

# **AI-BASED LOST ITEM RECOVERY SYSTEM**

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**Abstract:** This paper presents an AI-based lost item recovery system that helps users find lost belongings efficiently. The system uses computer vision and machine learning to identify and match lost items with found items. Images are analyzed and compared with a centralized database for accurate detection. It provides real-time results and notifications to users. The system reduces manual effort and improves recovery chances. Overall, it offers a fast, reliable, and user-friendly solution for lost item management.

**Keywords:** AI-Based Lost Item Recovery, Computer Vision, Machine Learning, Image Matching, Lost and Found System, Real-Time Detection.

## **1. INTRODUCTION**

In today's fast-paced world, losing personal belongings in public places has become common. Traditional lost-and-found systems rely on manual processes, which are often slow and inefficient. The proposed AI-Based Lost Item Recovery System introduces a smart approach to manage lost items digitally. It uses image processing and pattern recognition to identify and match items. This system improves accuracy, reduces delays, and provides an efficient solution for lost item management.

## **2. Literature Survey**

The lost item recovery process has evolved from traditional manual systems to intelligent AI-based solutions. Earlier approaches relied on web-based platforms and manual reporting, which were time-consuming and less efficient. These systems required users to search databases manually, leading to delays in recovery.

Recent advancements use artificial intelligence, computer vision, and machine learning to automate object detection and identification. Image-based matching techniques help compare lost items with stored data, improving accuracy and reducing human effort. Some systems also use surveillance and cloud technologies to enable real-time tracking and centralized data management.

From the reviewed literature, the following key observations can be made:

- Early systems depended on manual reporting and database search.
- AI and computer vision enable automated detection and matching.
- Image processing improves accuracy and efficiency.
- Cloud-based systems support real-time access and scalability.

These developments show a clear shift toward smart, automated solutions for efficient lost item recovery.

## **3. Proposed System**

The proposed AI-Based Lost Item Recovery System is designed to intelligently identify and match lost and found items using both image and text data. Users can upload details of lost or found objects through a web or mobile interface, including images and descriptions. The system preprocesses the input by refining images and cleaning textual data to ensure accurate analysis.

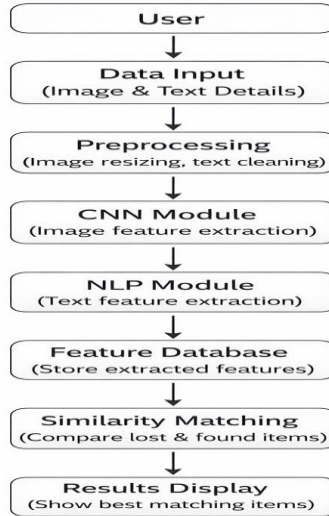


Fig 1: Proposed System

A deep learning-based CNN model is used to extract visual features from images, while an NLP module processes textual descriptions to capture semantic information. These extracted features are stored in a centralized database for efficient retrieval. The system then performs similarity matching between newly uploaded items and existing records to identify potential matches. Finally, the system displays the most relevant results to users and provides notifications, enabling faster recovery of lost items. This approach reduces manual effort, improves accuracy, and offers a smart, automated solution for lost item management.

#### 4. Methodology

The methodology of the system is organized into the following steps:

1. Data Collection: Users submit lost or found item details, including images and text descriptions, through the system interface.
2. Data Input: The system accepts and stores uploaded images along with relevant textual information such as item name, location, and time.
3. Preprocessing: Input data is cleaned and prepared; images are resized and enhanced, while text is normalized for accurate analysis.
4. Image Feature Extraction: A Convolutional Neural Network (CNN) is used to extract visual features from the uploaded images.
5. Text Feature Extraction: Natural Language Processing (NLP) techniques are applied to extract meaningful information from text descriptions.
6. Feature Storage: Extracted image and text features are stored in a centralized database for efficient retrieval.
7. Similarity Matching: The system compares new entries with existing records using similarity algorithms based on combined features.
8. Result Ranking: Matching items are ranked according to similarity scores to identify the best possible matches.
9. Results Display: The system presents matched results to users through a user-friendly interface along with notifications.
10. Continuous Update: The system continuously updates the database and improves matching accuracy as new data is added.

### 5. Proposed System Hardware Results

The proposed system successfully identifies and matches lost and found items using uploaded images and text descriptions. The system accurately recognizes objects based on visual features such as shape, color, and patterns, along with textual information provided by users. It effectively compares new inputs with existing records in the database and displays relevant matches. Users can easily view results and retrieve item information through a simple interface without manual searching. The response time of the system is fast, providing quick matching results within a few seconds. The system performs well when clear images and proper descriptions are provided, ensuring reliable accuracy. Overall, the results demonstrate that the proposed system offers an efficient, user-friendly, and automated solution for lost item recovery.

- Accurate matching of lost and found items using image and text data.
- Fast response time with efficient similarity detection.
- Easy-to-use interface for uploading and viewing results without manual effort.

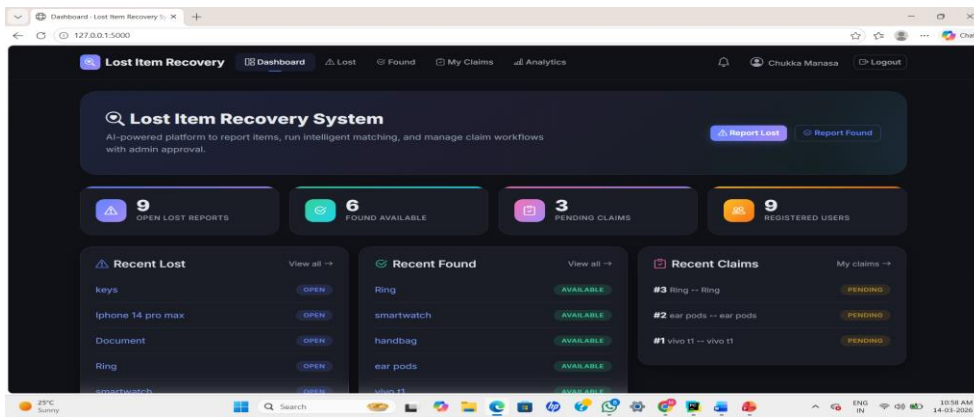


Fig 2: User Interface

The system showed consistent performance in processing inputs, detecting items, and generating matching results. Overall, it demonstrated reliable and effective operation in managing and recovering lost items.

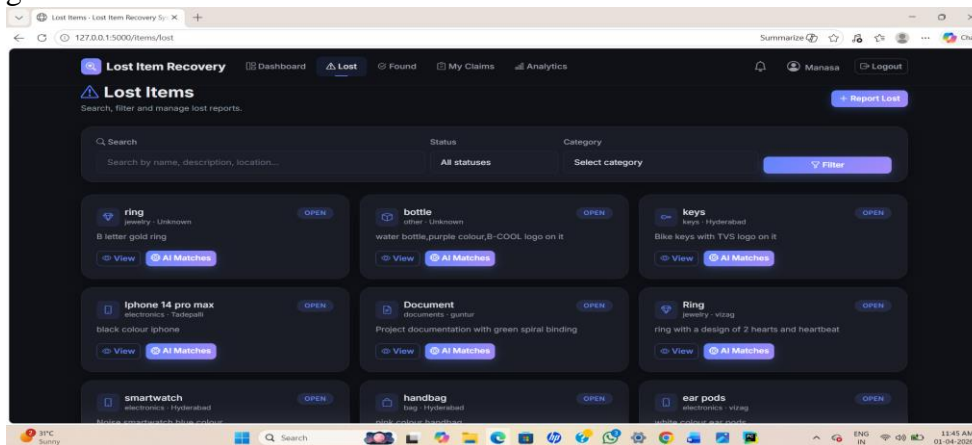


Fig 3:Lost items

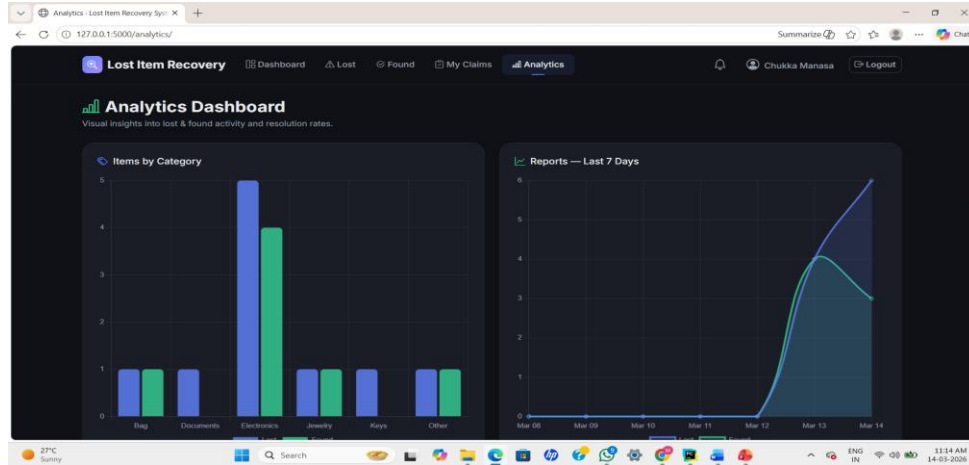


Fig4:Analytics Dashboard

## 6. CONCLUSION

The proposed AI-Based Lost Item Recovery System provides an efficient solution for identifying and matching lost items using image and text data. It overcomes the limitations of traditional manual methods by automating the entire process. The system offers a simple and user-friendly interface for easy interaction. It delivers accurate results when clear inputs are provided. The response time is fast, ensuring quick matching and retrieval. Overall, the system improves efficiency and reliability in lost item management. Additionally, the system reduces manual effort and minimizes the chances of errors. It can be easily scaled and adapted for use in various real-world environments such as campuses and public places.

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