



FindIt+: A Mobile-Based Lost and Found Management System Using Image and Text Matching

¹V.Krishna Teja, ²P. Uhaaravindsai, ³M.Nishanth, ⁴Harish Rao Salunke

¹Assistant Professor, ²Student, ³Student, ⁴Student

¹Information Technology,

¹ACE Engineering College, Ankushapur, India, Krishna568943@gmail.com

²ACE Engineering College, Ankushapur, India, aravindsaipotla@gmail.com

³ACE Engineering College, Ankushapur, India, mamidinishanth034@gmail.com

⁴ACE Engineering College, Ankushapur, India, harishsalunke2004@gmail.com

Abstract : In our day-to-day life, many times we misplace valuable things like a wallet, mobile phone, ID cards, etc. The existing system for finding lost things is not efficient. In this project, a mobile application named FindIt+ is developed to make the task easier for finding lost things. The application will enable the user to upload the information regarding the lost item. The information will be stored in the database. Image comparison will be done for finding the matching item. The request for the item will be sent. The verification will be done using OTP. The application will make the task easier for finding the lost item.

Keywords : Lost and Found System, Mobile Application, Item Matching, MongoDB, Node.js, React Native.

I. INTRODUCTION

The issue of losing personal belongings is a common problem in various areas, including colleges, transport, and offices. The conventional approach to the lost-and-found system is based on manual records and notice boards. However, the conventional system is slow and inefficient. In the conventional system, the users face difficulties in reporting the lost items.

The problem can be solved with the application of modern technologies like mobile applications. The FindIt+ system is developed to solve the problem. The system is based on a mobile-based platform for reporting the lost/found items. The system allows the users to search for the lost items easily.

II. LITERATURE REVIEW

The problem of handling lost and found items is one area that has attracted more attention in recent times, particularly with the rapid growth of urban and public spaces. Conventional methods have proven to be inefficient, prone to human error, and lack accessibility in handling lost and found items. These problems have led various researchers to explore more innovative solutions using modern technology to increase efficiency in handling lost items.

Some initial solutions to this problem were based on web-based systems, which enabled users to report lost or found items through various websites. These systems provided a centralized database for handling lost items, which improved communication among users. However, this solution relied heavily on keyword-based searches, which were found to be inaccurate in most cases due to differences in descriptions, spelling, and lack of information.

Recently, with advancements in mobile technology, mobile-based solutions have proven to be more efficient in handling lost and found items. These solutions enabled users to report lost or found items in real time from anywhere in the world. Some systems also utilized location-based services to increase efficiency in handling lost items. However, most mobile-

based solutions still rely heavily on manual inputs and filtering techniques, which have proven to be inefficient in handling complex situations.

Recent advances in computer vision and machine learning have led to the development of even more sophisticated techniques for dealing with this problem. Image-based matching techniques make use of advanced machine learning algorithms for analyzing images based on factors such as shape, color, etc. Using these techniques has been found to provide better results for object matching since these algorithms enable the identification of similarities even if the text is not available.

In addition to these techniques, researchers have also used Natural Language Processing (NLP) techniques for dealing with the problem of object matching. NLP is used for analyzing text in an intelligent manner. Using NLP for object matching has been found to provide better results since it enables the extraction of meaningful information from the text.

Recent studies have focused on using both image and text data for object matching. Using both types of data has been found to provide better results since these techniques make use of both computer vision and NLP for object matching. Moreover, the use of cloud computing has enabled the enhancement of the performance of these techniques since cloud computing enables real-time data processing.

III. PROPOSED SYSTEM

FindIt+, the proposed system for managing lost and found property, will consist of a mobile application which allows users to document items they have lost or found, including entering Title, Description, Category, Location, and uploading pictures of the item to a central database.

The system will automatically compare the database records of lost and found items and pictures to determine if there are any items within the database that match. When items match with those entered into the system, a user will be able to create a claim to re-claim the matching item.

The claim process will use the One-Time Password (OTP) Authentication process and Admin Approval to confirm that the returned item is going back to the original owner. Users will be notified of their claim status and will be able to interact with the FindIt+ Support Team to ensure the best possible experience of using this service.

IV. IMPLEMENTATION

The system architecture of FindIt + is based upon the client-server model, with the mobile application acting as the client and the back-end services (or Back-end) serving as the server. This model allows for scaling, flexibility, and efficient data management.

The front end of the application is built using a combination of React Native & Expo, as well as other related libraries in JavaScript, allowing for development across multiple platforms at a faster pace than traditional development methods. The UI is created to provide an easy-to-use experience for users, permitting them to report lost items, search for matches, and submit claims within the application through an easy-to-navigate interface. Forms are created to provide both text descriptions and photographs of items being returned, thereby providing a detailed set of inputs when reporting lost items.

The back end of the application is built on a Node.js server using Express.js (a web application framework) for routing APIs and processing requests as well as business logic. To achieve this goal, the development team utilizes RESTful API methods to allow efficient communication between the client and back end. This means smooth communication between these systems allowing users to easily move their data between devices. In addition, the system uses authentication methods to control access, validation processes to verify data input by users, and error-handling processes to ensure the reliability of the system.

Finally, the application uses a cloud-based database system, MongoDB Atlas (a cloud-based NoSQL database), for storing all user information, item description, images, and claimant information. The design of the NoSQL database was created to support fast and efficient querying of records, particularly with respect to lost and found matching.

Finally, the system separates its core functionalities into logical modules, as follows:

User Authentication: Facilitates registration and Log-In and secure access through OTP verification.

User Item Management: Provides the ability to report lost and found Items via picture upload and description.

Matching: Compares New Item Entries against Existing Item data using text similarity and image features.

Claims Verification: Allows users to request Claim of Ownership with both admin confirmation and Verification systems.

Notifications: Provides users with updates as to Matches and Claim status.

Combining these modules creates a seamless flow from reporting an item through claiming it successfully.

V. RESULTS AND TESTING

The FindIt+ System Evaluation

Finally, a number of functional and performance tests were carried out on the FindIt+ system to ensure its reliability and usability. Tests were conducted using several user scenarios in a controlled environment.

Functional Testing

Each module was tested in isolation and the complete workflow was tested by performing all necessary actions.

User registration and login were validated with right and wrong inputs.

The item posting function was tested on different types of data, including images and text descriptions.

Matching functionality was checked by comparing the newly uploaded items with the records already in place.

Claim requests were tested to ensure that there was a proper validation and approval flow.

Performance Testing

Under normal usage, the system showed a stable performance.

The time interval for responses issued via APIs was deemed tolerable, and the operation involving data retrieval was considered effective.

The use of cloud-based storage ensured availability and scalability at all times.

Usability Testing

The application with the simple interface designed for the user could interact with the application without any difficulty.

Accessibility was ensured by requiring little effort both during reporting and when searching for items, thus allowing first-time users to utilize the system without problems.

Security Testing

OTP-Based authentication, combined with above-mentioned validation mechanisms, dictated secure access.

Unauthorized access attempts were limited, and user data was treated in a secure manner.

Observed Results

Based on input data, accurate matching results were generated.

Users reported successfully and retrieved items. Claim verification was proven to be correctly administered with proper authorization. The system exhibited a level of certainty by producing consistent and reliable results in various contexts. Overall Conclusion This was proven during the testing stage when it was established that the system is effective and accurate for its purposes.

VI. CONCLUSION

The FindIt+ system is a modern, efficient way of using mobile technology to manage lost and found. By replacing the traditional manual practices with a digital platform, the system realizes improved accessibility to the service, lesser processing time, and a better user experience.

One of the key strengths of the system is identification of similar items based on image and text-based matching techniques, which provides the accuracy of identifying items. The combined approach compensates for the weaknesses of all other existing systems that use only either images or textual inputs.

Features such as strong authentication, claim verification, and real-time interaction make the system reliable, efficient, and user-friendly. Also, the use of scalable technologies ensures that the system can scale with data or user requirements.

The project shows how some emerging technologies—mobile computing, cloud database, and intelligent matching techniques—are used to solve real-life problems successfully. Finally, it lays a foundation for further improvements to the system in the future, including AI-based advanced matching, real-time notifications, and integration with external services.

Thus, FindIt+ is not only about reporting and retrieving lost items but also about creating a more interconnected and cohesive digital ecosystem.

VII. REFERENCES

1. A. Verma and S. Gupta, "Design and Development of a Web-Based Lost and Found Management System," *International Journal of Computer Applications*, vol. 182, no. 45, pp. 15–19, 2019.
2. R. Sharma, P. Singh, and K. Mehta, "Mobile Application for Lost Item Tracking Using Location-Based Services," *International Journal of Engineering Research & Technology (IJERT)*, vol. 10, no. 6, pp. 234–238, 2021.
3. J. Redmon, S. Divvala, R. Girshick, and A. Farhadi, "You Only Look Once: Unified, Real-Time Object Detection," in *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016, pp. 779–788.
4. M. Sandler, A. Howard, M. Zhu, A. Zhmoginov, and L. Chen, "MobileNetV2: Inverted Residuals and Linear Bottlenecks," in *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018, pp. 4510–4520.
5. K. He, X. Zhang, S. Ren, and J. Sun, "Deep Residual Learning for Image Recognition," in *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016, pp. 770–778.
6. T. Brown et al., "Language Models are Few-Shot Learners," in *Advances in Neural Information Processing Systems (NeurIPS)*, vol. 33, pp. 1877–1901, 2020.
7. S. Hochreiter and J. Schmidhuber, "Long Short-Term Memory," *Neural Computation*, vol. 9, no. 8, pp. 1735–1780, 1997.
8. D. Jurafsky and J. H. Martin, *Speech and Language Processing*, 2nd ed., Pearson, 2009.
9. M. Fowler, *Patterns of Enterprise Application Architecture*, Addison-Wesley, 2002.
10. E. Gamma, R. Helm, R. Johnson, and J. Vlissides, *Design Patterns: Elements of Reusable Object-Oriented Software*, Addison-Wesley, 1994.
11. N. Naik, "Cloud Computing in Mobile Applications," *International Journal of Advanced Computer Science and Applications*, vol. 8, no. 4, pp. 45–50, 2017.
12. K. Bankar and S. Patil, "A Survey on Image Matching Techniques in Computer Vision," *International Journal of Computer Science Trends and Technology*, vol. 5, no. 2, pp. 112–116, 2017.