

Smart EDU Guide Aid for Electronics and Communication Graduates

Rakshita P Naik, Kruthika P Naik, Pooja Kumbar, Jaishanti, Dr J D Mallapur

Department of ECE

Basaveshwar Engineering College, Bagalkot, India

rakshitapnaik2001@gmail.com, kruthikapnaik2001@gmail.com, poojakumbar983@gmail.com

jaishanti9901@gmail.com, bdmallapur12@gmail.com

Abstract: *Smart Edu-guide Aid for E &CE graduates is a dynamic web application designed to revolutionize the way student access study materials. stay updated on academic events and collaborate on projects. This innovative platform offers a one-stop solution for educational resources events and projects. Enhancing the learning experience for users. Education is the cornerstone of human development and progress. It encompasses the acquisition of knowledge, skills, values, and experiences that empower individuals to thrive in a rapidly changing world. Education is not limited to formal schooling; it is a lifelong journey of exploration and growth. It equips individuals with the tools to understand the world. There could be various reasons why students might be lagging behind in their Studies. It could be due to a lack of difficulties in understanding the concepts, laziness, lack of interest in reading books, time management issues, or distractions. it's important to identify the specific reasons for the struggle and work on solutions that cater to those issues. This application provides learning materials like Syllabus, Projects and related to Events anytime, anywhere, making education more accessible. Students can carry their educational materials in their pockets. Concepts can be quickly searched, making it easier to find specific information.*

Keywords: Smart Edu-guide Aid, dynamic web application, one-stop solution, formal schooling.

I. INTRODUCTION

Early, education relied on books, teachers, and traditional methods. Students used textbooks, attended lectures, and engaged in hands-on learning. Peer interaction, writing, and assessments were crucial. Access to information was limited, primarily through physical resources. Since, the advancement in technology has brought about significant transformations in entertainment sectors. Initially, technological innovations primarily focused on enhancing entertainment experiences, such as the development of cinema, television, and gaming consoles. These advancements revolutionized how people access and interact with entertainment content, providing more immersive and interactive experiences. However, as technology continued to evolve, its impact on education became increasingly apparent. The rise of the internet and digital devices paved the way for the development of educational technology (EdTech), which encompasses a wide range of tools and platforms designed to enhance learning processes. Mobile app education is a boon for students We have to develop student in holistically but it has its own challenges and issues to resolve ,we have chosen an issue of data management and data percolation We have come up with very easy and student friendly educational app for all engineering students. Critical thinking and analysis, Imagination and creativity facilitating a balanced and enriched learning experience.

1.1 Challenges of Secure Mobiles Apps Development

- **Data Integration and Management:** Integrating and managing various types of data (e.g., syllabus copies, notes, event details, project documentation) from different sources can be complex and require careful planning to ensure accuracy and consistency.

- **Content Quality:** Ensuring that the educational content provided in the app is accurate, up-to-date, and aligned with curriculum standards can be a challenge. Maintaining content relevance as educational standards evolve can also be difficult.
- **Engagement and Retention:** Keeping users engaged with the app over time can be a challenge, especially with the abundance of distractions available on digital platforms. Designing the app in a way that encourages regular use and provides incentives for continued learning is crucial.
- **Technical Compatibility:** Ensuring that the app works seamlessly across various devices. Compatibility issues may arise, particularly with older devices or less common operating systems.
- **Data Privacy and Security:** Educational apps often collect sensitive user data, such as personal information and learning progress. Ensuring the privacy and security of this data is essential to maintain user trust and comply with regulations such as GDPR.
- **Monetization:** Finding a sustainable monetization strategy for the app can be challenging, especially if the target audience includes students or educators who may not have the budget for paid apps. Balancing revenue generation with affordability and value for users is key.
- **Feedback and Iteration:** Gathering feedback from users and incorporating it into future iterations of the app is essential for its continuous improvement. However, managing and prioritizing feedback while maintaining the app's core vision and functionality can be challenging.
- **Competition:** The educational app market is highly competitive, with numerous apps vying for users' attention. Standing out from the crowd and offering unique value proposition can be challenging, especially for new entrants.
- **Educational Research:** Incorporating educational research and best practices into the app's design and content can be challenging, especially for developers without a background in education. Collaboration with educators and experts in the field can help address this challenge.

1.2 ISSUES

- **Technical Problems:** This could include app crashes, slow performance, or compatibility issues with certain devices or operating systems.
- **Difficulty in Navigation:** Poorly designed user interfaces or confusing navigation can make it challenging for users to access the content they need efficiently.
- **Privacy and Security Concerns:** Educational apps that collect personal data or require sensitive information should prioritize user privacy and security. Issues such as data breaches or misuse of personal information can erode trust in the app.

II. LITERATURE REVIEW

Many of the studies in the area of web application development have mainly focused on the evolution of web application and comparison of web application development languages. Author: Scott Barnett, Iman Avazpour, Rajesh Vasa, John Grundy wrote on concepts on Supporting Multi-View Development for Mobile Applications The purpose of this paper is to give a new approach and tool support Rapid Application Tool, RAPPT, that enables rapid development of a mobile application. As a result, it utilizes multiple views and abstractions levels of mobile applications to help the developers to be more efficient in prototyping various apps.

Mobile App Development Framework for Technology Decision Making This paper presents a packed-in-a-tool prototype Once entered, the neat and required device features, the tool returns measures that allows a decision maker to identify the development technology as a result, a model and guidelines for supporting the choice of the right technology stack for the development of a new mobile app.

A Comprehensive Comparison of Hybrid Mobile Application Development Frameworks This paper briefly explains the comprehensive experiments that involved the use of various mobile development frameworks and that were tested under different scenarios. The outcomes were big difference when using the different frameworks in different test

scenarios which ensure the high execution speed while some ensure low memory consumption. Thank you for watching.

The paper presents the analysis on Integrated Development Environment, IDE, is being proposed, which will help a software developer to code an application in a single-code base and deploy that single-code to a multipleoperating systems. As a result, the IDE will perform all the code conversions and also helps to debug the program.

Developing Mobile Application via Model-Driven Development. This paper systematically investigates MDD techniques and methodology have been used to support mobile app development and how techniques have been employed to identify key benefits, limitations, gaps, and future research potential. This paper guides future researchers, developers to improve app development techniques ultimately that will help end-users in having more effective apps.

Mobile app development with android, developed by Google, is a widely used open-source mobile operating system for various devices like smartphones, tablets, TVs, and cars. It offers key applications and middleware, making it versatile for developers. Android Studio 2.2.3 is commonly used for mobile app development, leveraging its open APIs. With its robust security features, Android safeguards against potential threats.

To understand trends, we conducted an exploratory review of research publications on LAs, presenting metadata analysis and discussing its significance and recent research works. The paper provides background, methods, results, and key research findings, highlighting up comming directions in the field.

It is observed that the agile approaches are the most suited approaches for mobile app development due to its flexibility in making changes, scalability, usability, etc. This crucial survey contributes towards a better comprehension of development trends in mobile app development industries.

The exponential growth of smart mobile devices has led to a surge in the adoption of third-party in-app payment systems, particularly in China, the world's largest mobile payment market. However, the intricate interactions among multiple participants in such systems make them susceptible to errors and exploitation, resulting in severe financial frauds. To address these concerns, a comprehensive analysis of the third-party mobile payment ecosystem in China was conducted, focusing on four major cashiers.

This paper explores the intersection of app development and social sustainability, emphasizing the importance of addressing user needs. Through analysis of 25 studies involving user interviews, three key findings emerged: the significance of specific user requirements, concerns regarding app attractiveness and accuracy, and a notable research gap regarding sustainability integration in app development. To bridge this gap, the Sustainable App Development Model (SADM) was introduced, incorporating social, economic, and environmental sustainabilityaspects in a circular approach to app development.

III. WEB APPLICATION TOOLS AND LANGUAGES

The World Wide Web operates in client-server architecture with the user making request using his/her Web browser at the client-side and the Web server, on the server-side, responding to user request. Hence, we shall discuss Web application tools and languages under the following: Client-side technologies, Server-side technologies and Web application Frameworks

3.1 Client-Side Technologies

These are Web technologies, tools and languages that run on the browser. Some of these tools include but are not limited to the following:

- **Android Studio:** Android Studio is a development app that was created to allow you to create Android applications on a Windows system. It installs a number of development tools along with a virtual Android environment that can emulate Android applications. The suite of tools has an Integrated Development Editor that not only makes creating programs for Android an easier task than opening up a basic text editor by including coding syntax, provides automation powered by the Gradle engine and provides for an optimized workflow with tons of flexibility
- **Web Browser:** The major responsibilities of web browsers are: to generate and send request to web servers. These requests can be from hyperlinks, submitted forms, Uniform Resource Locator (URLs) and Hypertext Markup Language (HTML) pages. The request could also involve auxiliary resources like applets, and images,

which accept and interpret responses from web servers to produce visual representation. To render results in web browser window or tools from third party based on the type of content. Some of the most popular web browsers are Internet Explorer, Chrome, Firefox, Safari and Opera, etc.

- **Java:** Java is a widely used programming language known for its versatility and platform independence. In mobile app development, Java is commonly used for building Android applications. It's the primary language for developing Android apps, allowing developers to create robust and scalable applications for a variety of devices.

With Java, developers can leverage the extensive Android SDK (Software Development Kit) to access device features, build user interfaces, handle user input, and interact with backend services. Java's object-oriented nature and rich ecosystem of libraries and frameworks make it well-suited for developing complex mobile applications.

Additionally, Java's strong typing and compile-time error checking contribute to the stability and reliability of Android apps. Overall, Java remains a top choice for mobile app development on the Android platform due to its power, flexibility, and extensive community support.

3.2 Server-Side Technologies

These are technologies, tools and languages that run on the Web server. Some of tools include:

- **XAMPP:** It is an open-source software package that provides a local web server environment for testing and development. It helps you test web applications locally before deployment, ensuring they function correctly on a live server. XAMPP, which stands for Cross-Platform, Apache, MySQL, PHP, and Perl, is a free platform that allows developers to test their code locally on their own computers. This platform provides the experience of having your own mini web server at home, compatible with both Windows (WAMP) and Linux (LAMP) environments. It is a safe space to experiment and perfect code before it goes live.
- **Database Management Systems (DBMS):** most Websites of today's Internet use DBMS to store their data. These databases are managed with DBMSs which are installed separately or as a suite. Common DBMS on the Internet are Structure Query Language (SQL) based. These include: SQL Server, MySQL, and Java DB.
- **PHP (Hypertext Preprocessor)** is a widely-used open-source server-side scripting language. It's especially well-suited for app development and can be embedded into HTML. PHP scripts are executed on the server, generating dynamic content for web pages. PHP code is typically processed by a PHP interpreter implemented as a module in the web server or as a Common Gateway Interface (CGI) executable. PHP syntax is similar to C and Perl, making it familiar to many programmers. It's commonly used for creating dynamic websites, web applications, and server-side scripting

IV. FLOW GRAPH

The process starts with a user logging in (START).

The system first checks if the user is an administrator (IF ADMIN). If the user is an admin and their login credentials are valid (TRUE), the system grants them full access and sends them to the main page (MAIN PAGE).

If the user is not an admin (FALSE), the system then checks if they are faculty (FACULTY). If the user is faculty and their credentials are valid (TRUE), the system sends them to the main page (MAIN PAGE).

If the user is not faculty (FALSE), the system determines if they are a student (STUDENT).

If the user is a student and their credentials are valid (TRUE), the system sends them to the main page (MAIN PAGE).

If the user is not a student (FALSE), the system denies access and ends the process (EXIT).

Once a user has been authorized and reaches the main page (MAIN PAGE), they can perform a number of actions depending on their user type:

Admin can view the syllabus (SYLLABUS), view or upload projects (PROJECTS), and view or upload events (EVENTS) and he has an authority to add or remove the user(Faculty/student).

Faculty can view the syllabus (SYLLABUS), view or upload projects (PROJECTS), and view or upload events (EVENTS).

Students can view the syllabus (SYLLABUS) and view events (EVENTS). Once a faculty member or student has finished viewing or uploading content, they are returned to the main page (MAIN PAGE).

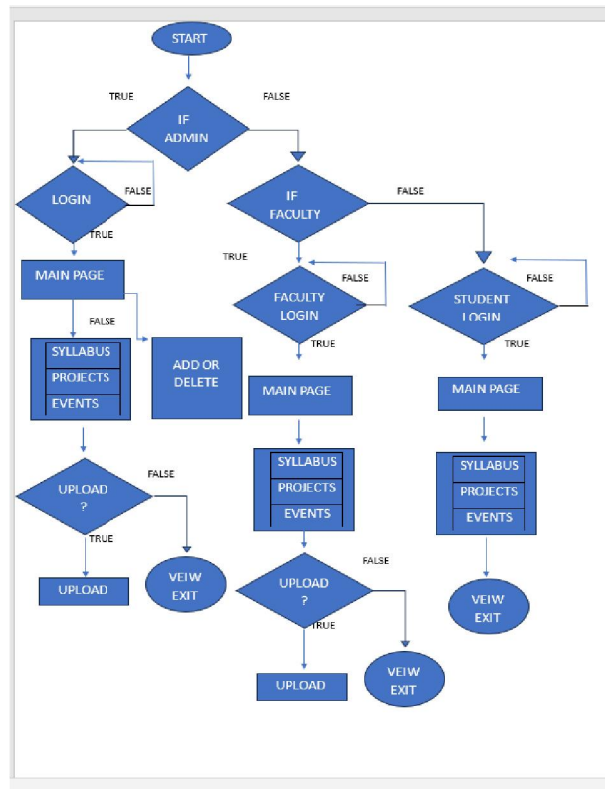


Figure 1

Application feature consists of Syllabus, Projects and Events. In a "Syllabus" section, providing easy access to semester-wise course materials. Users can select any semester from 1st to 8th by clicking on the respective button. Upon selecting a semester, users are presented with comprehensive syllabus copies, educational videos, and supplementary notes tailored to that specific semester's curriculum. Dive into your studies with ease, as our platform offers a seamless learning experience with all the necessary resources at your fingertips.

Upon entering the project page, users are greeted with a chronological list of years, ranging from 2020 onwards. Clicking on any given year reveals a collection of projects associated with that particular timeframe. Each project is showcased with its title, accompanied by a thumbnail photo copy for visual reference, and a concise abstract providing an overview of the project's objectives and significance. This setup offers users a structured and organized approach to exploring projects across different years. It allows for easy navigation through the project archive, empowering users to delve into specific time periods and discover the breadth of work accomplished over time. The inclusion of abstracts alongside project titles and visuals enhances user engagement by providing context and insight into the nature of each project at a glance. This intuitive design fosters efficient exploration and facilitates informed decision-making for users seeking to delve deeper into the projects showcased on the platform.

The event page offers users a comprehensive overview of events spanning various years, starting from 2020 and extending into subsequent years. Upon selecting a specific year, users are presented with a curated list of events that occurred during that time frame. Each event is accompanied by its title and a thumbnail photo copy, providing users with a glimpse into the essence of the event. What sets this feature apart is its dynamic nature, allowing for seamless updates and additions to the event roster each year. Users can actively contribute by uploading new events, ensuring that the platform remains vibrant and up-to-date. Additionally, users with appropriate permissions can edit or remove events as needed, maintaining the accuracy and relevance of the event listings. Navigation is made effortless, enabling users to effortlessly switch between different years and explore events from various time periods. Furthermore, search and filter functionalities empower users to efficiently locate specific events or refine their search based on various

criteria such as date, location, or event type. This comprehensive approach ensures that users can easily access and engage with a rich tapestry of events across different years within the application

V. RESULTS AND DISCUSSION

Distribution of Resources

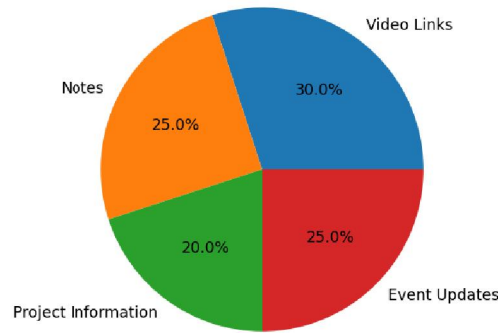


Fig 2

The largest portion of resources (30%) is allocated to "Video Links". This suggests that video content will be a prominent feature of the app. The next largest portion of resources (25%) is allocated to "Notes". This could indicate that a significant amount of effort is being put into documentation, user manuals, or other forms of written content. The remaining resources are divided evenly among "Project Information" and "Event Updates" (20% and 25% each). This suggests that these sections will have similar levels of importance in the app.

User Engagement Over Time

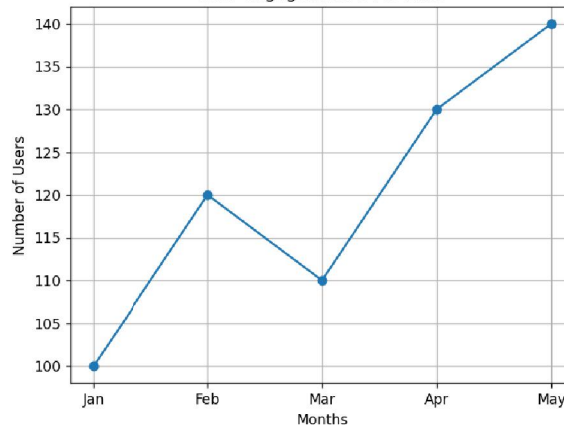


Fig 3

The number of users engaged with the app appears to be increasing over time. This is a positive sign, as it suggests that the app is attracting and retaining users. Specific trends: It is difficult to say for sure without the axis labels, but there might be seasonal fluctuations in user engagement.

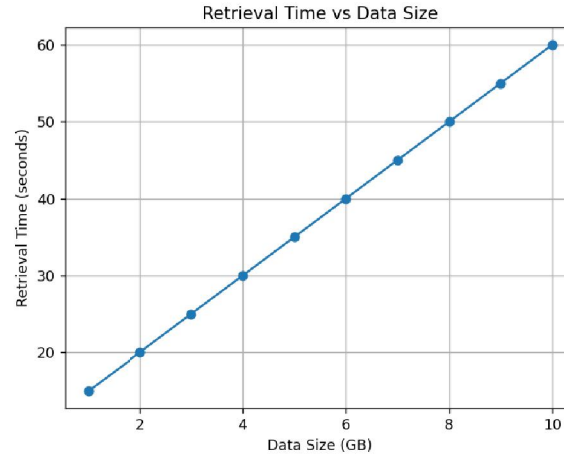


Fig 4

As a data size increases the retrieval time(second) also increase. Consider if my app is of 2GB so the retrieval time is 20 sec.

VI. CONCLUSION

The Edu Aid Guide for ECE students is a multifaceted web application designed to cater to students from first year to last year, with a specific focus on syllabus related vedios links, Notes, project information and events . For each academic year, the platform provides extensive information on coursework, encompassing detailed course descriptions, outlines, and recommended study materials. Moreover, it serves as a centralized repository for syllabus related vedios, offering comprehensive insights in understanding the concept easily. Students can easily access a detailed syllabus, projects ,events, outlining key objectives, and collaborative opportunities within the ECE field. The user-friendly interface, efficient search options, allowing students at any level to access study materials and syllabus information effortlessly. The Edu Aid Guide aims to enhance the overall academic for ECE students throughout their educational journey.

VII. FORTHCOMING WORK

The future of educational app development could involve integrating more personalized learning experiences, leveraging AI for adaptive learning, incorporating augmented reality (AR) and virtual reality (VR) for immersive education, enhancing collaboration features for group learning, and focusing on accessibility and inclusivity for all learners.

VIII. ACKNOWLEDGEMENT

We thank Basaveshwar Engineering College, Bagalkot, Karnataka, And VTU University Belagavi, Karnataka, for supporting us during this work.

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