Chapter-1

INTRODUCTION

1.1 Introduction

In a world teeming with technological advancements, the quest to find missing persons has taken a groundbreaking turn through the integration of Artificial Intelligence (AI). This report delves into the innovative fusion of dlib, JSON (JavaScript Object Notation), and the K-nearest neighbors (KNN) algorithm, presenting a formidable methodology for locating individuals who have become lost or unaccounted for.The amalgamation of dlib's facial recognition capabilities, JSON's versatile data interchange format, and the robust KNN algorithm forms a dynamic trio that transcends traditional search methods. AI has become an indispensable ally in addressing the challenges associated with locating missing persons by leverageing the power of data analysis, pattern recognition, and real-time decision-making.

As we navigate through the intricate landscape of this cutting-edge approach, we will explore the individual contributions of dlib, JSON, and the KNN algorithm, unveiling the synergy that propels their collective efficacy. The transformative potential of this integrated solution extends beyond conventional methods, offering a paradigm shift in the way we approach and resolve cases of missing persons. Join us on this journey into the realm of AI-driven search and rescue, where the fusion of technology and empathy opens new avenues for reuniting loved ones and ensuring the safety and well-being of individuals in distress**.**

1.2 Reason for the Project

Every day, a countless number of people around the world go missing, including children, teenagers, mentally challenged individuals, and elderly people with Alzheimer's disease. Unfortunately, many of them remain unaccounted for. This paper suggests a solution that can aid both law enforcement and the general public

in finding missing individuals more quickly by using facial recognition technology. Facial recognition technology has numerous applications, but one of its greatest benefits is finding missing persons. To simplify the process of locating missing individuals, we plan to develop an application that can be accessed by volunteers, allowing us to find the missing person in a shorter period of time. This will make it easier for law enforcement to find the specific person they are looking for. In addition, there is a need for automation to help identify missing individuals by comparing images and determining if they have similar characteristics. This will help determine if the missing person in the image captured from a specific location is indeed the person they are looking for. Our application will have a feature that saves all of the missing person's data, allowing the system to detect that image data and track the missing person. As technology advances, facial recognition and detection have become the primary means by which we identify individuals. This technology has seen significant growth in recent years, making it easier to identify individuals with ease. The purpose of our project is to create a tool that can aid in the search for missing persons. This tool will be accessible to both the general public and the police department, allowing them to quickly locate loved ones who have gone missing. The project includes a comprehensive database of missing persons, allowing police to investigate cases and guardians to file reports. Additionally, individuals can upload images of missing persons, which will be compared to the images in the database, resulting in a match.

1.3 Motivation

Physically it takes huge time, as it is lengthy procedure for finding missing person as it increases time to launch an FIR in police station. Also during handy process workforce for searching missed person is not so great and due to this half of the cases remain mysterious. An alarming fact about India’s missing children is that 296 children go missing every day on average. And every month, that is a disturbing number of 9,019, half of them remain untraceable. Shockingly, when India was dealing with the Covid-19 pandemic in 2020, the total number of children missing across India was 1,08,234, according to the National Crime Records Bureau data. 33,456 girls were reported missing and 15,410 boys were missing, and

43,661 of them remained untraceable till the end of the year. However, the statistics are indicative of the absence of a national Missing Children's repository. "There are no budgets earmarked for tracking missing people," said an official source.

The motivation behind harnessing artificial intelligence (AI) for the task of finding missing persons is deeply rooted in the imperative to enhance the efficiency and effectiveness of search and rescue operations. Time is often of the essence in these cases, and AI presents a compelling solution by rapidly processing vast amounts of data. The utilization of advanced technologies, such as facial recognition and biometric analysis, aims to bring a heightened level of precision and accuracy to the identification process, thereby reducing false positives and directing resources more strategically. The scalability and efficiency inherent in AI systems are particularly crucial, allowing for the simultaneous analysis of diverse information sources and coverage of extensive areas in a fraction of the time required by traditional manual methods.

Moreover, AI's capacity for behavioral analysis and pattern recognition introduces a strategic dimension to search operations, enabling teams to predict potential routes or locations based on historical data. The integration of AI with surveillance systems is another key motivator, providing real-time monitoring and tracking capabilities that prove invaluable in urban environments with extensive camera networks. Cross-platform collaboration, facilitated by AI, ensures effective information sharing among various stakeholders, optimizing the collective effort to locate the missing person. Beyond the technological advantages, the humanitarian impact serves as a profound motivator. The timely and safe retrieval of missing individuals holds the potential to reunite families, alleviate emotional distress, and, in some instances, even save lives. In essence, the motivation for deploying AI in the search for missing persons is grounded in a commitment to leveraging advanced technologies for the greater good, with the ultimate goal of positively impacting individuals and communities by ensuring the prompt and safe reunion of loved ones.

1.3 Aims & Objectives

Provide an overview of the project, emphasizing the significance of using AI in locating missing persons. Highlight the increasing number of missing persons cases and the potential of AI technology to assist in search and rescue efforts.

Develop an AI system that enhances the efficiency of locating missing persons.

Integrate machine learning algorithms and data analysis techniques to improve the accuracy and speed of the search process. The integration of artificial intelligence (AI) in the search for missing persons is driven by several key aims and objectives. Firstly, the endeavor seeks to significantly enhance efficiency and speed by employing AI algorithms for rapid analysis of extensive datasets, particularly in facial and image recognition.

Another crucial goal is to improve the accuracy of identification, achieved through the development and deployment of advanced biometric analysis tools like facial recognition and gait analysis, thereby minimizing false positives. Integrating AI with existing surveillance systems is also a pivotal aim, ensuring seamless collaboration between AI and various data sources such as surveillance cameras and social media platforms. Furthermore, the application of AI in behavioral analysis aims to understand and predict the behavior of missing persons based on historical data and patterns, aiding in search efforts. Data fusion and cross-platform collaboration objectives focus on leveraging diverse data sources for comprehensive searches, while user-friendly interfaces facilitate effective collaboration between AI systems and human search teams. Addressing privacy and ethical considerations remains paramount, with the implementation of robust safeguards to ensure responsible and transparent use of AI

Chapter-2

FEASIBILITY STUDY

A feasibility study is a crucial step in determining the viability and practicality of a project. For a project involving the use of AI to find missing persons, here's a breakdown of the feasibility study

- ✓ Technical Feasibility
- ✓ Operation Feasibility
- ✓ Economical Feasibility

2.1 Technical Feasibility:

This involves questions such as whether the technology needed for the system exists, how difficult it will be to build, and whether the firm has enough experience using that technology. The assessment is based on outline design of system requirements in terms of input, processes, output, fields, programs and procedures. This can be qualified in terms of volume of data, trends, frequency of updating in order to give an introduction to the technical system. The application is the fact that it has been developed on windows XP platform and a high configuration of 1GB RAM on Intel Pentium Dual core processor. This is technically feasible .The technical feasibility assessment is focused on gaining an understanding of the present technical resources of the organization and their applicability to the expected needs of the proposed system. It is an evaluation of the hardware and software and how it meets the need of the proposed system.

The technical issue usually raised during the feasibility stage of the investigation includes the following:

- ✓ Does the necessary technology exist to do what is suggested?
- ✓ Do the proposed equipments have the technical capacity to hold the data required to use the new system?
- ✓ Will the proposed system provide adequate response to inquiries, regardless of the number or location of users?

- ✓ Can the system be upgraded if developed?
- ✓ Are there technical guarantees of accuracy, reliability, ease of access and data security?
- ✓ Earlier no system existed to cater to the needs of 'Secure Infrastructure Implementation System'.
- ✓ The current system developed is technically feasible. It is a web based user interface for audit workflow at NIC-CSD.
- ✓ Thus it provides an easy access to the users. The database's purpose is to create, establish and maintain
- ✓ a workflow among various entities in order to facilitate all concerned users in their various capacities or roles. Permission to the users would be granted based on the roles specified.

2.2 Operational Feasibility

Proposed projects are beneficial only if they can be turned out into information system. That will meet the organization's operating requirements. Operational feasibility aspects of the project are to be taken as an important part of the project implementation. Operational feasibility is the measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development. The operational feasibility assessment focuses on the degree to which the proposed development projects fits in with the existing business environment and objectives with regard to development schedule, delivery date, corporate culture and existing business processes. To ensure success, desired operational outcomes must be imparted during design and development.

These include such design-dependent parameters as reliability, maintainability, supportability, usability, product , disposability, sustainability, affordability and others. These parameters are required to be considered at the early stages of design if desired operational behaviours are to be realised. A system design and development requires appropriate and timely application of engineering and

management efforts to meet the previously mentioned parameters. A system may serve its intended purpose most effectively when its technical and operating characteristics are engineered into the design. Therefore, operational feasibility is a critical aspect of systems engineering that needs to be an integral part of the early design phases.

Some of the important issues raised are to test the operational feasibility of a project includes the following: -

- ✓ Is there sufficient support for the management from the users?
- ✓ Will the system be used and work properly if it is being developed and implemented?
- ✓ Will there be any resistance from the user that will undermine the possible application benefits?

This system is targeted to be in accordance with the above-mentioned issues. Beforehand, the management issues and user requirements have been taken into consideration. So there is no question of resistance from the users that can undermine the possible application benefits perational feasibility, in the context of implementing a system for finding missing persons using AI, encompasses the practicality of integrating the proposed solution into existing operational frameworks. This evaluation involves assessing how seamlessly the AI system aligns with established processes within law enforcement agencies, non-governmental organizations (NGOs), and other relevant entities engaged in missing persons cases. The feasibility also hinges on the willingness and ability of users to adopt and adapt to the new technology, necessitating training programs for effective utilization. Additionally, considerations must be made regarding the accessibility of data sources, such as law enforcement databases and social media platforms, ensuring the system's capability to efficiently access and analyze pertinent information. Collaboration with diverse stakeholders, including law enforcement, NGOs, social media platforms, and the public, is crucial, demanding the establishment of effective communication channels and protocols. Legal and ethical compliance, encompassing privacy and data protection regulations, is paramount to ensure the responsible use of AI in this sensitive domain. Scalability, infrastructure requirements, ongoing maintenance, and support, as well as a cost-benefit analysis, are integral components of operational feasibility. Furthermore, the system should

be designed for iterative improvements based on user feedback and evolving needs, and its capacity to support rapid response during emergency situations should be a key consideration. The perception of the public regarding transparency and communication about the system's capabilities and limitations adds another layer to operational feasibility, emphasizing the need for a comprehensive and collaborative approach in deploying AI for finding missing persons.

2.3 Economic Feasibility

A system can be developed technically and that will be used if installed must still be a good investment for the organization. In the economical feasibility, the development cost in creating the system is evaluated against the ultimate benefit derived from the new systems. Financial benefits must equal or exceed the costs. Establishing the cost-effectiveness of the proposed system i.e. if the benefits do not outweigh the costs then it is not worth going ahead. In the fast paced world today there is a great need of online social networking facilities. Thus the benefits of this project in the current scenario make it economically feasible. The purpose of the economic feasibility assessment is to determine the positive economic benefits to the organization that the proposed system will provide. It includes quantification and identification of all the benefits expected. This assessment typically involves a cost/benefits analysis.

The economic feasibility of implementing a project for finding missing persons using AI is contingent on a meticulous assessment of financial considerations. A Comprehensive cost-benefit analysis is paramount, scrutinizing both the tangible and intangible advantages against the investments required. This involves evaluating the development costs, encompassing software development, AI model training, data acquisition, and potential infrastructure upgrades. Operational costs, including ongoing maintenance, support, and training initiatives, must also be considered. Infrastructure investments to ensure optimal performance should be factored in, along with a nuanced analysis of the return on investment (ROI) derived from anticipated benefits such as increased efficiency in locating missing persons and enhanced collaboration between agencies. Sustainability is a key aspect, necessitating an examination of the project's long-term financial viability

and adaptability to evolving technological landscapes. Identifying potential funding sources, mitigating economic risks through contingency plans, and ensuring scalability to accommodate future demands are integral components of economic feasibility. Moreover, a holistic view considers the broader economic impact, encompassing societal benefits, potential job creation, and contributions to public safety. The economic feasibility analysis serves as a crucial pillar in determining the viability of deploying AI in the mission to locate missing persons.