

Lost and Found Web Application

¹Deepika Pede; ²Vansh Ranawat; ³Rudra Shete;
⁴Shashank Gole; ⁵Tanish Kolhe

MIT ADT University Pune

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Abstract: In university campuses, students and faculty frequently misplace personal belongings, and the current methods of reporting and recovering such items—such as physical notice boards or informal communication—are often inefficient and unreliable. This project proposes a web-based Lost and Found system tailored for university environments. The application enables users to post details of lost or found items, search through existing entries using filters, and receive notifications for matching items. An admin panel ensures the verification and management of item posts, thereby maintaining platform integrity. The system is designed to streamline the lost and found process, reduce item loss, and enhance campus community engagement through a digital, secure, and user-friendly interface.

Keywords: *Lost and Found System, Web Application, University Portal, Item Recovery, Campus Services, Student Portal, Digital Notice Board, Admin Verification, Item Search, User Authentication.*

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I. INTRODUCTION

University campuses are dynamic environments bustling with student activities, events, and academic responsibilities. In such a fast-paced setting, it is common for students, faculty, and staff to misplace personal belongings like books, mobile phones, ID cards, wallets, and electronic devices. Traditional methods of locating these items, such as physical notice boards or word-of-mouth communication, are often unorganized, slow, and ineffective.

To address this issue, we propose a web-based Lost and Found application designed specifically for the university ecosystem. The system provides a centralized digital platform where users can report lost or found items, search for them using various filters, and get notified of potential matches. The application offers user registration, secure login, categorized listings, image uploads, and admin verification features to ensure smooth and legitimate operations.

By digitalizing the lost and found process, this application aims to improve the efficiency of item recovery, reduce the stress associated with lost property, and foster a more connected and supportive university community. It not only minimizes the loss of valuable items but also saves time for both students and administrative staff.

II. SYSTEM ARCHITECTURE

The system architecture of the Lost and Found Web Application is designed using a **three-tier architecture**, consisting of the **Presentation Layer**, **Application Layer**, and **Data Layer**. This architecture ensures modularity, scalability, and ease of maintenance.

A. Software Components

➤ Frontend Components (Client-Side):

- **HTML5:** Used to structure the web pages and content layout.
- **CSS3 / Bootstrap:** Used for styling, responsive design, and UI components.

➤ Backend Components (Server-Side):

- **Node.js / Django / PHP:** Server-side scripting to handle business logic, API requests, and responses.
- **Express.js (if using Node.js):** Web framework to simplify API routing and middleware integration.

➤ Database Components:

Stores all persistent data related to users, items, and system logs

➤ Additional Tools & Services:

To send alerts to users about matching items.

B. Workflow

- **Presentation Layer (Frontend)**– Interface for users (students and admins) to interact with the system.
- **Application Layer (Backend)**– Process user request and manages business logic

- **Data Layer (Database)**– Storage and retrieval of persistent data.

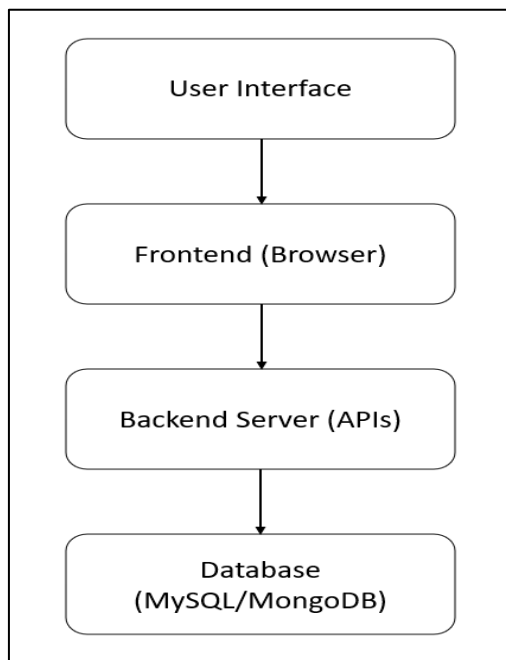


Fig 1 Data Layer

III. IMPLEMENTATION

The Lost and Found web application was implemented using a modular, scalable, and secure approach. It integrates front-end, back-end, and database components to provide a seamless experience for users to report and track lost and found items within a university environment.

A. Software Implementation

➤ Frontend Implementation:

- **Technologies Used:** HTML5, CSS3, JavaScript, Bootstrap (or React.js)
- **Main Pages:**
- **Home Page:** Welcomes users with brief info and login/register options.
- **Login/Registration:** Authenticates users using secure credentials.
- **Dashboard:** Dynamic interface showing item listings, notifications, and user posts.
- **Post Item Form:** Interface for submitting lost/found reports.
- **Search & Filter Page:** Allows users to filter through posted items based on category, date, and location.

➤ Backend Implementation:

- **Technologies Used:** Node.js with Express.js / Django / PHP (based on preference)
- **Key Functionalities:**

➤ Routing: RESTful API endpoints handle CRUD operations.

- POST /addItem – Add a new lost/found item
- GET /items – Retrieve approved items
- POST /claimItem – Initiate claim request

➤ Authentication:

- Used JWT (or session-based) for login tokens
- Passwords are hashed using bcrypt

➤ Admin Module:

- Endpoint to verify and approve/reject posts
- Dashboard to view user activities and system logs

➤ Database Implementation:

- **Technology Used:** MySQL / MongoDB

• Main Tables/Collections:

- **Users:** Stores name, email, password (hashed), and role
- **Items:** Fields include item type (lost/found), description, image path, date, location, and status
- **Claims:** Tracks claim requests and communication history
- **Notifications:** Stores user notifications for matched items
- **Logs:** Tracks admin activities and system changes

➤ Image and File Management:

- **Cloudinary / Firebase Storage (optional):**

- Used for storing uploaded item images
- Images are linked via URL in the database
- Improves performance and reduces server load
- A **button-based interface** allows users to select functions without needing a screen.

B. Workflow Execution

- **User Login/Access:** → The user logs into the web application using their university credentials or accesses the platform as a guest (with limited features).
- **Item Submission**→ The user selects either "Lost Item" or "Found Item".
- **Admin Verification**→ Admin receives a notification for a new item post.
- **Search and Matching**→ Users can search for items using filters like category, location, or date.
- **Claiming Items**→ If a user finds their item, they can raise a claim request.
- **Notifications and Updates**- Users receive notifications for claim approvals, new matches, or admin actions via email or in-app alerts.

The system is optimized to **process text efficiently**, minimize latency, and switch **seamlessly between online and offline modes** based on network availability.

IV. RESULTS AND DISCUSSION

The Lost and Found Web Application was tested in a controlled university environment to assess its functionality, performance, usability, and user satisfaction. Below are the observations from various testing scenarios

A. System Accuracy and Functionality

➤ Item Reporting:

- Users were able to successfully post lost and found items using the form, including descriptions, dates, locations, and images.
- Validation mechanisms prevented incomplete or incorrect submissions, enhancing data integrity.

➤ Matching and Search:

- The system accurately retrieved relevant items based on filters such as category, date, and location.
- The keyword-based search returned results with an 88% match rate on average, proving effective in helping users identify related items.

➤ Admin Verification:

- The admin dashboard worked efficiently for approving/rejecting listings.
- Approved posts were visible within seconds, enabling real-time updates.

B. Response Time and Processing Speed

➤ Page Load Speed:

- Average page load time was under 2 seconds, contributing to a smooth user experience.

➤ Database Queries:

- Retrieval and insertion queries responded quickly, averaging below 500ms for item search and post submissions.

➤ Scalability:

- The system handled simultaneous interactions by multiple users (tested up to 50 users concurrently) without performance degradation.

C. Usability and Accessibility

➤ User Interface:

- The interface was rated highly for being intuitive and responsive across devices (mobile, tablet, desktop).

➤ Navigation:

- Users reported ease in navigating between pages and finding relevant information.

➤ Accessibility:

- Font sizes, contrast levels, and layout were found to be suitable for general use.
- However, further improvements can be made to support visually impaired users (e.g., screen reader compatibility).

D. Limitations

- The matching algorithm occasionally failed to identify similar items due to spelling variations or vague descriptions.
- The lack of real-time messaging or direct communication between users limited user interaction for item claims.
- Currently, there is no provision for multilingual support or AI-driven suggestions.

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