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ENHANCED MOBILE LEARNING PLATFORM

Pooja[1], Sameeksha Shetty[2], Thanushree C J[3], Vighnesh[4], Dr. Ramananda Mallya[5]

Student, Dept. of Information Science & Engineering, Mangalore Institute of Technology & Engineering, Moodabidre, India[1-4]

Assistant Professor, Dept. of Information Science & Engineering, Mangalore Institute of Technology & Engineering, Moodabidre, India[5]

Abstract: The Enhanced Mobile Learning Platform presents an innovative approach to education on mobile devices, aiming to transform traditional learning methods by utilizing the flexibility and accessibility of smartphones and tablets. Mobile learning (M-Learning) is increasingly recognized as vital among today's youth, offering benefits such as fostering critical thinking and driving deeper engagement, ultimately leading to the meaningful acquisition of knowledge. Among its advantages, M-Learning serves as a supplementary learning resource accessible anytime, anywhere, on any network, through various wireless devices. It stimulates students' interest in learning and facilitates communication by providing learning materials in diverse formats, accessible at their convenience. Furthermore, M-Learning introduces novel learning avenues through mobile devices like smartphones and MP3 players. This chapter aims to explore the current landscape of mobile learning, its advantages, characteristics, and challenges in sustaining effective learning, while also discussing various mobile applications designed for learning purposes. A mobile application, in this context, refers to software application developed for educational activities specifically tailored for smartphones and tablets, diverging from traditional desktop or laptop computers.

Keywords: Mobile learning, Critical thinking, Smartphones, Software application.

I. INTRODUCTION

E-learning has emerged as a versatile method of delivering education through digital platforms, witnessing a notable surge in significance alongside rapid technological advancements. However, the focus has often been on technological enhancements rather than understanding the diverse needs and learning preferences of individual learners. The COVID-19 pandemic further accelerated the adoption of online learning worldwide as educational institutions were compelled to transition to remote teaching and learning modalities.

Traditional recommender systems primarily rely on collaborative filtering, recommending items based on the preferences of similar users, as seen in e-commerce platforms. However, this approach encounters challenges, particularly in scenarios with limited initial data (cold start) and where learning paths and styles vary significantly among students in an e-learning environment.

Content filtering, another common technique, relies on predefined rules and demographic details to recommend content but often results in static and ineffective suggestions. Therefore, a hybrid approach that combines content filtering with a model capable of learning individual learning patterns and styles appears most suitable for content recommendation in e-learning systems.

This paper proposes a recommendation engine designed to address these challenges by integrating a pedagogically curated content hierarchy that reflects the prerequisites of educational concepts. Additionally, it incorporates mechanisms to detect and adapt to the diverse learning styles and patterns of students, thereby facilitating the personalized recommendation of educational content.

In an e-learning setting, students aim to achieve various goals through interactions with the system, whether it be completing a course, skill development, or simply acquiring knowledge. An adaptive e-learning system should thus prioritize recommending educational concepts tailored to individual student performance, knowledge, skill levels, and learning patterns and styles.

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II. LITERATURE SURVEY

In [1] Ziema Mushtaq et. Al (2020) This paper introduces the contemporary approach known as "learning-on-the-go" or Mobile Learning (M-Learning). It delves into the various challenges encountered across different domains in advancing M-Learning as a prevalent platform for educational attainment. The research emphasizes the necessity for meticulously organized, developed, designed, and maintained content to expand the reach of M-Learning, thereby inspiring a broader audience to pursue education through mobile platforms.

In [2] M. Sertic et. Al (2023) The foundation of this paper stems from the initiative aimed at enhancing digital competencies within the realm of strategic partnerships under the Erasmus KA2 activities. It will explore diverse applications for interactive digital content and tools within educational settings. The primary objective of this project is to demonstrate the efficacy of utilizing digital tools in classroom instruction to elevate the digital competence levels of both students and educators. Through sharing experiences in e-learning practices, the project seeks to identify novel avenues for enhancing digital competencies among students and teachers alike.

In [3] Clara Herlina Karjo et. Al (2021) This study delves into the viewpoints of both faculty members and undergraduate students at a private university in Jakarta concerning the functionalities offered by their institution's Learning Management System (LMS). Data were collected through an online survey administered to 100 university lecturers and 512 undergraduate students. Subsequently, the data underwent quantitative analysis using SPSS software and qualitative examination to elucidate respondents' perspectives on four key features of the LMS: discussion forums, video conferencing, educational videos, and assignment management.

In [4] Arun M V et. Al (2021) The e-learning platform caters specifically to both students and teachers in schools, offering the flexibility to access educational resources at their convenience. With the freedom to learn from any location and various study options available, learners are encouraged to engage actively. The modules provided are tailored to be relatable and thorough, promoting effective comprehension and fostering motivation among rural individuals who are eager to pursue education and its benefits.

In [5] P.H.D.D Silva et. Al (2021) This mobile app utilizes Neural Networks, Natural Language Processing, and Machine Learning principles. It incorporates insights from primary education experts to ensure adherence to standards. The main aim of this solution is to monitor student performance and provide assistance in their studies, all while fostering motivation.

In [6] Anuradha Peramunugamage et. Al (2022) The review aimed to evaluate the extent of research conducted on mobile collaborative learning within the realm of engineering education from 2010 to 2020. A comprehensive analysis of 48 articles was undertaken to examine the research methodologies employed, areas of focus, and to offer an updated overview of investigations into mobile collaborative applications, specifically within engineering education. Results indicated that the bulk of the studies were concentrated in computer sciences, electronic engineering, and artificial intelligence domains.

In [7] Munil Shiva Goundar et. Al (2021) This paper provides an overview of the utilization of mobile learning applications within higher education institutions. The research conducted indicates a growing interest in this area, showcasing a diverse range of applications employed, including those for learning management, vodcasts and podcasts, game-based learning, collaborative learning, and language acquisition. Notably, the existing literature predominantly offers solution-driven perspectives, emphasizing the practical implementation and effectiveness of mobile learning applications.

In [8] Lu Dai (2021) As information technology continues to advance, the incorporation of mobile devices like smartphones and tablets has become ubiquitous in both personal and academic spheres. These devices offer students immersive visual and auditory experiences, significantly enhancing their engagement and serving as invaluable tools for stimulating interest. To cater to the demands of blended learning environments, particularly in college English education, this study focuses on leveraging smartphone applications to create a mobile learning platform that seamlessly integrates online and offline instructional modalities.

In [9] Bimal Aklesh Kumar et Al (2018) This paper seeks to enhance comprehension of mobile learning adoption by offering insights to support researchers in this domain. It presents an analysis of publication trends, prevalent adoption models, and key factors influencing the adoption of mobile learning. Drawing from these findings, suggestions are provided for future research endeavors in this area.

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In [10] Abdulrahman Alyami et Al (2020) The review delves into the potential ramifications of Mobile Collaborative Learning (MCL), exploring various key factors such as user satisfaction, ease-of-use perception, usefulness perception, influence on affective and cognitive domains, and enjoyment perception. It highlights that embracing MCL methodologies leads to enhanced learner motivation and cognitive abilities, while also positively affecting emotional engagement. Furthermore, the research indicates that MCL initiatives are currently tailored for educational settings across all levels, spanning from universities to schools.

III. SCOPE AND METHODOLOGY

Aim of the project

The goal of the Farmland Wild Animal Detection project is to develop and implement efficient technologies or systems capable of swiftly identifying the presence of wild animals in agricultural areas. By employing such technology, farmers should be empowered to swiftly recognize incursions, enabling them to take immediate measures to mitigate potential wildlife-related damages. This objective aims to safeguard human life, minimize crop losses, and promote the sustainable coexistence of agriculture and wildlife. Additionally, it seeks to address human-animal conflicts, enhance food security, and protect agricultural landscape ecosystems.

Existing system

Existing e-learning Android systems primarily operate as one-way channels, wherein they predominantly display materials uploaded by mentors. These systems do not cater to individual student requirements nor provide personalized learning materials. While the overarching goal of e-learning systems is to assist students in setting and achieving their educational goals, the diverse learning styles among students present a challenge. This can overwhelm parents who may struggle to meet their children's educational needs in today's competitive environment, often due to a lack of technical proficiency and time constraints.

Proposed system

The proposed system architecture comprises two main modules: students and administrators. Students, the end-users, interact with the system through an Android application, while administrators access it via a web application. The system offers various functionalities for students, including accessing learning materials, participating in collaborative assignments, communicating with mentors through chat and call services, attending class tests, and accessing career guidance data. All data required for display within the Android application will be uploaded and managed by the administrator.

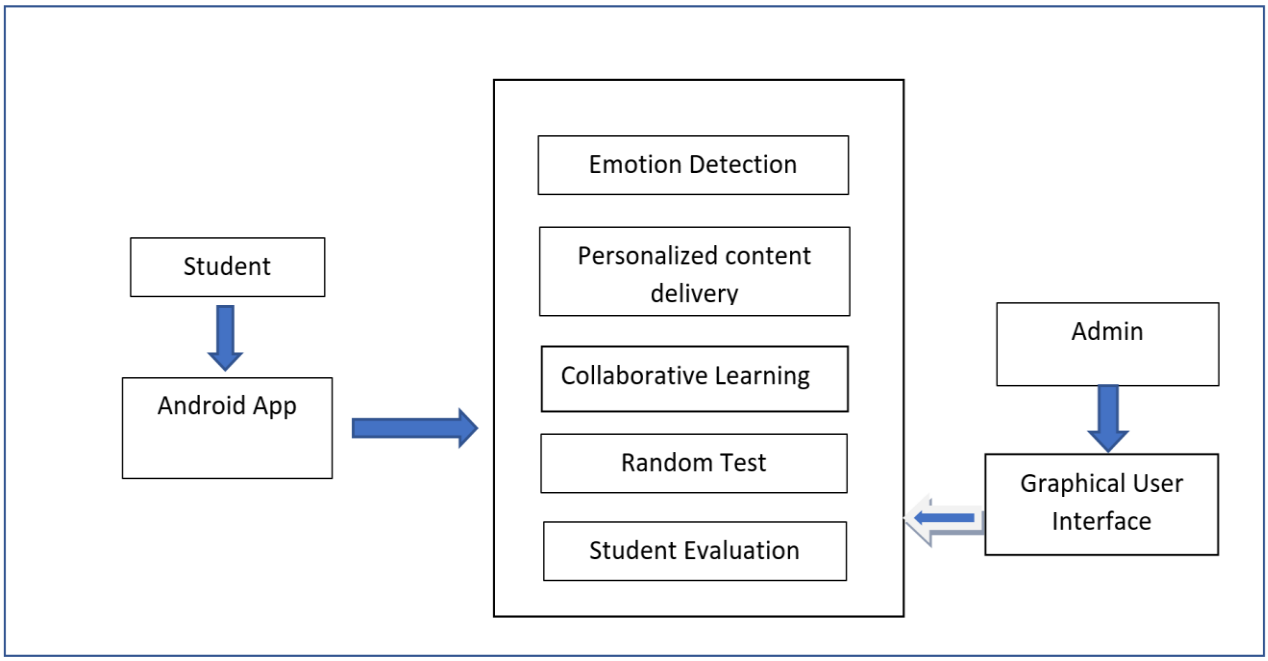

Fig 1. Proposed system

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System Architecture

An architectural explanation serves as a structured depiction and narrative of a system, meticulously detailing its components, their observable attributes, interactions, and the strategic blueprint guiding procurement and development. This comprehensive approach facilitates rational comprehension of the system's structure and ensures effective collaboration towards its overall functionality.

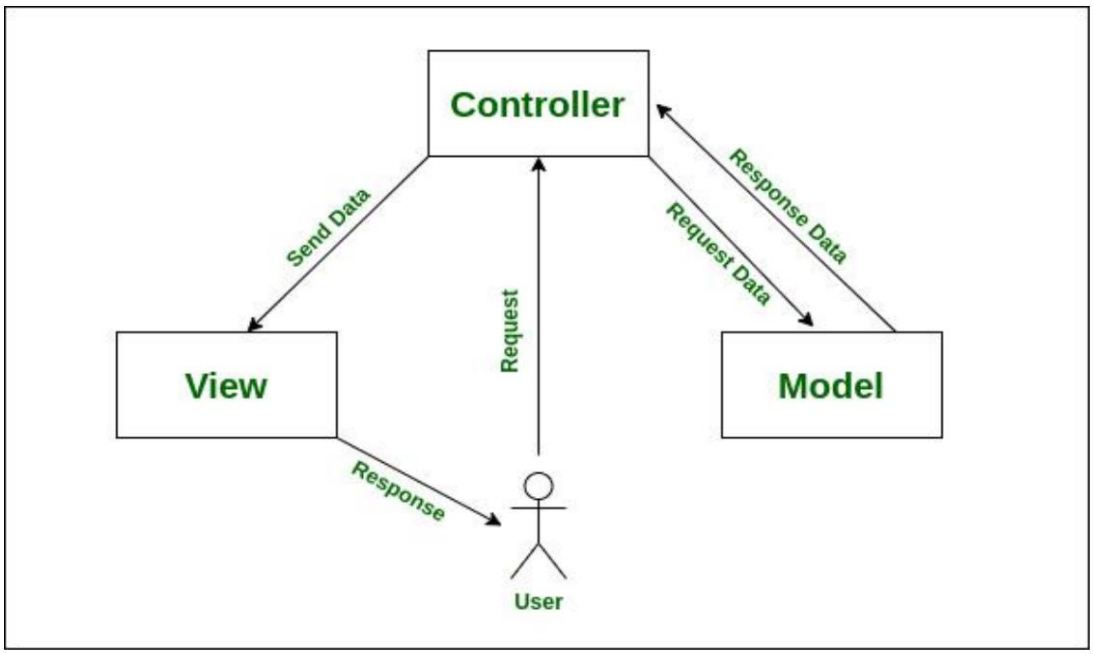

Fig 2. System Architecture

Model:

The Model segment encompasses the entirety of the application's data-related functionalities, including the management of data exchanged between the View and Controller modules, as well as any other business logic-related data. This may involve various database systems such as MSSQL, MySQL, or PostgreSQL, among others.

View:

The View module handles all user interface (UI) functionalities within the application. It's responsible for rendering HTML, CSS, and JavaScript elements, and also supports frameworks like React and Angular.

Controller:

Acting as the intermediary between the Model and View components, Controllers are tasked with processing business logic and incoming requests. They manipulate data utilizing the Model component and collaborate with Views to generate the final output. Controllers can be implemented in languages such as Java, Python, C#, C++, and more.

IV. CONCLUSION

We have presented a summary of design work in progress, describing our vision of M-Education, an architecture for integrating the use of wireless technologies into an existing collaborative environment. The consequence is that teachers, students, and peers in a distributed field environment can interact seamlessly with their counterparts in a desktop environment. They are also able to examine and modify shared data maintained in the online community. The basic architecture is in place and we are beginning to develop and evaluate scenarios of the sort described here.

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In conclusion, envisioning E-Learning involves crafting an architecture that seamlessly integrates wireless technologies into an established collaborative framework. This integration empowers teachers, students, and peers, regardless of their physical locations, to engage with one another effortlessly across both mobile and desktop platforms. Through this interconnected system, they can collaboratively access, analyze, and amend shared data within the online community. With the foundational architecture established, our focus now shifts to the development and evaluation of various scenarios aligned with this vision.

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