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# ABSTRACT

In today's fast-paced world, the loss of personal belongings is a frequent and often stressful occurrence, particularly in crowded public spaces such as airports, malls, and universities. Traditional lost-and-found systems are inefficient, relying on manual processes that are time-consuming and prone to human error. To address this issue, we have developed a deep learning-based Lost and Found App that automates the identification and matching of lost items with those found by others. The system leverages state-of-the-art artificial intelligence models, specifically BLIP (Bootstrapped Language-Image Pre-training) for image captioning and BERT (Bidirectional Encoder Representations from Transformers) for natural language processing, to streamline this process.

The system allows users to either report a lost item by submitting a textual description or upload an image of a found item. The BLIP model generates accurate and descriptive captions for the images, focusing on key visual characteristics like color, shape, and unique features (such as logos or markings). These captions are then matched with user-submitted descriptions using the BERT model, which creates semantic embeddings of the textual data. A cosine similarity algorithm is employed to compare the embeddings, enabling the system to identify potential matches. When a match exceeds a predefined similarity threshold, real-time notifications are sent to both the person who found the item and the person who lost it, improving the speed and reliability of item recovery.

The primary objectives of this project were to develop an automated solution that minimizes manual effort, reduces human error, and provides a faster, more accurate matching process for lost-and-found services. A user-friendly web interface was created to ensure accessibility, catering to both tech-savvy and non-technical users alike. The system also includes a scalable database to store images, item descriptions, and user data, ensuring robust and secure operations across multiple public and private settings.

The scope of the project extends beyond individual applications. It can be deployed in large-scale environments like airports, transportation hubs, and educational institutions, where the volume of lost-and-found items is substantial. The system can also be adapted for smaller, private settings like offices or campuses to streamline internal lost-and-found processes.

The results of this project demonstrate the feasibility and effectiveness of using deep learning to automate the lost-and-found process. By significantly improving accuracy and reducing the manual workload, the system represents a substantial improvement over traditional methods. It also highlights the potential for AI-driven solutions to enhance user experience in high-traffic environments where lost belongings are a common issue.