**1.0 Introduction**

This report will provide a comprehensive understanding as well as an overview of the final object that will be created through a review of the literature. It will also include defining the design and the methods that will be utilized. The review of existing research will help with an extensive review of the appropriate themes and issues connected with the project, while providing direction for the layout and method.

**1.1 Aim and Objectives**

The aim of this project is to develop an easily searchable and user-friendly website that connects people who have lost their personal items with those who have found them. This platform will enable effective communication and promote a cooperative community effort to reunite misplaced property with its rightful owners.

The following objectives have been set to fulfill the aim of this project:

 Objective **1:** Create a powerful search engine for users to find lost or found items based on details like location, date, and type of item.

 Objective **2:** Design features for businesses to manage lost and found items, especially in hotels, workplaces, and public spaces.

 Objective **3:** Develop a secure messaging system for communication between users and lost property employees.

 Objective **4:** Reduce costs, effort, and time required to manage lost and found properties compared to traditional methods.

 Objective **5:** Conduct user surveys to evaluate system acceptability and achieve a user satisfaction.

 Objective **6:** Ensure the platform is easy to use, up-to-date, and accessible from multiple devices, including mobile.

### 1.2 Literature Search Methodology

This project mainly covers the topic of lost and found systems with a focus on their design and implementation. To identify quality academic resources on this subject, a thorough list of search terms and a well-defined methodology will be employed. This preparation will include background reading and leaning on own knowledge from previous projects with inventory management and item recovery systems. The search terms for the literature review will be based on the project's title and topics. The purpose of reviewing the relevant literature is to identify significant ideas and evidence to help the project's research into effective tactics and technology for enhancing lost and found systems.

**Search Terms:**

* Lost and found, Lost and found Systems, Lost items, Found items, Lost and found services, Lost and found platforms, User communication, User interaction, User-friendly design, User experience, Customer feedback, Search functionality, Item categorization, Web-Based Lost and Found System, Lost and Found Assistance App, Missing items, Ifound, Item Recovery Application, Lost and Found on Public Transportation

To conduct the literature review, resources were sourced from Google Scholar, IEEE Xplore, and the University Library databases.

**2. Literature Review**

**2.1 Themes**

The themes that are going to be discussed in this literature study include 12345. Breaking down my project into 5 themes will help me gather appropriate sources and facts.

**A thematic approach has been used to identify key areas necessary for developing the object of study. Keywords for each theme were selected to gather information from the literature, providing clarity and knowledge on each topic. The table below lists the themes and the keywords used to find relevant and specific literature.**

**During the literature review, such keywords will be used with a focus on recent publications to verify that the information is current and credible, while avoiding older sources. Each theme is important to the subject in an original way, and the sources will give context and help for the design and methods needed to create the final objects.**

**Note: yesma chai garnu hunu nai baki xa hai????????????????????**

**Review of Literature**

In this part of the report, I will review relevant literature on my chosen themes and topics, as well as relevant material on my project as a whole. I will explain how these may benefit or connect to my research.

1. **Lost and found items**

The problem of missing or misplaced things often rises day by day. People who lost the items will difficult to find their items back. Previous studies revealed that owner would waste their time to search the items around 16 to 55 minutes per day (Ahmad et al., 2015). Therefore, several surveys are conducted by various organizations and research to highlight the problem of lost and misplaced item's objectives. The current lost and found system available in the market, such as Troov, is not convenient to the students as the system is designed for the whole world and does not focus on a specific area (Troov, 2022). The question of these issues is the people difficult to find their items when they are losing it. Some of the lost items are valuable items like a wallet, handbag, clothes, phone, and an umbrella. Frequently, these issues happened at schools, universities, hotels, transportation, and so on. But typically, at school, they introduce a method where every student needs to remark their valuable items like to put a phone number, name, or address, and they also provide a box if someone found something useful. Unfortunately, social media is not a safe platform for finding lost items because there are many disadvantages, such as hacking, scammer, thief, fake account, and security issues. Therefore, a lot of solutions are being proposed in the market to solve these issues. Some of the solutions use GPS, and an RFID to detect the owner of the details and also used communication technology like SMS and an email notification to send information.

1. **Technological Solutions and Innovations**

Technology has been modernizing from a few recent times. It facilitates the network of the problems and make it less problem network. So that the betterment of the humankind can take place. However, when it comes to lost and found and about the personal belongings of the persons that are lost then some researches are done for that but most of them takes problem of how to locate the items properly (Marti and George 2009).Therefore, a lot of solutions are being proposed in the market to solve these issues. Some of the solutions use GPS, and an RFID (Radio frequency identification system) to detect the owner of the details and also used communication technology like SMS and an email notification to send information. The RFID reader can recognize the object without direct line-of-sight (Shah & Singh, 2016), while the barcodes are line-of-sight technologies. Global Positioning System (GPS) is a global satellite navigation system that provides position, speed, and time synchronization for air, sea, and land travel using at least 24 satellites, a receiver, and algorithms. Kyes & Aarthi (2017) claimed that the satellite system has consisted of six orbital planes centered on the earth with four satellites each. Another solution is AppalLOCATE is a reactive web application built in Vue.js that seeks to solve the prevalent lost and found issue at Appalachian State University. The application allows users to report found items, reporting their location and other item information (Wilson 2022). That research included a survey of the community to gauge interest in such an application, and the results showed that community members would be likely to use the application to help others.

Today, most data must be processed and protected from unauthorized people who have always tried to access the information. There have been various threats and attacks that can endanger the info. Meanwhile, the data can be more critical because it can be used by unauthorized individuals (Malik & Patel, 2016) to access them, then manipulate the data and using it for the wrong purpose. It happened because it is possible to improve data security. According to Singh (2015), a DBMS uses a variety of advanced techniques to store and retrieve data efficiently. The database enables the user to retrieve the data stored.

One of the disadvantages of the database is the size. As DBMS is more significant software due to its features, it needs plenty of storage and memory (Thakur, 2016) to run the application efficiently. Then, Castro (2018) claimed that a database contains or stores a large amount of data, especially for bigger organizations.

There were some tools, like Adobe Dreamweaver, MySQL, and Arduino IDE to store data. Kyrnin (2018) revealed that Dreamweaver is designed for new users to help them to start the program and this software's advanced features that make possible from beginning web designer to professional in a short period. Today, MySQL has many leading business and consumer websites and web-based applications, such as Twitter and YouTube. They will be used for both PHP and HTML. Besides, most web scripting languages using PHP language (Christensson, 2007), and most server-based websites use MySQL to access the information from the database.

In a new era, email is a popular communication where email is the primary medium of electronic communication, and it is one of the cheapest (Sah & Parmar, 2017) and fastest platforms. According to Kumar, Vaisla & Kishore (2014), email is a part of application form in the platform on the internet.

1. **User Engagement and Experience**

User engagement and experience are crucial elements in the efficacy and success of digital systems, including lost and found services. User engagement pertains to the degree of interaction and participation a user has with a system, while user experience (UX) encompasses the overall satisfaction and usability of the system. Providing accessible features, like handicap assistance, enhances diversity and encourages user participation (Kafai et al., 1998). Additionally, effective systems that quickly address issues help keep users engaged and content (Jung, 2011).

Surveys, feedback forms, and metrics such as Net Promoter Score (NPS) and User Satisfaction Score were all used to increase engagement. To assess user involvement, both quantitative and qualitative methods are used. Surveys and indicators such as Net Promoter Score (NPS) provide valuable insights into user happiness and loyalty (Hsu, 2012; Kasim and Khalid, 2016).

User involvement and experience are critical to the efficacy and success of digital systems, including lost and found services. User engagement and experience are crucial elements in the efficacy and success of digital systems, including lost and found services. AppalLOCATE is separated into a client-side that encapsulates both the web and mobile versions of the application and a server-side that handles managing the data that users submit. While some work was done on both in (Wilson, 2022), substantial work has been done to improve them and extend their functionality.

1. **Data Security and Privacy**

According to Kimura (2018) found that at school, children recently losing items like school uniform garments. If people saw the garments, then they will put it in a lost and found box. Next, another way how those who lost items and those who discover things manage this situation by interacting with each other using electronic networks such as Whatsapp, Twitter, and Facebook (Loutit, 2017). So, they will use it as a platform to communicate with each other (Hamad, 2017). Unfortunately, social media is not a safe platform for finding lost items because there are many disadvantages, such as hacking, scammer, thief, fake account, and security issues. But expose information details into social media is not safe because somebody not responsible will use it for something terrible purpose. The researcher proposes a web-based system for lost and found items using RFID and use email notification to solve the problem. RFID devices can store the details of the owner by using tags. The researcher wants to use email notification platform to send a notification to the owner. Troov is a lost and found management system developed by Aurelie Tobol, Gregoire Rey-Broth, and Ibrahim Fofana in 2018 (Troov, 2022). In order to recover the lost belongings, users need to prove their ownership of the item by answering the security question correctly. As soon as the users are proven to be authenticated, they will receive the information to pick the item up or have it delivered. When it comes to authenticating lost items, blockchain’s potential is vast. The implications for privacy and security in lost and found operations are significant (Kevin, 2023). Traditional methods often required sharing contact information publicly, but with blockchain, this data can be encrypted and kept secure. Blockchain is setting the stage for a more trustworthy and secure future in the lost and found industry.

1. **Implementation and Case Studies of Lost and Found Systems**

Brandsen, Lambers, Verberne, and Wansleeben, (2019) presented the findings of client requirement solicitation for a quest system of grey literature in archaeology particularly Dutch excavation descriptions. The quest system utilized Named Individual Identification and Information Recover y Methods to generate an operational and uncomplicated pursuit experience. Njuguna, (2018) established an online capability that increased simple recuperation of misplaced individual credentials. Onwuchekwa and Jegede, (2011) considered the thought of information retrieval and the several information retrieval methods. The study also surveyed the operators of the information techniques discussed and their comportment. Lost and Found Kenya (2014) this lost and found medium does not have a module to post lost and found items, everything is posted in one section of the Facebook platform. Githinji (2016) developed a lost and found web application which was limited to businesses and customers.

Through the existing service, people are motivated to help each other. This is a current relevant theme, as we tend to be more individualistic than ever before in our society, and individual autonomy plays an increasing role in defining our individual, philosophic, economic and social viewpoints (Stickdorn, Schneider, Andrews & Lawrence, 2011). The saying system can provide the fastest track with the shortest travel time to a destination based on the density of indoor people in each area (Chen & Liu, 2019). Furthermore, the EasyFind system can evacuate all people in the shortest total time of escape in emergency time by modelling indoor spatial and temporal mobility. It is environmentally friendly because it is paperless; there is no need for printing and paperwork, which is a crucial issue in the airline industry at the moment (Malhotra, Sinha, Godara, Preethi & Angeline, 2018).

1. **User Feedback and Continuous Improvement**

Ongoing development of system relies extensively on user feedback and the support's update process. Useful lost and found systems constantly seek feedback from users through various channels, including surveys, focus groups, and usability testing sessions. These feedback mechanisms provide valuable insights into user experiences, pain points, and suggestions for improvement. Survey is a common method for gathering quantitative and qualitative data on user satisfaction and system effectiveness. For example, Net Promoter Score (NPS) and User Satisfaction Score are metrics that can gauge user loyalty and overall satisfaction (Hsu, 2012; Kasim & Khalid, 2016). Focus groups, on the other hand, allow for in-depth discussions and a deeper understanding of user needs and behaviors.

Usability testing sessions are crucial in identifying specific issues that users encounter when interacting with the system. These tests involve observing users as they navigate the system and perform tasks, providing direct evidence of usability problems and areas for improvement. Orfanou, Tselios, & Katsanos (2015) emphasize the importance of usability in maintaining user engagement and ensuring the system meets users' needs effectively. Once feedback is collected, it is essential to analyze the data and implement changes accordingly. This iterative process involves regularly updating the system based on user input and monitoring the impact of these changes. Successful lost and found systems, such as AppalLOCATE, demonstrate the benefits of incorporating user feedback into the development process. Wilson (2022) highlights how community surveys informed the design and functionality of AppalLOCATE, leading to a more user-friendly and effective application.

The dynamic nature of user needs and technological advancements necessitates a commitment to continuous improvement. By prioritizing user feedback and maintaining a flexible development approach, lost and found systems can adapt to changing requirements and enhance user satisfaction over time. This commitment to improvement not only benefits users but also contributes to the overall success and longevity of the system.