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Digital Lost and Found Item Portal

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Abstract - *The "Digital Lost and Found Item" project aims to address the demand for a more dependable and effective method for handling lost objects. Conventional approaches, such as actual lost-and-found boxes, are disorganized and lack a methodical verification procedure. The main goal of this project is to make item reporting and claims easier while maintaining comprehensive verification to guarantee authenticity. It attempts to provide people with a smooth way to report lost items, examine found items, and retrieve their lost property. User identification, object classification, location tagging, picture uploading, and a special verification procedure are all included in the project. Additionally, a badge-based rewards system is incorporated to promote community building and user involvement. This initiative represents a major step forward for lost and found systems, offering an effective digital tool. While the current implementation includes essential features like login and signup, there is potential for further enhancements to improve effectiveness and user experience*

Key Words: **Digital Lost and Found, Item Reporting, Item Retrieval, User Authentication, Web Development, User Identification**

1.INTRODUCTION

We frequently misplace personal stuff in our increasingly hectic lifestyles. The time and energy required to look for a lost object add to the inconvenience caused by its disappearance in addition to its monetary value. The digital lost and found project is a comprehensive web-based platform created to address the long-standing issue of lost and found items. Its goal is to use digital technology to expedite the reporting and finding of lost items, saving users time and stress. Because of the platform's user-friendly interface, people may report missing items and claim found ones. It includes a number of features intended to increase process efficiency and user experience, including these are a homepage with links to add missing items, log out, and report found items. Important details regarding the lost object, such as its category, location, and image, are gathered on the add lost item page. This data is then kept in a structured database with tables for user groups, claims, item locations, alerts, students, and verifications.

The claim authentication process is one of the platform's distinctive features. It adds an extra degree of security and guarantees that only the rightful owner can claim a lost item. When a user claims a found item, they must respond to a series of questions to confirm their ownership of the item. The badge system is another cutting-edge innovation that hasn't been put into use yet. This system's goal is to promote user participation by rewarding frequent users and those who have located a sizable number of things. The platform offers basic operations including user registration, login, and password recovery in addition to these features. Badges are a visual depiction of accomplishments that might encourage users to participate more actively in the platform. These features guarantee that users may safely maintain their information and create an account with ease. The digital lost and found project is a noteworthy advancement in the use of digital technology to everyday issues.

Although it presently has the bare minimum of features, future upgrades are planned to increase user interaction and boost system performance even more. With this project, we hope to make the tedious job of keeping track of lost and found objects into a productive and pleasurable experience.

2. LITERATURE SURVEY

The paper introduces a novel framework utilizing social networks and computer vision to aid in locating lost items within a university campus. This framework comprises a mobile app, web server, and cloud service, enabling users to report lost items, search for found items, and claim them. The paper evaluates the framework through a prototype implementation and a user study, emphasizing its effectiveness, efficiency, and user-friendliness. However, it overlooks key aspects, such as incorporating location information for more precise results, introducing incentives or reward mechanisms for user engagement, addressing user verification and authentication, and exploring integration with other popular social media platforms to expand the system's reach and impact. These considerations would enhance the project's accuracy, security, user motivation, and outreach [1].

The paper introduces an innovative system for the internal localization of lost objects, combining active RFID and ultrasonic location detection technologies for accurate item location. Enhancing the user experience, it employs moving light technology commonly found in stage lighting to visually inform users of an object's location, as demonstrated in an experiment highlighting the superiority of light notifications. Notably, the paper lacks a comprehensive discussion of user authentication and verification, typical in location-based system literature, and primarily focuses on internal applications, neglecting exploration of external adaptability, a common theme in high-level research. Bridging these gaps is

essential to align the paper with the standards expected of literature reviews in conferences [2].

The thesis proposes a web-based system for lost and found items using RFID and email notification. The system aims to trace the owner details of the lost items and notify them via email. The system involves IoT devices such as NodeMCU ESP8266 and RFID RC-522, which are used to scan the RFID tags attached to the items. The system also has a web interface for users to register their details and report any cases of missing or found items. The system is tested at the UiTM Arau branch in Malaysia, targeting students as the main users. The thesis reviews the literature on the problem of lost and found items, the technologies used in the system, such as web-based application, RFID, email, and database, and the related works that use similar or different approaches to address the problem. The thesis identifies a research gap in the lack of a secure and efficient system for lost and found items in the campus setting, and argues that the proposed system can fill this gap by using RFID and email notification as the main features[3].

The paper introduces a system that enhances traditional lost-and-found processes through the use of location-based services, 4G technology, and mobile devices. It is built on Android using Amap API and Bmob cloud services, facilitating the reporting of lost items, managing notices, and searching for property. The paper provides a comprehensive account of the technical aspects and the integration of location services, demonstrating its efficiency in enabling quick and accurate lost-and-found information sharing with geographic data. However, it lacks discussions on user experience, security, and scalability, while not exploring the broader implications and challenges of real-world implementation. Future research should address user satisfaction, privacy concerns, and the complexities of large-scale deployment, along with examining the social impact of digital lost-and-found systems, particularly their influence on community dynamics and public service effectiveness. These considerations are critical to enhancing the understanding of digital lost-and-found solution design and deployment [4].

The paper explores the development and usability evaluation of an online lost and found system tailored for educational institutions, with a strong emphasis on user-friendliness. The researchers designed and implemented a web-based platform, utilizing various technology tools and eye tracking methodology for system assessment. While the paper provides a comprehensive view of the web-based system, a substantial gap exists in the literature regarding its broader applicability beyond educational institutions. The paper's focus on usability evaluation using eye tracking overlooks advances in lost and found technology, particularly the integration of artificial intelligence for enhanced item recognition and retrieval. Addressing these gaps is crucial to expand the understanding of the potential use of web-based lost and found systems in different sectors and to harness the benefits of evolving technologies [5].

The literature survey investigates the "Designing Lost and Found Web Applications, Based on Trusted Third Party Model" by Stanley Muturi Githinji, focusing on the Kenyan context. It critically analyzes popular platforms like Zipate, Lost and Found Document Center, and Lost and Found Kenya, highlighting limitations in verifying item legitimacy and revenue models. The paper introduces a Trusted Third Party (TTP) model but lacks practical implementation details and technical considerations. It also neglects exploration of the model's alignment with authentication and authorization mechanisms. This underscores the need for further research in implementing a TTP model in digital lost and found portals, considering data security, privacy, and integration with existing systems, providing valuable insights for the user's project [6].

The literature survey examines a web page providing online services for reporting lost articles or documents in Delhi, India. Notably, the paper focuses solely on reporting lost items, lacking coverage for found items. In contrast, the proposed project aims for a comprehensive website covering both lost and found items, introducing features like login, signup, registration, badges, verification questions, and image uploads. The project addresses considerations of security, privacy, usability, and user engagement, along with implementing a robust database system for efficient data management—an aspect not covered in the referenced paper. Bridging these gaps will be crucial for enhancing the functionality and user experience of the project [7].

The literature survey explores "iFound," an Android-based application for lost item recovery. The paper emphasizes features like reporting lost/found items and communication between parties, backed by testing and user feedback. However, it identifies gaps in security measures and incentives for finders. The proposed project aims to enhance data protection and motivate finders through badges. Furthermore, it plans to extend its services beyond lost items, incorporating facial recognition and other methods to assist in finding missing people. This positions the project to address crucial aspects overlooked in the existing literature [8].

Literature survey emphasizes a web-based system for managing lost items in a college campus. Notably, the paper lacks user feedback, comparisons with existing systems, and considerations of security issues. Additionally, it overlooks user-enhancing features such as ratings and reviews. In contrast, the proposed project distinguishes itself through user-friendliness, image uploads, badges, security features, live chat, and advanced search capabilities using NLP and machine learning. This positions the project to address crucial aspects overlooked in the existing literature and provides a more comprehensive solution for lost and found systems [9].

This paper investigates a "Lost Identifiable Items Recovery System" focusing on recovering lost items in Kenya, with an

emphasis on developing a user-friendly, secure system using QR code tagging. Identified gaps in the paper include the absence of empirical user feedback, limited usability evaluation, oversight of privacy and security concerns, and a lack of exploration into the social and ethical implications of QR code usage. The proposed project aims to address these gaps through rigorous user evaluations, improved security measures, and an in-depth exploration of the human and behavioral aspects associated with QR code technology [10].

The literature survey on the use of NoSQL databases in lost and found websites, as demonstrated by the paper, underscores the advantages of employing MongoDB in such systems. However, notable gaps in the document include the absence of performance and usability comparisons with other database types, an oversight of potential challenges related to MongoDB, neglect of user-centric aspects like authentication and engagement features, and a primary focus on technical aspects with little consideration for user interface and interaction design. These gaps underscore the need for a more comprehensive approach to ensure the effectiveness, security, and user-friendliness of the entire lost and found website, extending beyond the database layer [11].

The literature survey of the smartphone application for managing missed and found belongings, as depicted in the article, underscores its Android-centric approach, primarily centered on reporting and locating lost items. However, several notable gaps within the document come to light. These gaps include the platform's restriction to Android, the absence of essential data security measures, a lack of incentives for users, and a limited scope focusing solely on items. In contrast, the proposed project aims to address these limitations by creating a more universally accessible website, enhancing data security through authentication and verification functions, introducing motivational incentives for users, and expanding the system's scope to encompass not only lost items but also missing people through innovative techniques like facial recognition. These enhancements will result in a more comprehensive, secure, and user-engaging solution for managing lost and found belongings [12].

The existing literature on lost and found systems reveals recurring gaps in several research papers, including issues related to location tracking, security, user incentives, and broader functionality. While these papers offer valuable insights into their respective areas, they often lack a holistic approach that considers the complete user experience and the system's adaptability to different contexts. To bridge these gaps, future projects in this domain should aim for comprehensive solutions that enhance security, user engagement, and inclusivity while also exploring opportunities to expand their scope to address issues like locating missing individuals and implementing advanced search techniques. This approach can result in more effective, secure, and user-friendly lost and found systems with broader applicability [13].

Within the domain of web-based lost and found systems, the literature survey highlights significant gaps found in this paper. This paper introduces a web-based social network designed for the unique context of Saudi Arabia, aiming to connect individuals who have lost items with those who have found them. However, the document lacks empirical user feedback and usability testing, does not sufficiently address privacy and security concerns, and overlooks the exploration of social and ethical implications within the system. To address these gaps, our project proposes conducting thorough user evaluations, enhancing security measures, and delving into the social and ethical dimensions of a web-based lost and found system, thereby creating a more robust and user-centric solution [14].

The research paper offers a cross-platform solution for item management at Universiti Tunku Abdul Rahman (UTAR). However, it neglects to address essential challenges and limitations within lost and found systems, including security, privacy, authentication, verification, notifications, rewards, and user feedback. Furthermore, the paper lacks critical comparisons with similar systems in terms of functionality, usability, performance, and user satisfaction, missing empirical evidence or statistical analysis to validate its claims of improving lost and found item organization at UTAR. Bridging these gaps is vital to developing a more comprehensive and evidence-backed system for enhanced efficiency and effectiveness in managing lost and found items within the UTAR context [15].

3. EXISTING SYSTEMS AND ALGORITHMS

1. The current system uses an eye tracking methodology and a variety of technological tools to manage lost and found items at educational institutions. It is a web-based platform.
2. Through an intuitive interface, this system enables users to register their information, report lost or found things, browse an item list, and retrieve their items.
3. HTML, CSS, and JavaScript are the database management systems used by the aforementioned system, which uses PHP as the server-side programming language.
4. The system also uses eye tracking technology to evaluate the usability of the web interface, measuring parameters such as fixation duration, fixation count, saccade length, and pupil size.
5. The system's development process uses a waterfall model, with five phases: requirement analysis, design, implementation, testing, and maintenance.
6. This system follows a three-tier architecture, comprising the presentation layer, the business logic layer, and the data access layer.

7. The system implements a simple algorithm for item matching, based on comparing the item name, category, and location entered by the user with the existing records in the database.

8. The system also implements a simple algorithm for item claiming, based on verifying the user's identity and contact information with the database records.

9. The system has certain drawbacks, like its inability to integrate with other platforms or gadgets and its absence of security measures like encryption, authentication, lack of incentives or rewards for users, and lack of advanced search techniques using artificial intelligence or machine learning.

10. The system has some opportunities for improvement, such as enhancing the user interface design, adding security measures such as password hashing and captcha verification, introducing badges or points for user motivation, and implementing natural language processing or image recognition for item retrieval.

4. LIMITATIONS

There are a number of issues with the lost and found system in educational institutions that could compromise its functionality, user satisfaction, and usability. First, the system's inability to integrate with other platforms or gadgets restricts its and implement interoperability. Secondly, the system does not provide adequate security features such as encryption and authentication, which might result into data breaches or unauthorized access. Thirdly, this system does not offer any incentives or rewards to motivate users to use it effectively or report lost items promptly. Fourthly, the system does not employ advanced search techniques such as natural language processing or image recognition, which could improve the accuracy and speed of item retrieval. Fifthly, the system may not be able to handle a large volume of users or data, which could affect its performances, and reliability. Sixthly, the systems may not be accessible to users with disabilities or special needs, which could limit their ability to use it effectively. Seventhly, the system may not allow users to customize their preferences or settings, which could affect their user experience and satisfaction. Eighthly, the system may not provide adequate feedback mechanisms to users, which could limit their ability to provide feedback or suggestions for improvement. Ninthly, the system may not support multiple languages, which could limit its use by non-native speakers or international students. Lastly, the system may not provide adequate training or support to users, which could affect their ability to use it effectively.

5. RESULT AND DISCUSSIONS

The current implementation of the project includes basic functionalities such as user registration, login, the password recovery, item addition, and item claiming. Its homepage provides options for reporting found items as well as logging out. The "Add Lost Item" page collects essential information about the lost item including its category, location, and an image. The database structure comprises tables for user groups, claims, items, locations, notifications, students, and verifications under Home and Authentication & Authorization categories. Future work includes the implementation of a badge systems for active users and those who found a significant number of items.

6. CONCLUSIONS

The "Digital Lost and Found" project offers a potential fix for the long-standing issue of managing the lost and found items. Its extensive features, including the item reporting, claim verification, and user rewards, make it a promising tool for efficient item recovery. While the current implementation provides basic functionalities, future enhancements are expected to improve user engagement also the system efficiency. The project underscores potentials of digital platforms in transforming mundane tasks into efficient processes.

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