iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 12 **Issue:** IV **Month of publication:** April 2024

DOI: https://doi.org/10.22214/ijraset.2024.59807

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 12 Issue IV Apr 2024- Available at www.ijraset.com

Finding Missing Person Using Face Recognition

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Abstract: ***This project presents a novel approach to enhance the efficiency and effectiveness of locating missing persons through the utilization of face recognition technology The main objective is to develop a robust system that can extract facial features, match them with a database, and notify the missing person's location. The system uses a special type of artificial intelligence called CNN to compare faces with the database and find the best matches. The face recognition system uses the CNN (Convolutional Neural Network) algorithm to compare the extracted faces with the database and find the best matches. The alert module sends notifications to the family members of the missing person with the location information if a match is found. The system also updates the database with the latest information about the missing person. The project leverages state-of-the-art machine learning algorithms to extract and compare facial features, it reduces the effort and time required for manual process. This project aims to find missing people faster and better by using facial recognition technology. The main goal is to build a strong system that can study facial details, match them with a database of known people, and help to find missing people quickly and correctly. By harnessing the power of artificial intelligence, this system offers a promising solution to the pressing issue of finding missing individuals, potentially helping to reunite families and improve public safety.***

Keywords: Facial Recognition, CNN, Missing Persons, Machine Learning, Deep Learning, Image Analysis.

I. INTRODUCTION

In today's society, the number of missing person complaints is increasing at an alarming rate. These complaints include reports of missing teens, girls, mentally challenged individuals, and elderly people, among others. The responsibility of searching for missing persons on police becoming quite challenging, even though some cases are not solved to find the missing persons. It is a very complex task to find the missing persons manually, this process takes a lot more time and effort. Sometimes CCTV footage is available but it takes a lot of time to go and check every recorded video one by one in the present CCTV database. Our project, titled 'Finding Missing Persons Using Face Recognition', represents a dedicated effort to leverage the capabilities of facial recognition technology to address this vital societal issue. This project makes an easy process to find a missing person with the help of Page Layout An easy way to comply with IJRASET paper formatting requirements is to use this document as a template and simply type your text into it. AI and deep learning. Using AI algorithms in the project it helps to make it easy to do some typical tasks more accurately and efficiently. In this system, the user can register a complaint and be given the required information about the missing person. The user uploads the missing person's photo then this uploaded photo goes through some process like features extraction and training. Then this uploaded photo is stored in the database. In the next phase, the system collects the data from the real-time footage with the help of the CNN (Convolutional Neural Network) algorithm and AI. It recognizes the faces after extracting these face details it can try to match the data to the stored face data in the database it compares all the data and find the best match. If any data matches with the database data the systems alert module sends notifications to that person who has registered a missing persons complaint with the location information if a match is found. The system also updates the database with the latest information about the missing person. This technology can help identify the missing person by real-time video and tracking the movements, it helps in the finding for a missing person and increases the chance of find the missing person. The video surveillance system is also connected with other technologies, to track the missing person's location. This system can help the authorities to quickly respond to the missing person and improve the chance of finding them as soon as possible and rescuing them safely. In conclusion, using an AI-based face recognition algorithm in real-time video surveillance improves the chance of find the missing person.

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ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 12 Issue IV Apr 2024- Available at www.ijraset.com

II. METHODOLOGY

A. Data Preparation and Collection

Collect a varied and extensive dataset comprising facial images, encompassing both images of individuals who are missing and those who are identified. Annotate and preprocess the data, ensuring uniform quality and labeling. The dataset should be divided into training sets., validation, and testing subsets.

B. Facial Recognition Model Development

Explore and select suitable deep learning architectures for facial recognition (e.g., Convolutional Neural Networks - CNNs). Train and fine-tune the model using the prepared dataset. Implement face detection and alignment techniques to improve recognition accuracy.

C. Feature Extraction

Extract facial features from the trained model to create a robust feature vector representation for each face.

D. Database Design

Design a scalable and secure database to store facial embeddings and metadata of known individuals. Implement efficient indexing and retrieval mechanisms for quick matching.

E. Real-time Face Detection and Recognition

Integrate the trained facial recognition model into a real-time processing pipeline. Develop algorithms for face detection in images and videos. Implement recognition algorithms to match detected faces against the database.

F. User Interface Development

Design a user-friendly interface for law enforcement personnel to interact with the system. Include functionalities for uploading images/videos, searching the database, and viewing results.

G. Security and Privacy Considerations

Implement security measures to protect sensitive data and ensure secure access. Address privacy concerns by adhering to relevant regulations and guidelines.

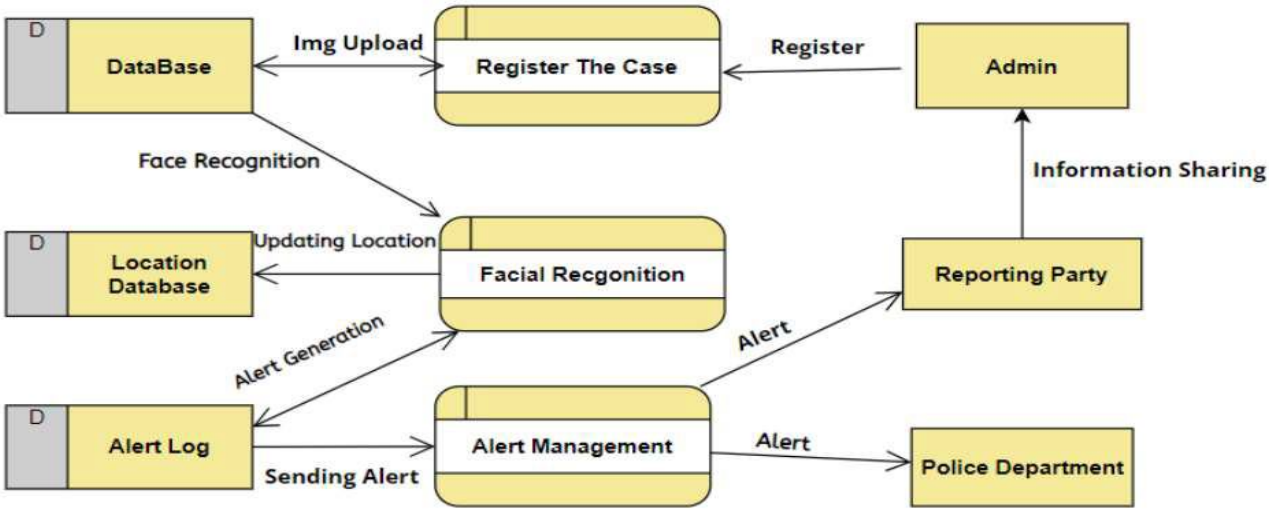
III.LITERATURE REVIEW

The paper proposes a software system to find and identify missing persons using facial recognition technology. It allows police and the public to upload photos of missing and found people into a database. Machine learning algorithms, specifically KNearest Neighbor (K-NN), are used to match facial features between these photos. If a match is found, notifications are sent via email. The system maintains records of missing people for continuous matching. Python, PostgreSQL, Docker, etc are leveraged to develop the platform. Overall, this system aims to improve efficiency in finding missing persons by using automated facial recognition instead of manual methods [1]. The paper proposes a system called Khoj to find missing persons using facial recognition technology. It allows users to upload photos of missing people into a database. When a user searches for a missing person by uploading a photo, feeding camera input, or applying filters like name, age, and location, the system matches facial features with the DB using algorithms. If a match is detected, the details of the missing individual are displayed. The system is built using OpenCV, a face recognition module, and Streamlit, and stores data in SQL. Overall, this facial recognition system aims to automate and accelerate for process of locating individuals who are missing in comparison to traditional techniques[2]. The paper proposes a system to find missing persons using facial recognition technology. It allows police and volunteers to upload photos of missing people into a database hosted on AWS cloud. The system uses the AWS Recognition service to analyze the photos. It extracts face IDs and matches them against face IDs extracted from newly uploaded search photos. On finding a match, the system fetches information about the missing person from the DB and sends notifications via email. The system aims to automate and accelerate finding missing persons by leveraging AWS cloud services like Face Recognition, S3 bucket, and Lambda indexe [3]. It proposes a system to identify missing children criminals and criminals using face recognition.It scrapes criminal records from websites and extracts features of those faces using OpenCV. For an input suspect face, it extracts features and compares them to scraped criminal faces using Facepplib API.

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Based on feature similarities, it calculates a confidence score. If it exceeds a threshold, it displays matched criminal info scraped from the web. The system leverages web scraping for dynamic data, Haar Cascade for detection, OpenCV for feature extraction, and Facepplib for face matching to identify criminals without needing a static database[4].

IV. MODELLING



V. RESULT

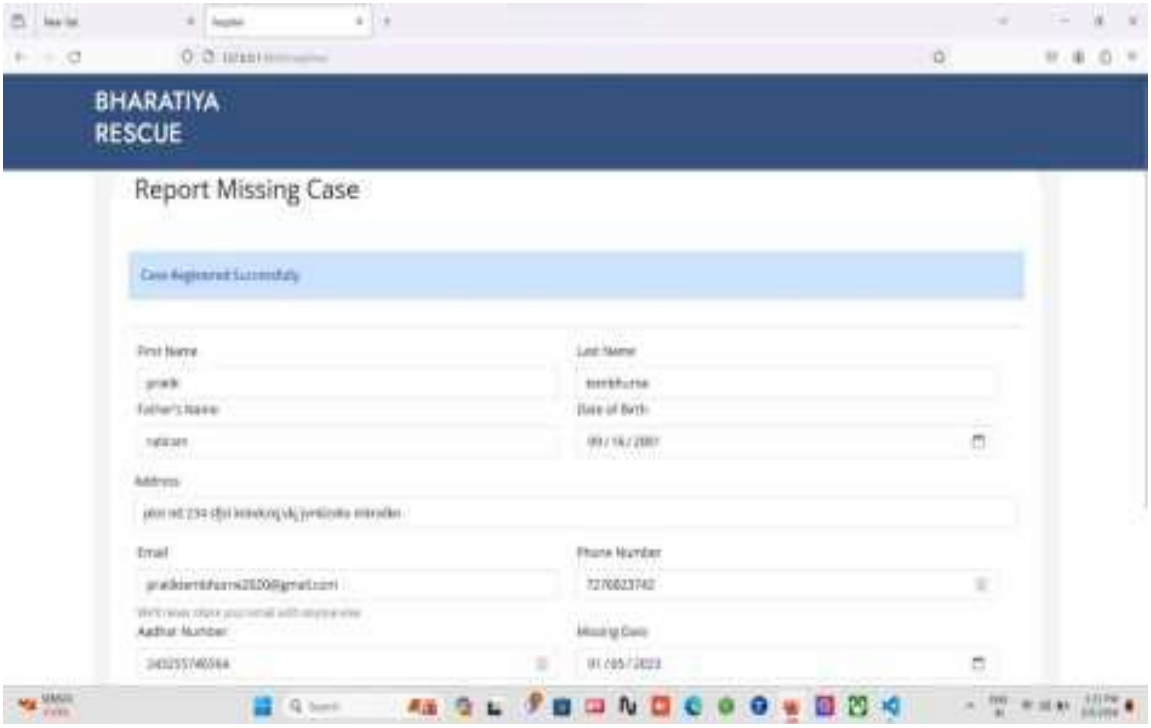
The system is tested with various types of images. For experimental purposes, it is tested with a sample dataset to analyze its accuracy level with various images. It takes the input image and using face recognition it performs a comparison of images with web images and displays the results which enables us to decide whether the person in the image is matched or not.

Face recognition because this model gives much more accurate results for both detection and recognition of faces. Face recognition works by saving the coordinate points of faces in two-dimensional arrays and then matching these points with the face points of the searched person. After considering these measurements, it calculates the distance using Euclidean distance and classifies the test image with minimum distance. It is much faster to train the model. Also, there is no need to provide multiple images for model training which serves as an asset for our system.

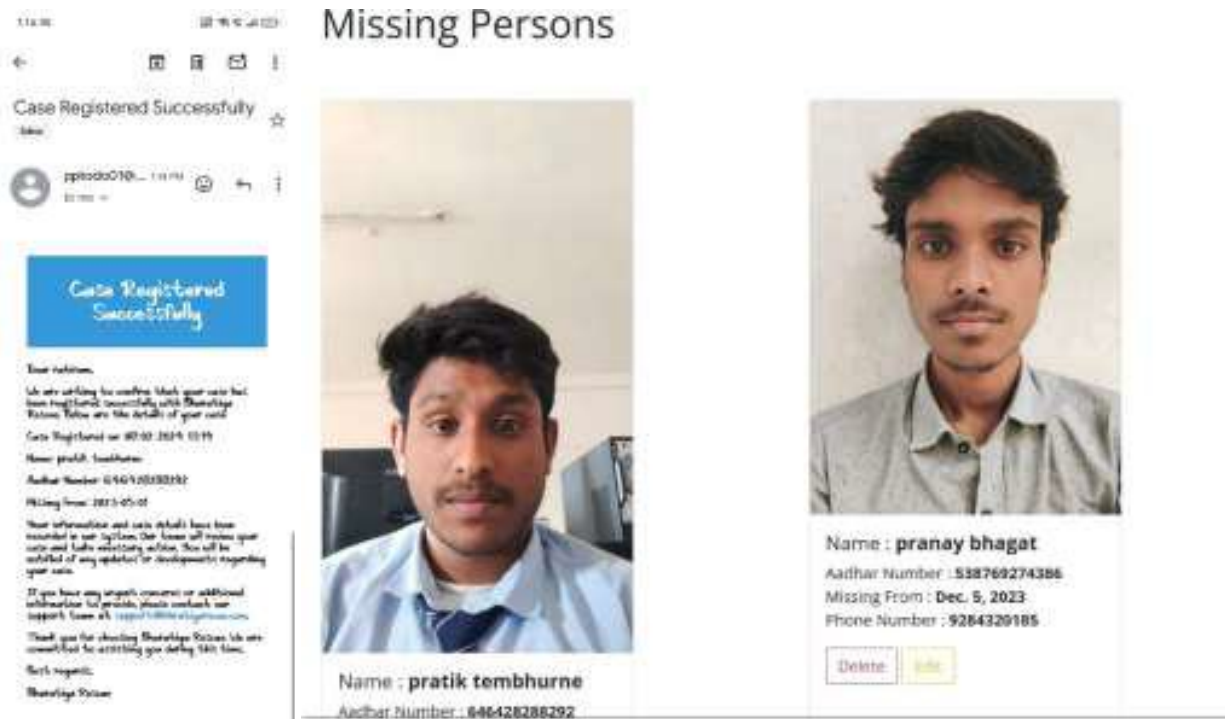
A. Model



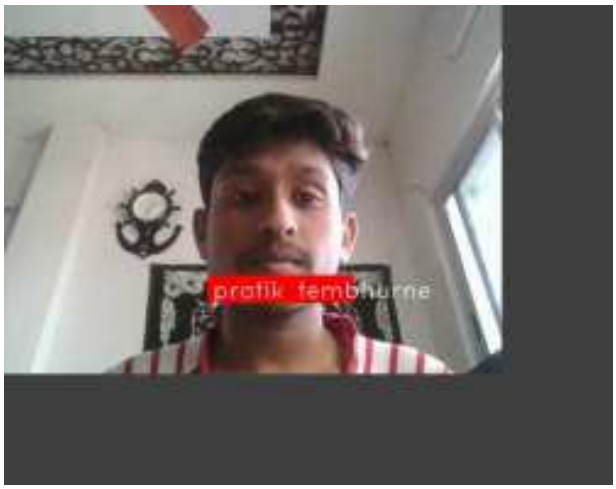
B. Case Registration



C. Case registration Mail Send and registered Cases



D. Detecting Missing Persons



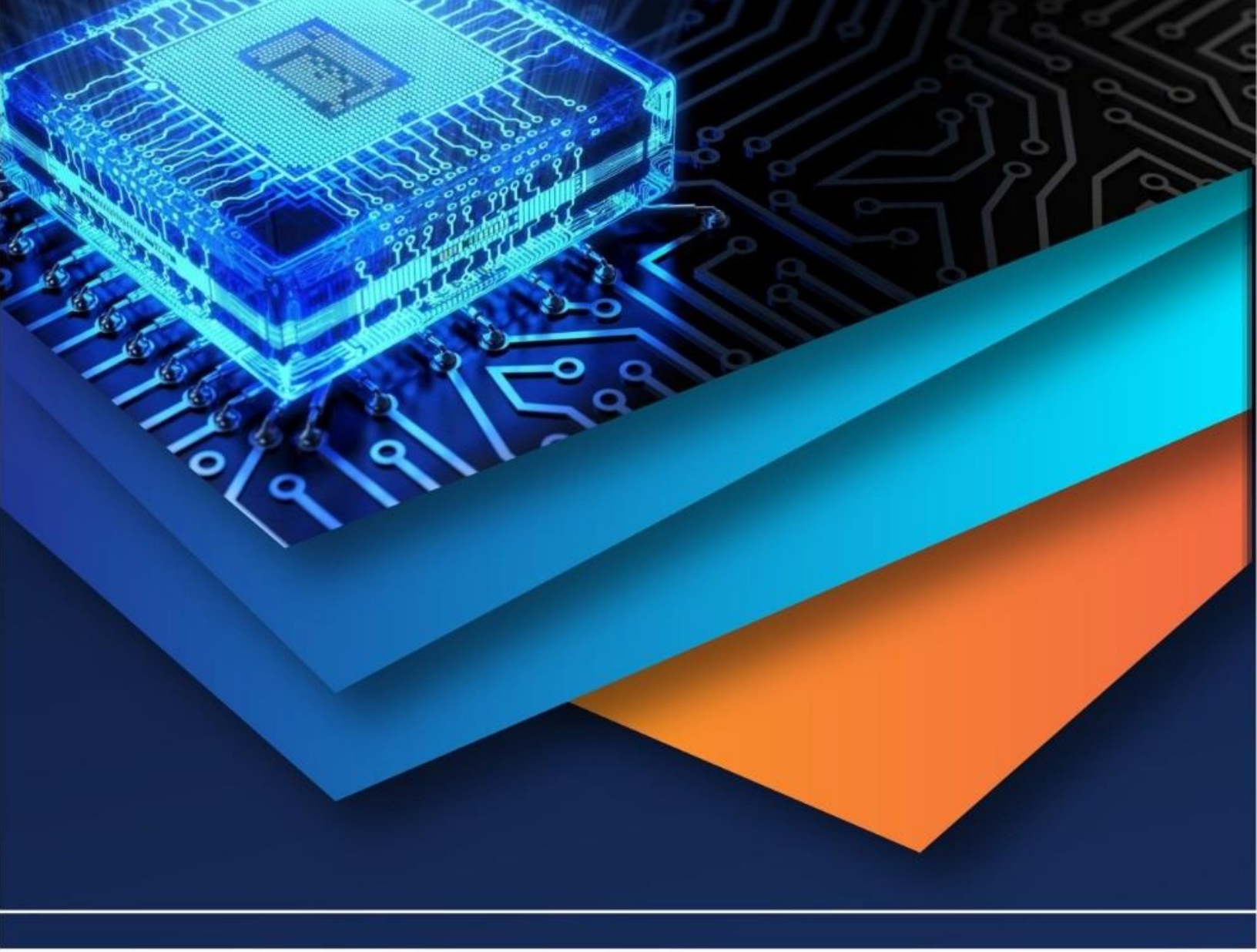


VI. CONCLUSIONS

The project successfully developed and deployed a face recognition system that can accurately and efficiently identify missing persons from various sources of images such as footage or online databases. The project also creates a user-friendly interface that can allow authorized users to upload, search, and compare images of missing persons with the face recognition system. This project will demonstrate the effectiveness and usefulness of the face recognition system by providing statistics and reports on the number of missing persons found, the time taken to find them, and the feedback from the users and beneficiaries of the system. The project complies with the ethical and legal regulations of facial recognition by ensuring the privacy, security, and consent of data subjects and data providers

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