International Journal of Research in Engineering and Science (IJRES)
ISSN (Online): 2320-9364, ISSN (Print): 2320-9356
www.ijres.org Volume 14 Issue 1 ǁ January 2026 ǁ PP. 96-103

Lost And Found Management System

Apoorva A Busad[#1], Ravikiran[#2], Neelambika B Sajjan[#3], Priya M K[#4], Nanditha V[#5]

[#1] *Assistant Professor, Dept of CSE, Dayananda Sagar Academy of Technology and Management*
[#2,3,4,5] *B.E, Scholars, Dept of CSE, Dayananda Sagar Academy of Technology and Management*

Abstract
In large college campuses, the loss of personal belongings such as identity cards, books, electronic devices, and accessories is a common problem faced by students and staff. Due to busy academic schedules and constant movement across classrooms, laboratories, libraries, and hostels, tracking misplaced items becomes difficult. Existing lost and found practices in most institutions rely on manual methods such as notice boards, registers, and verbal communication, which are inefficient, unorganized, and prone to delays and errors. These methods often fail to ensure proper documentation, verification, and timely recovery of items.
This paper presents the design and development of a web-based Lost and Found Management System aimed at providing a centralized and systematic solution for college environments. The system allows users to register, report lost or found items by providing detailed descriptions, images, dates, and locations, and search for matching records using filtering mechanisms. An administrative module is included to verify reports, manage users, and update item status such as pending, verified, or claimed. By digitizing the entire lost and found process, the proposed system reduces manual effort, improves transparency, enhances communication between users and administrators, and enables faster and more reliable recovery of lost belongings, thereby improving overall campus efficiency and user experience.

Date of Submission: 05-01-2026 Date of acceptance: 15-01-2026

I. Introduction

In modern educational institutions, the campus environment has become increasingly dynamic due to a large number of students, extensive infrastructure, and continuous academic and extracurricular activities. Students and staff routinely carry personal belongings such as identity cards, textbooks, notebooks, electronic devices, chargers, headphones, water bottles, umbrellas, and other accessories while moving across classrooms, laboratories, libraries, hostels, cafeterias, and sports facilities. In such a busy environment, misplacing personal items is a common occurrence. The loss of these items often leads to stress, inconvenience, and unnecessary expenditure, especially when important documents or electronic devices are involved.

The problem of lost belongings is further intensified in large college campuses where thousands of students interact daily. Due to overlapping schedules and shared spaces, identifying the owner of a found item or locating a lost item becomes difficult. In many cases, students are required to visit multiple offices or depend on word-of-mouth communication to recover their belongings. This not only consumes time but also disrupts academic routines. Items such as ID cards are especially critical, as their loss can affect access to academic buildings, examinations, and campus facilities, while the loss of electronic devices may result in data loss and financial burden.

Despite the increasing dependence on digital solutions in academic institutions, the management of lost and found items in most colleges continues to rely on traditional manual methods. These methods include displaying notices on physical notice boards, maintaining handwritten registers in security offices, or relying on informal communication among students and staff. Although these approaches are easy to implement, they suffer from several limitations. Records are often incomplete, difficult to search, and prone to errors. Information may not reach the rightful owner in time, and there is no reliable mechanism to verify claims or track the status of reported items. As a result, many items remain unclaimed or are permanently lost.

Manual systems also lack transparency and accountability. Once an item is reported, there is no proper way to monitor its progress or confirm whether it has been claimed. Duplicate entries and false claims are common issues, as there is no centralized database to validate reports. Additionally, administrative staff and security personnel are burdened with the responsibility of managing records manually, increasing their workload and the possibility of human error. As the number of students and campus facilities grows, these traditional approaches become increasingly impractical and inefficient.

The rapid advancement of web technologies and the widespread availability of internet access provide an opportunity to address these challenges through digital transformation. Web-based applications offer centralized data storage, real-time access, and efficient communication, making them suitable for managing information-intensive processes. A digital lost and found system can streamline the process of reporting, searching, and recovering lost items by replacing fragmented manual practices with a structured and automated solution.

This research paper focuses on the design and development of a web-based Lost and Found Management System tailored specifically for college campuses. The proposed system provides a centralized platform where students and staff can securely register and log in to report lost or found items. Users are required to submit detailed information such as item name, description, category, date, time, location, and images to ensure accurate identification. The system supports efficient searching and filtering mechanisms that allow users to find potential matches quickly. An administrative module is included to verify reports, manage users, remove duplicate or false entries, and update the status of items as pending, verified, or claimed.

By digitizing the lost and found process, the proposed system significantly reduces manual effort and improves transparency. Users are kept informed about the status of their reports, and administrators can monitor all activities through a structured dashboard. The system ensures better coordination between students, staff, and authorities, leading to faster recovery of lost belongings. Furthermore, the use of a centralized database ensures data consistency, easy retrieval of records, and secure storage of information.

In addition to addressing current challenges, the proposed Lost and Found Management System is designed with scalability and future enhancements in mind. The system can be extended to include features such as notification alerts, mobile application support, QR code-based item verification, and integration with existing institutional systems. By providing a reliable, efficient, and user-friendly solution, the system contributes to creating a more organized, secure, and student-centric campus environment. This makes the proposed approach a practical and effective solution for improving lost and found management in educational institutions.

II. Problem Forumlation

The problem of managing lost and found items in a college campus arises due to the lack of a structured and centralized mechanism to handle reporting, searching, verification, and recovery of misplaced belongings. Traditional approaches rely heavily on manual processes, which are inefficient and unsuitable for large academic environments. This section formulates the problem by analyzing the system environment, identifying key challenges, and defining the limitations of existing approaches.

2.1 Existing System Model

In the current system, lost and found activities are handled manually through notice boards, handwritten registers, and verbal communication with security or administrative staff. When an item is lost, the owner typically reports it to the office or checks notice boards regularly. Similarly, when an item is found, it is either submitted to the security office or announced informally.

This system does not involve any centralized digital storage of information. Records are scattered, unstructured, and difficult to retrieve. Searching for an item requires manual inspection of notices or repeated inquiries, which is time-consuming and unreliable. There is also no formal authentication or verification process, making it difficult to ensure that items are claimed by the rightful owners.

2.2 Challenges and Limitations of Existing System

The manual lost and found system suffers from several critical limitations that reduce its effectiveness in a college campus environment:

Lack of Centralization: Information about lost and found items is spread across notice boards, registers, and individuals, making data management difficult.

Inefficient Searching: Users cannot efficiently search or filter records based on item type, location, or date.

No Status Tracking: Once an item is reported, there is no mechanism to track whether it has been verified or claimed.

High Probability of Errors: Manual record-keeping leads to incomplete data, duplication of entries, and loss of records over time.

Security Issues: Absence of authentication and verification increases the risk of false claims and misuse.

Administrative Burden: Security and office staff must manually manage records, increasing workload and human error.

These challenges clearly indicate that the existing system is not scalable and fails to meet the needs of modern academic institutions.

2.3 Proposed Problem Model

To address the above limitations, there is a need for a centralized digital system that automates the entire lost and found process. The proposed problem model involves a web-based platform that connects students, staff, administrators, and a centralized database through a secure and structured workflow.

In this model:

- Users (students and staff) can report lost or found items by submitting complete item details.
- The system stores all records in a centralized database.
- An administrator verifies reports and updates item status.
- Users can search and track item recovery progress transparently.

This model ensures efficient data management, faster item matching, and secure recovery of lost belongings.

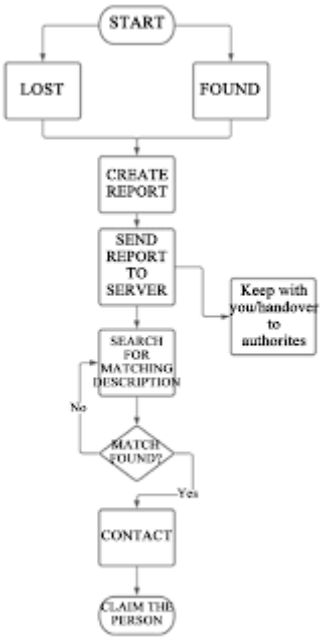

Fig1. System model

2.4 Problem Definition

Based on the analysis of existing practices and system limitations, the core problem can be defined as follows:

'There is no centralized, secure, and efficient system in college campuses to manage the reporting, searching, verification, and tracking of lost and found items, leading to delays, miscommunication, increased manual effort, and permanent loss of belongings'.

The proposed Lost and Found Management System aims to solve this problem by introducing a structured digital approach that improves efficiency, transparency, and reliability.

III. Concept Hierarchy

Concept hierarchy is used to organize and represent information in a structured and meaningful manner by defining relationships between different concepts at various levels of abstraction. In the context of a Lost and Found Management System, concept hierarchy helps in classifying lost and found items based on categories, subcategories, and attributes. This hierarchical organization improves searching, filtering, and matching efficiency, making the system more accurate and user-friendly.

3.1 Need for Concept Hierarchy in Lost and Found Systems

In a college campus, lost and found items belong to a wide range of categories such as identity cards, books, electronic devices, stationery, personal accessories, and others. Treating all items as a single flat list makes searching inefficient and increases ambiguity. For example, searching for a "charger" without classification may return irrelevant results such as power banks or cables.

By introducing a concept hierarchy, items can be organized from general concepts to more specific ones. This structured representation allows the system to narrow down search results efficiently and improves the accuracy of matching lost items with found items. Concept hierarchy also reduces redundancy and helps maintain consistency in data representation across the system.

3.2 Hierarchical Representation of Item Categories
The proposed system organizes items using a multi-level hierarchical structure. At the top level, items are grouped into broad categories. Each category is further divided into subcategories, and each subcategory contains specific item instances.
For example:

Electronics
Mobile Phones
Laptops
Chargers

Documents
ID Cards
Hall Tickets
Certificates

Accessories
Watches
Earphones
Bags
Such a hierarchical structure allows the system to understand relationships between items and improves semantic relevance during searches. When a user searches for an item, the system can consider both parent and child concepts, resulting in more meaningful matches.

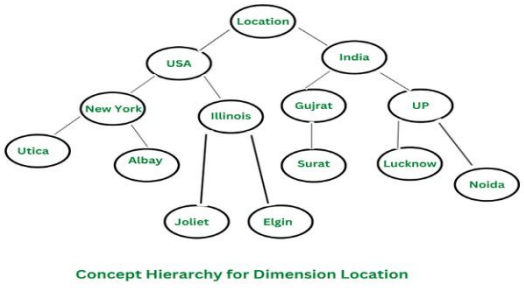

Fig2. A concept hierarchy for college employees

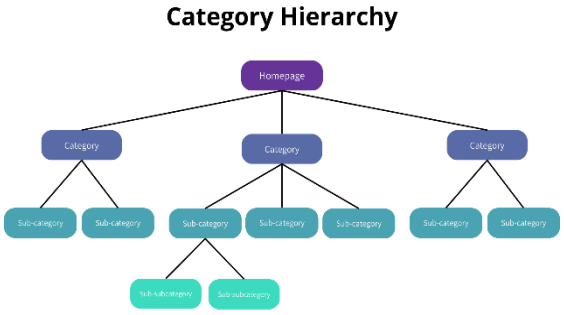

Fig3. An example of our extended concept hierarchy

3.3 Concept Hierarchy Construction
The concept hierarchy in the Lost and Found Management System is constructed based on commonly lost items within a college campus. The hierarchy is designed by identifying major item categories and defining their relationships with subcategories and attributes such as color, brand, location, and date.
Each reported item is mapped to a specific node in the hierarchy. This mapping ensures that items with similar characteristics are grouped together, enabling efficient retrieval. The hierarchy can be easily extended to include new categories or subcategories as required, making the system scalable and adaptable to future needs.

3.4 Role of Concept Hierarchy in Search and Matching
Concept hierarchy plays a crucial role in improving the search and matching process. When a user searches for a lost item, the system does not rely only on exact keyword matching. Instead, it considers hierarchical relationships

between concepts. For instance, a search for "electronics" can also retrieve results related to mobile phones or laptops.
This hierarchical approach improves recall and precision during searches and reduces the chances of missing relevant results. It also helps the administrator verify reports more efficiently by grouping similar items together and identifying duplicates or false entries.

3.5 Advantages of Using Concept Hierarchy
The use of concept hierarchy in the proposed system provides several advantages:

- Improves organization and classification of lost and found items
- Enhances search accuracy and matching efficiency
- Reduces ambiguity and duplicate records
- Supports scalability and future expansion
- Improves overall system usability and performance

By incorporating a well-defined concept hierarchy, the Lost and Found Management System ensures structured data management and efficient information retrieval, making it suitable for large and dynamic college environments.

IV. Secure Search Scheme

In a web-based Lost and Found Management System, searching plays a critical role in enabling users to quickly locate misplaced items. Since the system stores sensitive information such as user details, item descriptions, locations, and images, it is essential that the search mechanism is not only efficient but also secure. A secure search scheme ensures that authorized users can retrieve relevant information without compromising data privacy, integrity, or system security.

4.1 Need for Secure Search
In a college environment, multiple users access the system simultaneously, including students, staff, and administrators. If search operations are not secured, unauthorized users may gain access to sensitive item information or misuse the system. Additionally, improper handling of search queries may lead to data leakage, false claims, or manipulation of records.
A secure search scheme is therefore required to:

- Protect user and item data from unauthorized access
- Ensure that search results are visible only to authenticated users
- Prevent misuse of search functionality for malicious purposes
- Maintain data integrity during search and retrieval operations

4.2 Search Access Control Mechanism
The proposed system follows a role-based access control mechanism to secure search operations. Users are required to authenticate themselves using valid credentials before accessing the search functionality. Based on their role, different levels of access are provided:
Students/Staff: Can search for lost or found items and view limited details required for identification
Administrators: Can perform advanced searches, view complete records, and verify item claims
This approach ensures that sensitive administrative data is not exposed to general users, while still allowing effective item discovery

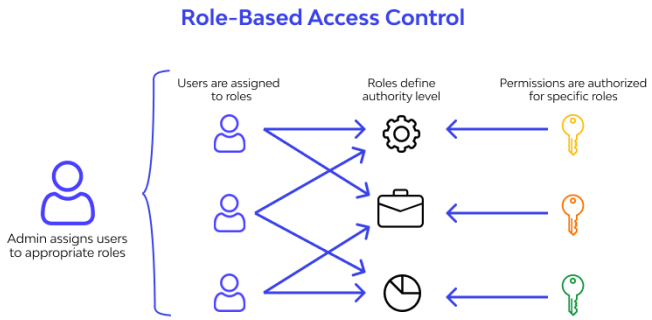

Fig4. Role-Based Access Control Model

4.3 Secure Search Process Flow
The secure search process follows a structured sequence of steps to ensure safety and accuracy:

1. The user logs into the system using authenticated credentials.
2. The user submits a search query based on item category, date, or location.
3. The backend validates the user session and access permissions.
4. The query is processed securely against the database.
5. Filtered and authorized search results are displayed to the user.

During this process, direct database access is restricted, and all interactions occur through controlled backend services, preventing unauthorized data exposure.

4.4 Data Protection and Query Validation
To enhance security, the system validates all search inputs before processing them. This prevents malicious inputs and ensures system stability. Sensitive data stored in the database is protected using access restrictions, and only required information is retrieved during search operations.
Additionally, item status information such as *Pending*, *Verified*, or *Claimed* is carefully managed so that users receive accurate and up-to-date results. This controlled access improves trust and reliability in the system.

4.5 Benefits of Secure Search Scheme
The secure search scheme provides several advantages to the Lost and Found Management System:

- Protects sensitive user and item information
- Prevents unauthorized access and misuse
- Ensures reliable and accurate search results
- Enhances user trust and system transparency
- Supports scalability for large campus environments

By integrating security mechanisms into the search process, the proposed system ensures that information retrieval is both efficient and safe, making it suitable for real-world college applications.

V. Related Work

This section reviews existing methods and studies related to lost and found systems, highlighting their approaches, strengths, and limitations. The review focuses on both traditional and digital solutions, including mobile and web-based systems, to establish the research gap that motivates the proposed solution.

5.1 Manual Lost and Found Systems
Traditionally, lost and found management in college campuses and public places has been handled using manual approaches. These include physical notice boards, handwritten registers at security counters, and verbal announcements. The owner of a lost item typically checks notice boards or visits centralized offices to inquire about their belongings.
While simple to implement, manual systems are fundamentally limited. They often involve incomplete or error-prone record keeping because entries are written by hand and can be misplaced. Searching for specific items among piles of notices is time-consuming and inefficient. Furthermore, accountability and tracking are minimal, and there is no verification mechanism to confirm the authenticity of reports. Due to these limitations, such systems are unsuitable for modern environments with large user populations and high item traffic.

5.2 Mobile Application Approaches
In recent years, several researchers have proposed mobile application based systems for lost and found item management. These systems often utilize GPS, Bluetooth, or QR codes to help users report or identify items.
For example, a study by Chen et al. proposed a mobile app that uses Bluetooth Low Energy (BLE) beacons to automatically detect nearby devices and notify users of lost items. Although this reduces manual reporting efforts, its dependence on BLE hardware limits scalability since users must deploy additional beacons across the environment.

Another approach uses QR codes attached to personal items. When a found item is scanned, its information is uploaded to a centralized server. While effective for tracking tagged items, this method fails to support untagged belongings that are commonly lost on campuses.
These mobile-based systems provide improved automation compared to manual systems, but they still face challenges including device dependency, infrastructure requirements, and limited support for untagged items.

5.3 Web-Based Systems for Lost and Found Management

Web-based solutions provide a more general approach by offering a centralized platform for reporting and searching items. Several universities and organizations have deployed web portals where users can log lost or found items and search for matches.

For instance, the "Campus Lost and Found Portal" described by Ahmad et al. provides users with forms to submit item details, images, and contact information. The system allows other users to search using key terms and dates. However, this portal lacks advanced filtering and categorization, making search results less accurate when large datasets are involved.

Another example is a community-driven website for lost pets and belongings, which utilizes user accounts and manual verification workflows. Although this system supports multiple categories, it does not enforce access control, allowing unauthorized users to edit or claim items, which can lead to false reporting.

While web-based systems improve accessibility and centralization compared to manual methods, most existing implementations lack effective search security, verification mechanisms, and structured item classifications.

5.4 Hybrid Systems with Intelligent Matching

Some research efforts extend web systems with intelligent matching techniques to improve search accuracy. For example, Latif et al. introduced a lost and found system that uses semantic matching to compare textual descriptions of items. This approach helps find approximate matches even when users use different words to describe the same item.

Another approach uses machine learning to cluster reported items based on features such as category, color, and location. These systems show promising results in matching related items, but they require extensive training data and complex backend resources, which may be impractical for small or mid-sized educational environments.

Though intelligent matching improves accuracy, existing hybrid systems often complicate implementation and maintenance, reducing usability for non-technical users.

5.5 Summary of Limitations in Existing Work

The review of existing systems highlights several recurring limitations:

Lack of Centralization: Manual methods cannot scale and do not support efficient information retrieval.

Infrastructure Dependencies: Mobile approaches often require hardware like beacons or QR tag deployment.

Poor Search Relevance: Simple web portals lack structured categorization and semantic search methods.

Insufficient Security and Verification: Most systems do not limit access or verify item ownership, exposing the platform to misuse and false claims.

Complexity of Intelligent Systems: Advanced matching systems introduce unnecessary complexity for campus environments that require simplicity.

These limitations confirm the need for a secure, centralized, efficient, and user-friendly Lost and Found Management System designed specifically for college environments. The proposed system aims to overcome these gaps by combining structured concept hierarchy, secure search, role-based access, and efficient matching mechanisms.

VI. Conclusion

This paper presented a web-based Lost and Found Management System designed to address the inefficiencies of traditional manual methods used in college campuses. Existing approaches such as notice boards, handwritten registers, and informal communication lack organization, transparency, and scalability, leading to delays in item recovery and increased administrative workload. The absence of centralized data storage and secure search mechanisms further limits the effectiveness of these methods.

The proposed system provides a centralized digital platform that enables students and staff to report lost and found items with complete details, including descriptions, location, and date information. By incorporating structured data organization, secure search functionality, and role-based access control, the system ensures accurate information retrieval while maintaining data privacy and security. Administrative verification and status tracking enhance transparency and reduce the chances of false claims or duplicate records.

The use of concept hierarchy improves classification and matching efficiency, allowing users to quickly identify potential matches for their lost belongings. Overall, the system reduces manual effort, improves communication between users and administrators, and ensures faster and more reliable recovery of items. The modular and scalable design of the system also allows for future enhancements such as mobile application support, notification services, and integration with institutional systems.

In conclusion, the proposed Lost and Found Management System offers a practical, secure, and efficient solution for managing lost and found items in college environments. Its adoption can significantly enhance campus organization, user experience, and operational efficiency, making it a valuable addition to modern educational institutions.

References

[1]. J. Tan and C. Chong, *"An Effective Lost and Found System in University Campus,"* ResearchGate, Aug. 2025. ResearchGate
[2]. S. Kumar, D. Bhatnagar, D. Gahlot, B. S. Gola, and G. Rajput, *"Web-Based Lost and Found System,"* MIT Int. J. of Computer Science and Information Technology, vol. 11, no. 1, Dec. 2022. ResearchGate
[3]. B. Veeru, S. Kranthi, M. Soumya, M. Amanpasha, and K. Rakesh, *"Lost and Found Website for College Campus,"* IJFANS Int. J. of Food & Nutritional Sciences, vol. 13, no. 04, 2024. IJFANS
[4]. *"Lost and Found System for VNR VJIET,"* IJERT, July 2022. IJERT
[5]. *"Lost and Found System for VNR VJIET,"* IJERT, [Online]. Available: https://www.ijert.org/research/lost-and-found-system-for-vnr-vjiet. IJERT
[6]. J. G. Ballard *et al.*, *"USTP Panaon Lost and Found Management System,"* ResearchGate, Apr. 2025. ResearchGate
[7]. A. T. Abhiram, A. E. B. Krishnan, M. K. Manjith, V. A. P., and A. A., *"CampusTrace- Application for Lost and Found Items on Campus,"* Journal of Trends in Computer Science and Smart Technology, vol. 6, no. 2, 2024. IRO Journals
[8]. *"Digital Lost and Found Item Portal,"* IRJET, Nov. 2024. IRJET
[9]. *"An Assistive Tool for Finding Lost Items — A Review,"* IJERT, [Online]. IJERT
[10]. *"Lost and Found Web Application,"* IJRASET, Nov. 2024. IJRASET
[11]. N. F. Ilias, *"A Web Based System for Lost and Found Items,"* Universiti Teknologi MARA, 2021. UiTM Institutional Repository
[12]. A. Dutta, Y. Tolani, and N. Singhal, *"Automated Lost and Found System with Peer-to-Peer Communication,"* JETIR, vol. 11, no. 5, May 2024. JETIR
[13]. S. K. Singh and N. Kumar, *"Design and Implementation of Lost and Found Web Application for University Campus,"* Int. J. of Computer Applications, vol. 182, no. 40, pp. 15–20, 2019, cited in online project. IJISRT
[14]. B. Veeru, S. Kranthi, M. Soumya, Md. Amanpasha, and K. Rakesh, *"Lost and Found Website for College Campus,"* IJFANS Int. J. of Food & Nutritional Sciences, vol. 13, no. 04, 2024. IJFANS
[15]. *"Lost and Found System for VNR VJIET,"* IJERT, 2023. IJERT
[16]. *"Lost and Found Web Application,"* Int. J. of Innovative Science and Research Technology, vol. 10, no. 5, May 2025. IJISRT
[17]. *"Lost and Found Web Application,"* IJRAS*ET*, Nov. 2024. IJRASET
[18]. M. Zhou, I. Fung, L. Yang *et al.*, *"LostNet: A Smart Way for Lost and Find,"* PLOS One, 2024. PMC
[19]. A. K. EB *et al.*, *"CampusTrace: Application for Lost and Found Items on Campus,"* Trends in Computer Science and Smart Technology, 2024. IRO Journals
[20]. *"YouR Code: Recovering Lost Items,"* IJCRT, Nov. 2024. IJCRT
[21]. *"An Application to Search and Find Lost Items,"* KLIK Journal, 202? (Online access). Klik ULM
[22]. R. Shrivastava, M. Owais, M. Zaid *et al.*, *"Lost and Found Platform,"* Int. J. on Advanced Computer Theory and Engineering, vol. 14, no. 01, 2025. Mathematical Research Institute Journals
[23]. *"Digital Lost and Found Item Portal,"* IRJET, vol. 10, no. 11, Nov. 2024.