outdated systems, overcrowding, and insufficient resources. Issues such as inadequate communication during emergencies, lack of accessible infrastructure, and delays in administrative processes affect the overall experience. These problems compromise student well-being and hinder the effective functioning of educational institutions. Additional challenges include insufficient mental health support systems, which leave students vulnerable to stress and anxiety, and the lack of integration between technology and traditional methods, resulting in inefficiencies and missed opportunities for innovation. Addressing these gaps requires innovative solutions that prioritize safety, inclusivity, and streamlined service delivery to create a better learning environment.

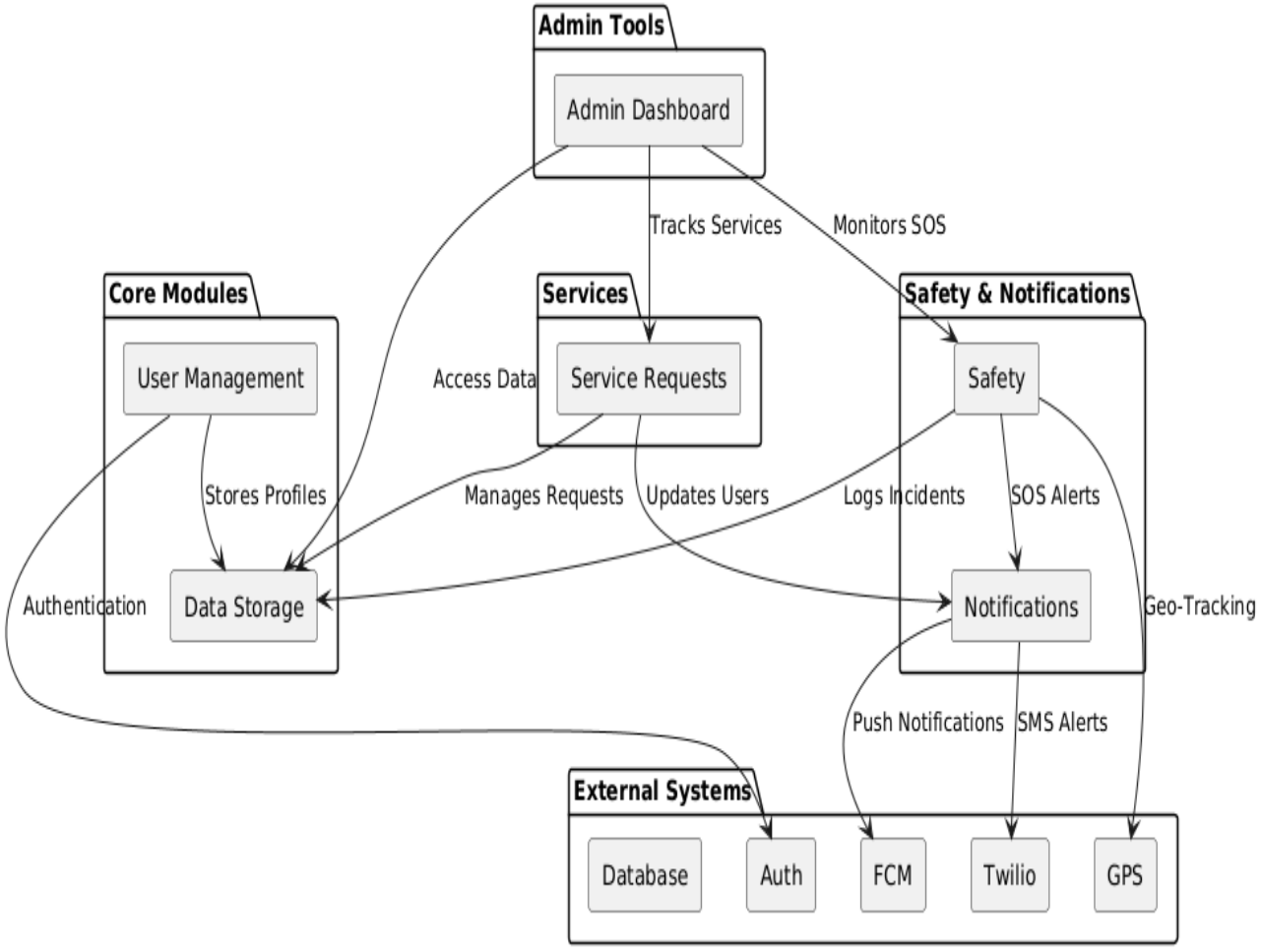
1.3 OBJECTIVE

The objective of applying design thinking in schools and colleges is to create innovative, user-centered solutions that enhance safety, streamline services, and improve the overall student experience. By fostering empathy, collaboration, and iterative problem-solving, this approach aims to address challenges such as inadequate safety measures, inefficient communication, and accessibility barriers. The goal is to develop practical, scalable solutions that meet the diverse needs of students, staff, and stakeholders, fostering a secure and inclusive environment that supports learning and growth.

CHAPTER 2

PROJECT METHODOLOGY

2.1 BLOCK DIAGRAM



CHAPTER 3

KEY PHASES OF DESIGN THINKING

3.1 EMPATHIZE

The focus is on understanding the perspectives, needs, and challenges of students, teachers, and staff in schools and colleges. Through methods such as interviews, surveys, and observations, we aim to uncover pain points related to safety and service delivery, including concerns about emergency preparedness, accessibility, and administrative efficiency. By engaging with users directly and immersing ourselves in their experiences, we gain valuable insights into their emotions, behaviors, and expectations, forming a strong foundation for designing meaningful and impactful solutions tailored to their needs.

3.2 DEFINE

The insights gathered during empathizing are analyzed to identify key challenges faced by students, teachers, and staff in schools and colleges. The main problems—such as insufficient safety measures, inefficient communication systems, and delays in administrative processes—are clearly articulated. A well-defined problem statement serves as a guiding framework for developing focused and impactful solutions.

3.3 IDEATE

The ideation phase involves brainstorming creative and user-centric solutions to address the defined problems. Leveraging insights from the empathize phase, diverse ideas are generated, encouraging out-of-the-box thinking. The goal is to explore a wide range of possibilities, such as digital safety tools, streamlined communication platforms, or automated administrative systems, before narrowing down to the most viable concepts.

3.4 PROTOTYPE

Selected ideas are transformed into tangible, low-cost prototypes to test their feasibility. These prototypes may include mock-ups of apps for safety alerts, redesigned administrative workflows, or interactive models of accessible infrastructure. The focus is on quickly and efficiently bringing ideas to life to evaluate their potential effectiveness in real-world scenarios**.**

3.5 TEST

The prototypes are tested with end-users, including students, teachers, and staff, to gather feedback and assess their practicality, usability, and impact. Observations and user inputs during testing help identify areas for improvement and refine the solutions. This iterative process ensures that the final designs address user needs effectively while being scalable and implementable in the school and college context.

CHAPTER 4
MODULE DESCRIPTION

4.1 DATA STORAGE MODULE

- Stores user data, reports, bookings, and service requests securely.
- Uses databases like Firebase or SQLite with encryption for sensitive information.

4.2 NOTIFICATION MODULE

- Sends push notifications for emergencies, updates, and request approvals.
- Integrates tools like Firebase Cloud Messaging (FCM) or Twilio for alerts.

4.3 ADMIN DASHBOARD MODULE

- Allows admins to monitor reports, approve requests, and track SOS alerts.
- Provides basic analytics for app usage and incident response.

4.4 LOCATION TRACKING MODULE

- Shares real-time user location during SOS alerts or incident reports.
- Uses GPS integration for accurate tracking and geo-tagging.

4.5 SERVICE REQUEST MODULE

- Handles complaints, feedback, and room bookings.
- Allows users to submit and track requests easily.

4.6 SAFETY MODULE

- Includes an SOS button to alert authorities with user location.
- Allows users to report safety issues or hazards with optional photos.

4.7 USER MANAGEMENT MODULE

- Manages user profiles, logins, and roles (e.g., admin, student).
- Includes secure authentication using tools like Firebase Auth.

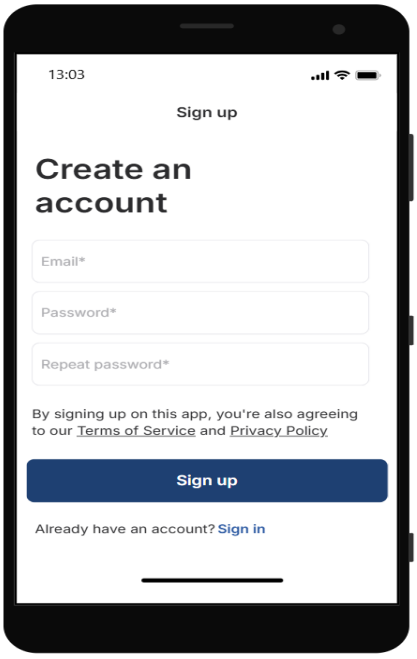
CHAPTER 5
CONCLUSION

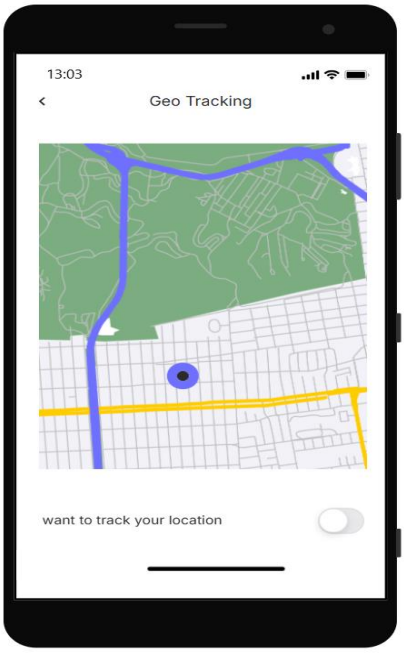
The application of design thinking to address safety and service challenges in schools and colleges provides a structured and innovative approach to creating user-centered solutions. By understanding the needs of students, teachers, and staff, and through iterative ideation, prototyping, and testing, this project aims to develop practical and scalable solutions that enhance safety, improve communication, and streamline administrative processes. The outcome fosters a more secure, inclusive, and efficient learning environment, demonstrating the power of design thinking in solving complex, real-world problems in educational institutions.

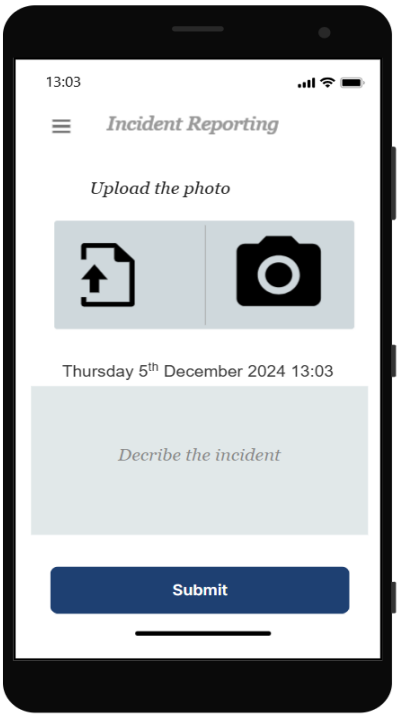
REFERENCES:

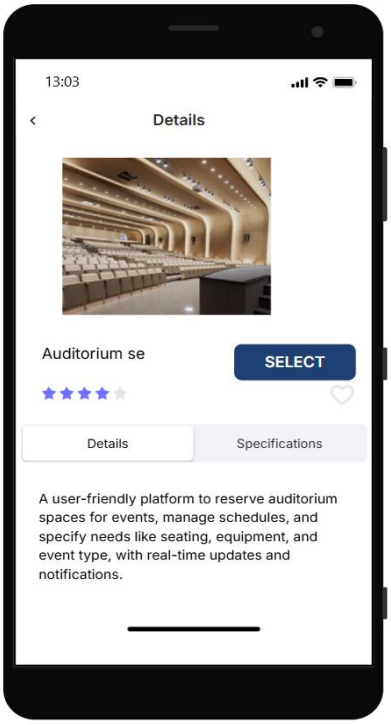
1. Case Studies: Relevant examples of safety improvements in educational institutions, accessible from journals or online repositories (e.g., *JSTOR*, *PubMed*, or educational organizations' websites).
2. **World Health Organization. (2018).** *Creating Safe and Inclusive School Environments*. WHO Publications. Retrieved from https://www.who.int.
3. **IDEO.org. (2015).** *The Field Guide to Human-Centered Design*. IDEO. Retrieved from https://www.designkit.org/resources.
4. **Brown, T. (2009).** *Change by Design: How Design Thinking Creates New Alternatives for Business and Society*. Harper Business.
5. **Buchanan, R. (1992).** *Wicked Problems in Design Thinking*. Design Issues, 8(2), 5-21.
6. **Buchanan, R. (1992).** *Wicked Problems in Design Thinking*. Design Issues, 8(2), 5-21.

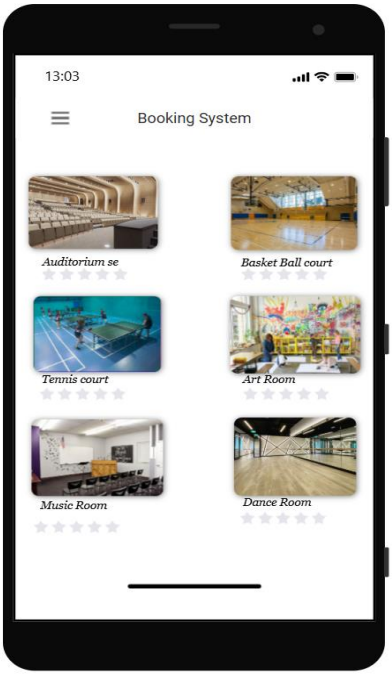
APPENDIX A – SCREENSHOTS

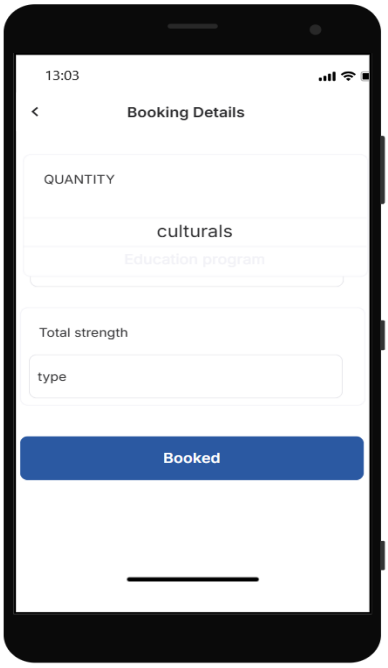





13:03
Incident Reporting
Upload the photo
Thursday 5th December 2024 13:03
Decribe the incident
Submit


13:03
Details
Auditorium se
SELECT
Details
Specifications
A user-friendly platform to reserve auditorium spaces for events, manage schedules, and specify needs like seating, equipment, and event type, with real-time updates and notifications.


13:03
Booking System
Auditorium se
Basket Ball court
Tennis court
Art Room
Music Room
Dance Room


13:03
Booking Details
QUANTITY
culturals
Education program
Total strength
type
Booked