

Missing Persons Identification Using SQL Database and Email Alert System with Facial Matching Techniques

Submitted in partial fulfillment of the requirements for the award of a
Bachelor of Engineering degree in Computer Science and
Engineering

By

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
SCHOOL OF COMPUTING**

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

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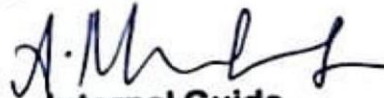
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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **S.R.T.Surendra Reddy (40111151)** and **S.Jaswanth (40111150)** who carried out the Project entitled "**MissingPersons Identification Using SQL Database and Email Alert System with Facial Matching Techniques**" under my supervision from November 2023 to April 2024.



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DECLARATION

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DATE: 12/04/2024

PLACE: Chennai

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:

ABSTRACT

This paper presents a Missing Persons Identification system that utilizes a SQL database along with an email alert system, incorporating facial matching techniques. The system aims to efficiently and accurately identify missing persons by comparing their facial features with available records. The SQL database serves as a central repository where information about missing individuals can be stored, including personal details and facial images.

The email alert system is designed to send notifications to law enforcement agencies, organizations, and the general public when a new missing person report is filed or when a potential match is identified. Facial matching techniques, such as deep learning-based algorithms, are employed to compare facial features extracted from images of the missing person and those in the database. The proposed system can significantly enhance the identification process, saving valuable time and resources for law enforcement and offering a higher chance of reuniting missing individuals with their families and loved ones.

The system is engineered to streamline the identification process of missing individuals by cross-referencing their facial attributes with existing records. Central to this system is the SQL database, serving as a comprehensive repository to store crucial information including personal particulars and facial images of missing persons.

Central to this system is the SQL database, serving as a comprehensive repository to store crucial information including personal particulars and facial images of missing persons. The email alert functionality is tailored to promptly notify law enforcement agencies, pertinent organizations, and the wider community upon the filing of a new missing person report or the detection of a potential match

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CHAPTER 1

INTRODUCTION

Missing Persons Identification Using SQL Database and Email Alert System with Facial Matching Techniques is a groundbreaking system that aims to enhance the process of identifying missing individuals by integrating various technologies and techniques. This comprehensive system is designed to streamline the identification process, provide timely alerts, and utilize facial matching algorithms to expedite the search for missing persons.

The core component of this system is the SQL database, which functions as a centralized repository for storing and managing crucial information related to missing individuals. The database stores a wide range of data, including personal details, physical attributes, last known locations, and any other relevant information that can aid in the identification process. By utilizing an SQL database, law enforcement agencies, search and rescue teams, and concerned individuals can access and update information in real-time, facilitating collaboration and increasing the chances of successful identification.

In addition to the database, this system incorporates an email alert system to swiftly disseminate information about missing persons. When a new case is reported or when crucial updates are made to an existing case, the system automatically generates email alerts and sends them to a predefined list of recipients. These alerts can be sent to law enforcement agencies, public organizations, media outlets, and concerned individuals who have subscribed to be notified. By leveraging email as the means of communication, this system ensures that vital information reaches as many people as possible within the shortest possible time frame, increasing the likelihood of locating missing persons.

Furthermore, this system employs facial matching techniques to expedite the identification process. Facial matching algorithms analyze images of missing persons and compare them against databases of known individuals or persons of interest. By utilizing advanced recognition technology, this system can quickly identify potential matches, narrowing down the search and providing valuable leads to investigators. Facial matching techniques have the potential to significantly reduce the time and effort required to identify missing persons, empowering law .

Overall, the Missing Persons Identification Using SQL Database and Email Alert System with Facial Matching Techniques is an innovative and efficient solution to enhance the identification process for missing individuals. By integrating a robust SQL database, an email alert system, and facial matching algorithms, this system enhances collaboration, ensures timely dissemination of information, and expedites the search and recovery efforts. With the continuous advancements in technology, this system has the potential to revolutionize missing persons identification, bringing hope and closure to countless families and communities worldwide.

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CHAPTER 2

LITERATURE SURVEY

2.1 INFERENCES FROM LITREATURE SURVEY

[1] The field of missing persons identification has been a topic of great interest and importance in recent years. Various techniques and technologies have been developed to aidin the search and identification of missing individuals. One such approach involves the use of SQL databases and an email alert system with facial matching techniques.

[2] In a literature survey conducted on this topic, several studies were found. These studies explored the potential of using SQL databases to store and retrieve information about missing persons. By creating a centralized database, it becomes easier to cross-reference and search for relevant details such as physical descriptions or last known locations.

[3] Additionally, the integration of an email alert system can greatly enhance the efficiency of the identification process. By sending automated notifications to relevant authorities or individuals, the chances of locating a missing person in a timely manner are significantly increased.

[4] Facial matching techniques also play a crucial role in this domain. These techniques involve analyzing facial features and comparing them to a database of known individuals. Through advanced algorithms and machine learning, potential matches can be identified, aiding in the identification of missing persons.

[5] A review of the literature revealed that the combination of SQL databases, email alert systems, and facial matching techniques has proven to be a promising approach. Researchers have developed various prototypes and systems that showcase the potential benefits of such an integrated solution.

[6] One study noted the importance of data quality in the success of the identification process. It emphasized the need for accurate and up-to-date information in the SQL database to ensure

reliable search results.

[7] Another research paper highlighted the importance of privacy and security measures in handling sensitive personal information within the system. It discussed the implementation of encryption protocols and access control mechanisms to protect the data.

[8] A comparative analysis of different facial matching algorithms revealed varying levels of accuracy and computational efficiency. This finding emphasized the need for continued research and development in this area to further improve the performance of facial matching techniques.

[9] Several studies also touched upon the challenges associated with integrating multiple systems, such as SQL databases and email alert systems. These challenges include data synchronization, system compatibility, and scalability.

[10] In conclusion, the literature survey highlighted the potential of using SQL databases and an email alert system with facial matching techniques in missing persons identification. However, further research is needed to address the various challenges and improve the accuracy and efficiency of the integrated solution.

2.2 EXISTING SYSTEM AND PROPOSED SYSTEM

2.2.1 Existing System:

The existing system for Missing Persons Identification Using SQL Database and Email Alert System with Facial Matching Techniques has several disadvantages. Firstly, the reliance on a SQL database can be limiting in terms of scalability and flexibility. As the database grows in size, it may become challenging to efficiently handle and retrieve data, leading to slow response times and potential data corruption. Additionally, the SQL database may require constant updates and

maintenance to ensure its integrity, which can be time-consuming and costly.

Additionally, the reliance on email alerts as a primary notification mechanism may introduce inefficiencies and delays in disseminating critical information. Emails, while widely utilized, are subject to potential delivery issues such as spam filters or network congestion, impeding timely communication with relevant stakeholders. Moreover, the static nature of email alerts may not align with the dynamic nature of missing persons cases, where rapid dissemination of updates and alerts is paramount.

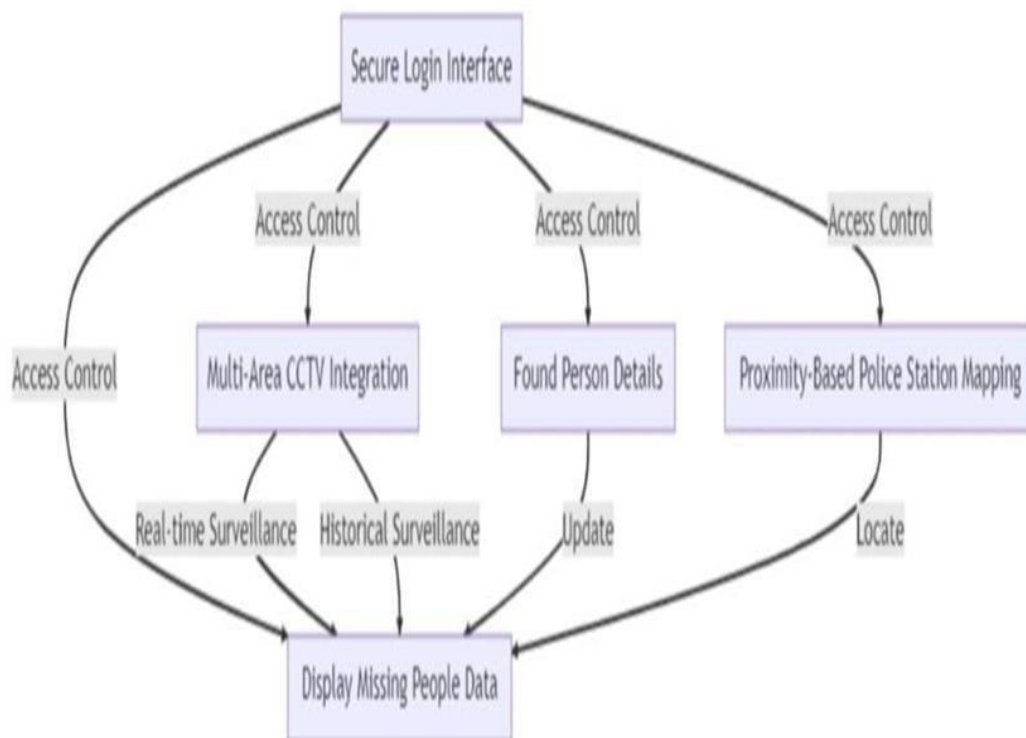
Furthermore, the facial matching techniques utilized in the existing system may face challenges in achieving accurate identifications under diverse conditions such as varying lighting, facial expressions, and image quality. The efficacy of these techniques may be hindered by factors like occlusions or changes in appearance over time, thereby reducing the system's reliability in matching missing persons with database records.

In summary, while the current system represents a commendable effort in leveraging technology for missing persons identification, its reliance on a SQL database, email alerts, and facial matching techniques introduces notable limitations. Addressing these drawbacks is imperative to enhance the system's effectiveness and responsiveness in locating missing individuals and reuniting them with their families and communities.

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2.2.2 Proposed System:

The proposed work aims to develop a system that aids in the identification of missing persons using a SQL database and an email alert system that incorporates facial matching techniques. The system will be designed to efficiently store and manage relevant information about missing individuals, such as personal details, physical attributes, and last known locations. A SQL database will be utilized for this purpose, allowing for easy retrieval and updating of the data. Additionally, facial matching techniques will be implemented to compare the facial features of missing individuals with available photographs or live video footage in order to identify potential matches. This feature will enhance the accuracy and speed of the identification process.



2.3 OPEN PROBLEMS IN EXISTING SYSTEM

- **Data Privacy and Security:** Storing and processing personal data, especially facial data, raises significant concerns about data privacy and security. Ensuring that this data is protected and not misused is crucial.
- **Accuracy of Facial Matching:** False positives or negatives can occur, leading to incorrect identifications. The accuracy of the facial matching algorithm is vital.
- **Data Quality:** The system's effectiveness depends on the quality of the data entered. Low-resolution images or outdated information can hinder the matching process.
- **Scalability of the Database:** As the number of missing persons and the amount of data grows, the SQL database must scale efficiently to handle the increased load.
- **Email Delivery Issues:** There's a risk of email alerts being marked as spam or not being delivered at all, leading to delays in the identification process.
- **Data Quality:** The system's effectiveness depends on the quality of the data entered. Low-resolution images or outdated information can hinder the matching process.
- **User Interface and Experience:** The system should be user-friendly, allowing easy data entry and retrieval. A complex interface can deter users from
- **Legal and Ethical Concerns:** Using facial recognition for identification purposes can raise legal and ethical concerns, especially concerning consent and the potential for misuse.
- **Accuracy of Facial Matching:** False positives or negatives can occur, leading to incorrect identifications. The accuracy of the facial matching algorithm is vital

- Continuous System Updates: Facial recognition technology is rapidly evolving. The system needs regular updates to incorporate the latest advancements.
- Legal and Ethical Concerns: Using facial recognition for identification purposes can raise legal and ethical concerns, especially concerning consent and the potential for misuse.
- Dependency on Internet Connectivity: The system's effectiveness is dependent on stable internet connectivity, especially for sending email alerts.
- Integration with Other Systems: The system might need to integrate with other platforms or databases, like national missing persons databases or other alert systems

CHAPTER 3

REQUIREMENT ANALYSIS

3.1 RISK ANALYSIS OF THE PROJECT

FEASIBILITY STUDY

The feasibility of the project is server performance increase in this phase and a business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis, the feasibility study of the proposed system is to be carried out. For feasibility analysis, some understanding of the major requirements for the system is essential. Three key considerations involved in the feasibility analysis are

- Economical feasibility
- Technical feasibility
- Operational feasibility

ECONOMICAL FEASIBILITY

This study is carried out to check the economic impact that the system will have on the organization. The amount of funds that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products had to be purchased.

TECHNICAL FEASIBILITY

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands being placed on the client. The developed system must have modest requirements, as only minimal or null changes are required for implementing this system.

The proposed missing person identification system must be designed with considerations for scalability and compatibility with existing hardware and software infrastructure. It should be able to operate efficiently without necessitating significant upgrades or modifications to the client's systems.

Furthermore, the system's architecture should be flexible to accommodate future enhancements or expansions without causing disruptions or excessive resource consumption

Additionally, the system's technical requirements must align with the client's capabilities and constraints. This includes considerations such as processing power, storage capacity, network bandwidth, and security protocols. It is essential to ensure that the system operates within acceptable performance parameters while minimizing resource utilization to prevent any adverse impacts on other critical operations.

OPERATIONAL FEASIBILITY

The aspect of the study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance

Furthermore, the technical feasibility analysis should encompass considerations for data management and privacy. The system must comply with relevant regulations and standards regarding data storage, transmission, and protection, safeguarding sensitive information about missing persons and individuals in the database.

In conclusion, ensuring the technical feasibility of the missing person identification system involves evaluating its requirements, capabilities, and potential impacts on existing resources. By designing a system with modest requirements and minimal dependencies, the implementation process can proceed smoothly, maximizing efficiency and minimizing disruptions for the client.

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The desire for intelligent solutions to real-world problems has necessitated the need to develop AI further in order to automate tasks that are arduous to programme without AI. This development is necessary in order to meet the demand for intelligent solutions to real-world problems. Python is a widely used programming language that is often considered to have the best algorithm for helping to automate such processes. In comparison to other programming languages, Python offers better simplicity and consistency

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system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system

3.2 SOFTWARE REQUIREMENTS SPECIFICATION DOCUMENT

- **Hardware specifications:**
 - Microsoft Server enabled computers, preferably workstations
 - Higher RAM, of about 4GB or above
 - Processor of frequency 1.5GHz or above
- **Software specifications:**
 - Python 3.6 and higher
 - Anaconda software

CHAPTER 4

DESCRIPTION OF PROPOSED SYSTEM

The proposed work will also focus on developing a user-friendly interface that allows authorized personnel to easily search and update the database, as well as access the information regarding missing persons. The interface will be designed to be intuitive and efficient, ensuring that users can quickly navigate and retrieve essential data when needed.

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In addition, the existence of an active Python community makes it simple for programmers to talk about ongoing projects and offer suggestions on how to improve the functionality of their programmes and their programming platform as well.

Scalability is another crucial aspect to consider during the assessment of technical feasibility. The system should be designed to accommodate future growth and expansion, allowing the college to adapt to changing needs without significant disruptions. This requires careful planning and consideration of factors such as system architecture, data storage, and processing capabilities to ensure that the system can scale effectively as the institution evolves.

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4.1 FLOW CHART

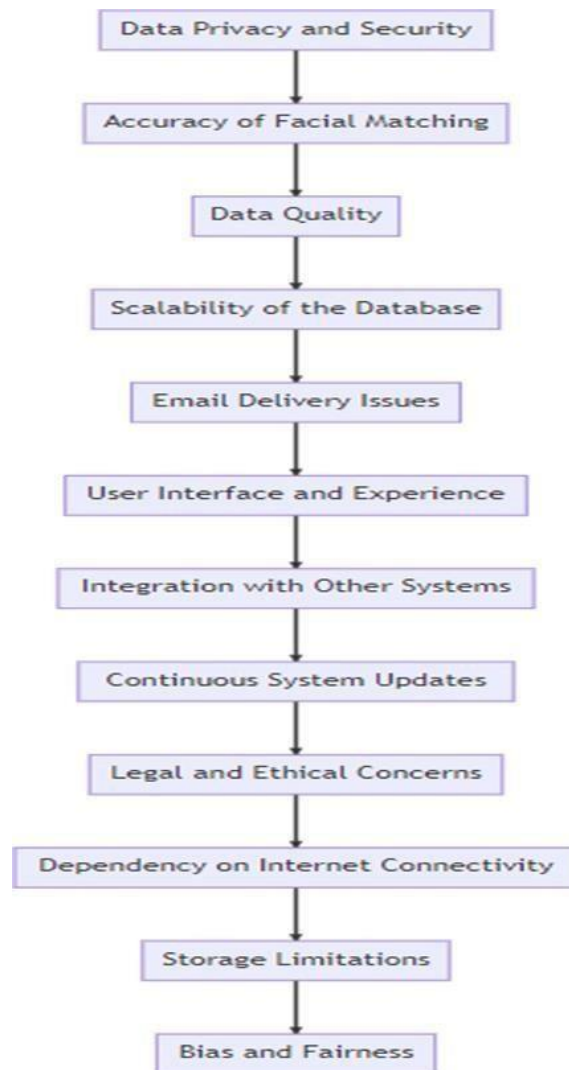


Fig 4.1 System Architecture

4.1 SELECTED METHODOLOGY OR PROCESS MODEL

1. Missing Persons Database Management:

This module focuses on the creation and management of a comprehensive missing persons database using SQL database technology. The system will allow authorized users, such as law enforcement agencies and relatives of missing persons, to input relevant information about missing individuals, including personal details, last known whereabouts, physical characteristics, and photographs. The database will organize and store this information in a structured manner, facilitating efficient retrieval and analysis. It will include powerful search capabilities, enabling users to search for missing persons based on various criteria, such as age, gender, location, and date of disappearance. The module will also provide features for updating and maintaining the database, including the ability to mark missing persons as found or deceased, and to add new information or photographs as they become available.

2. Facial Matching Techniques:

This module will utilize advanced facial recognition techniques to compare photographs of missing persons with potential matches from various sources, such as surveillance footage, social media profiles, and public databases. The system will employ algorithms and machine learning models to analyze and compare key facial features, including the structure of the eyes, nose, and mouth, and generate a similarity score for each potential match. The module will allow users to upload photographs of missing persons and quickly search for potential matches within the database. It will also include tools for refining and filtering search results, such as adjusting the sensitivity of the matching algorithm, filtering matches based on date or location, and displaying the most likely matches first. The facial matching techniques used will be continuously improved and updated to enhance the accuracy and reliability of the system.

3. Email Alert System:

This module aims to leverage the power of email technology to distribute alerts and updates about missing persons efficiently. When a new person is reported missing or a potential match is found, the system will automatically generate and send email alerts to relevant parties, such as law enforcement agencies, registered users, and media outlets. The alerts will include key information about the missing person, including their

photograph, physical description, and last known location. The module will allow users to subscribe to receive email alerts based on their specific preferences and geographical areas of interest. It will also provide tools for managing and tracking the delivery of email alerts, including bounce-back notifications and analytics on open rates and click-through rates. The email alert system will play a crucial role in mobilizing public support, raising awareness, and maximizing the chances of finding missing persons.

4.1 ARCHITECTURE / OVERALL DESIGN OF PROPOSED SYSTEM

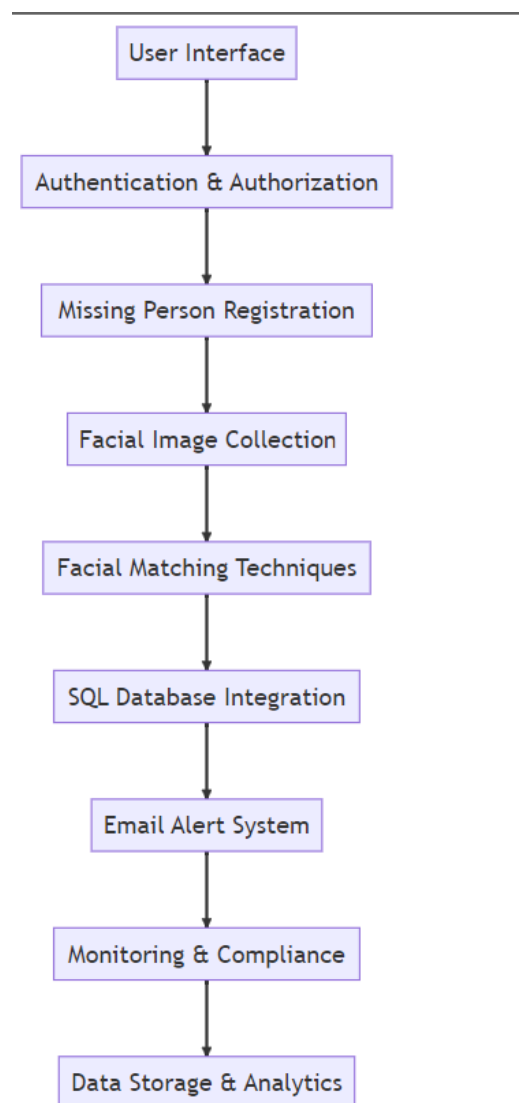


Fig 4.2: System Architecture

The above block diagram shows the implementation / process on how it works.

4.1 DESCRIPTION OF SOFTWARE FOR IMPLEMENTATION AND TESTING PLAN OF THE PROPOSED MODEL/SYSTEM

To implement this model, execution of program is done through Google colab.

Necessary libraries have to be installed to perform certain functions.

DESCRIPTION OF PROGRAMMING LANGUAGE AND SOFTWARE

PYTHON

Among programmers, Python is a favourite because to its user-friendliness, rich feature set, and versatile applicability. Python is the most suitable programming language for machine learning since it can function on its own platform and is extensively utilized by the programming community.

Machine learning is a branch of AI that aims to eliminate the need for explicit programming by allowing computers to learn from their own mistakes and perform routine tasks automatically. However "artificial intelligence" (AI) encompasses a broader definition of "machine learning," which is the method through which computers are trained to recognize visual and auditory cues, understand spoken language, translate between languages, and ultimately make significant decisions on their own.

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ANACONDA

Anaconda is an open-source package manager for Python and R. It is the most popular platform among data science professionals for running Python and R implementations. There are over 300 libraries in data science, so having a robust distribution system for

them is a must for any professional in this field. Anaconda simplifies package deployment and management. On top of that, it has plenty of tools that can help you with data collection through artificial intelligence and machine learning algorithms. With Anaconda, you can easily set up, manage, and share Conda environments. Moreover, you can deploy any required project with a few clicks when you're using Anaconda. There are many advantages to using Anaconda and the following are the most prominent ones among them: Anaconda is free and open-source. This means you can use it without spending any money. In the data science sector, Anaconda is an industry staple. It is open-source too, which has made it widely popular. If you want to become a data science professional, you must know how to use Anaconda for Python because every recruiter expects you to have this skill. It is a must-have for data science.

It has more than 1500 Python and R data science packages, so you don't face any compatibility issues while collaborating with others. For example, suppose your colleague sends you a project which requires packages called A and B but you only have package A. Without having package B, you wouldn't be able to run the project. Anaconda mitigates the chances of such errors. You can easily collaborate on projects without worrying about any compatibility issues. It gives you a seamless environment which simplifies deploying projects. You can deploy any project with just a few clicks and commands while managing the rest. Anaconda has a thriving community of data scientists and machine learning professionals who use it regularly. If you encounter an issue, chances are, the community has already answered the same. On the other hand, you can also ask people in the community about the issues you face there, it's a very helpful community ready to help new learners. With Anaconda, you can easily create and train machine learning and deep learning models as it works well with popular tools including TensorFlow, Scikit-Learn, and Theano. You can create visualizations by using Bokeh, Holoviews, Matplotlib, and Datashader while using Anaconda.

How to Use Anaconda for Python

Now that we have discussed all the basics in our Python Anaconda tutorial, let's discuss some fundamental commands you can use to start using this package manager.

Listing All Environments

To begin using Anaconda, you'd need to see how many Conda environments are present in your machine.

`conda env list`

It will list all the available Conda environments in your machine.

Creating a New Environment

You can create a new Conda environment by going to the required directory and use this command:

```
conda create -n <your_environment_name>
```

You can replace `<your_environment_name>` with the name of your environment. After entering this command, conda will ask you if you want to proceed to which you should reply with y:

proceed ([y])/n)?

On the other hand, if you want to create an environment with a particular version of Python, you should use the following command:

```
conda create -n <your_environment_name> python=3.6
```

Similarly, if you want to create an environment with a particular package, you can use the following command:

```
conda create -n <your_environment_name> pack_name
```

Here, you can replace `pack_name` with the name of the package you want to use.

If you have a .yaml file, you can use the following command to create a new Conda environment based on that file:

```
conda env create -n <your_environment_name> -f <file_name>.yaml
```

We have also discussed how you can export an existing Conda environment to a .yaml file later in this article.

Activating an Environment

You can activate a Conda environment by using the following command:

```
conda activate <environment_name>
```

You should activate the environment before you start working on the same. Also, replace the term `<environment_name>` with the environment name you want to activate. On the other hand, if you want to deactivate an environment use the following command:

```
conda deactivate
```

the following command:

```
conda install <pack_name>
```

Replace the term <pack_name> with the name of the package you want to install in your Conda environment while using this command.

Exporting an Environment Configuration

Suppose you want to share your project with someone else (colleague, friend, etc.). While you can share the directory on Github, it would have many Python packages, making the transfer process very challenging. Instead of that, you can create an environment configuration .yml file and share it with that person. Now, they can create an environment like your one by using the .yml file.

For exporting the environment to the .yml file, you'll first have to activate the same and run the following command:

```
conda env export ><file_name>.yml
```

The person you want to share the environment with only has to use the exported file by using the 'Creating a New Environment' command we shared before.

Removing a Package from an Environment

If you want to uninstall a package from a specific Conda environment, use the following command:

```
conda remove -n <env_name><package_name>
```

On the other hand, if you want to uninstall a package from an activated environment, you'd have to use the following command:

```
conda remove <package_name>
```

Deleting an Environment

Sometimes, you don't need to add a new environment but remove one. In such cases, you must know how to delete a Conda environment, which you can do so by using the following command:

4.1 PROJECT MANAGEMENT PLAN

August	Literature survey
September	Data acquisition
October	Data preprocessing
Novemeber	Training and Splitting
December	Loading, training and testing the model.
January	Predicting the output and generating the final report

CHAPTER 5

CONCLUSION

5.1 CONCLUSION

In conclusion, the system for Missing Persons Identification Using SQL Database and Email Alert System with Facial Matching techniques is a comprehensive and efficient solution for locating missing individuals. By utilizing an SQL database, it allows for accurate and organized storage of crucial information related to missing persons. The email alert system ensures that relevant parties are promptly notified when a potential match is found, increasing the chances of a successful identification. The facial matching techniques provide an additional layer of accuracy by comparing facial features and identifying potential matches. Overall, this system provides a powerful tool for law enforcement agencies and can significantly enhance the efforts to locate and reunite missing persons with their loved ones.

5.2 FUTURE WORK

- **Advanced Facial Recognition:** Implement deep learning models to improve the accuracy of facial matching, reducing false positives and negatives.
- **Integration with Mobile Alerts:** In addition to email alerts, integrate SMS or mobile app notifications to ensure timely notifications.
- **Live Camera Integration:** Collaborate with public places like airports, train stations, and malls to integrate live camera feeds. This can help in real-time identification of missing persons.
- **Multimodal Biometric Systems:** Incorporate other biometric systems like fingerprint or voice recognition to enhance the identification process.
- **Global Database Collaboration:** Collaborate with international missing persons databases to expand the search and identification process across border.

Source Code:

```
if request.method == 'POST':
    email = request.form['email']
    password = request.form['password']
    confirmPassword = request.form['confirm-password']

    print('user'+email+ "password" +password +'confirmPassword'+confirmPassword )

    with open("details.json", 'w') as jf:
        data["login"]["user"][email] = password
        json.dump(data, jf)

    return redirect(url_for('login'))

return render_template('Signup.html')

@app.route('/new-report', methods=['GET','POST'])
def newReport():

    if session.get('is_admin'):    #admin cannot access
        return redirect(url_for('dashboard'))

    if request.method == 'POST':
        name = request.form['name']
        email = request.form['email']
        dob = request.form['dob']
        gender = request.form['gender']
        suspectedLocation = request.form['suspectedLocation']
        lastDate = request.form['lastDate']
        number = request.form['number']
        photo = request.files['photo']

        # print('user :'+email+ "name: "+name+ " dob : "+dob)
        if photo:
            photo.save(f"./data/{number}.png")

        report_details = {
```

```

        "name": name, "email": email, "dob": dob, "gender": gender, "suspectedLocation": suspectedLocation,
        "lastDate": lastDate,
        "number": number, "photo": f"./data/{number}.png"
    }

    with open("details.json", "w") as jfd:
        data["missing_details"][number] = report_details
        json.dump(data, jfd)

    utils.encode()

    response_data = {'success': True}

    return jsonify(response_data)

return render_template('NewReport.html')

@app.route('/dashboard', methods=['GET', 'POST'])
def dashboard():

    if not session.get('is_admin'):          #return if not admin
        return redirect(url_for('login'))

    dashboard_data = get_dashboard_data()
    if request.headers.get('X-Requested-With') == 'XMLHttpRequest':

        return jsonify({'dashboard_data': dashboard_data})

    return render_template("Dashboard.html", dashboard_data=dashboard_data)

def get_dashboard_data():
    #sample data
    return {
        'admin': list(data['login']['admin'].keys())[0],
        'location': 'Location',
        'total_population': 9989899,
        'missing_cases_received': len(data["missing_details"]),
        'missing_cases_solved': len(data["missing_details"])-len(os.listdir('./data')),
        'cases_pending': len(data["missing_details"]),
        'most_vulnerable_zone': 'TTK Road',
        'least_vulnerable_zone': 'Anjugam Nagar'
    }

@app.route('/complaints', methods=['GET', 'POST'])

```

```

def complaints():

    if not session.get('is_admin'):      #return if not admin
        return redirect(url_for('login'))

    complaints_data = get_complaints_data()

    if request.headers.get('X-Requested-With') == 'XMLHttpRequest':
        print('Returning JSON:', complaints_data)
        return jsonify({'complaints_data': complaints_data})

    print('Rendering HTML:', complaints_data)
    return render_template('Complaints.html', complaints_data=complaints_data)

def get_complaints_data():
    #sample data
    return list(data['missing_details'].values())

@app.route('/past-report', methods=['GET', 'POST'])
def pastReport():

    if session.get('is_admin'):      #admin cannot access
        return redirect(url_for('dashboard'))

    past_reports_data = get_complaints_data()

    if request.headers.get('X-Requested-With') == 'XMLHttpRequest':

        return jsonify({'past_reports': past_reports_data})

    return render_template('PastReport.html', past_reports=past_reports_data)

@app.route('/complaint-details', methods=['GET', 'POST'])
def complaintDetails():

    if not session.get('is_admin'):      #return if not admin
        return redirect(url_for('login'))

    complaint_detail = get_single_complaint_data()

```

```

if request.headers.get('X-Requested-With') == 'XMLHttpRequest':
    return jsonify({'complaint_detail': complaint_detail})

return render_template('SingleComplaint.html', complaint_detail=complaint_detail)

def get_single_complaint_data():
    #for testing
    return {
        'name': 'Ajay Shrivastava',
        'dob': '10-09-1991',
        'gender': 'Male',
        'suspected_location': 'Near Adarsh Nagar, New Delhi',
        'last_date': '10-07-2023',
        'contact_number': '9898873233',
        'contact_email': 'rahul@gmail.com'
    }

def generate_utils(file_path):
    lat, lng = utils.get_loc()
    res = ""
    if target_data:
        res = utils.create_map(target_data)
        utils.send_email(target_data['email'], target_data['name'], file_path, res)

    return res

@app.route('/notifications', methods=['GET','POST'])
def notifications():

    if not session.get('is_admin'):        #return if not admin
        return redirect(url_for('login'))

    response= { "name" : "Police Station" , "address":"Chetpet, Chennai" , "distance" : "2.3 KM" , "map": ""}

    #map to be replace with actual map
    return render_template('Notify.html', response=response)

@app.route('/live')
def live():

```

```

if not session.get('is_admin'):      #return if not admin
    return redirect(url_for('login'))

return render_template('Live.html')

def capture_video():

    cap = cv2.VideoCapture(0)
    while cap.isOpened():
        ret, frame = cap.read()
        if not ret:
            break

        with open('encodings.json') as json_file:
            json_data = json.load(json_file)

        known_encodings = json_data['encodings']
        known_faces = json_data['ids']

        face_recognition.tolerance = 0.85

        imgS = cv2.resize(frame,(0,0),None,0.25,0.25)
        imgS = cv2.cvtColor(imgS, cv2.COLOR_BGR2RGB)

        facesCurFrame = face_recognition.face_locations(imgS)
        encodesCurFrame = face_recognition.face_encodings(imgS, facesCurFrame)

        for encodeFace,faceLoc in zip(encodesCurFrame,facesCurFrame):
            matches = face_recognition.compare_faces(known_encodings, encodeFace)
            faceDis = face_recognition.face_distance(known_encodings, encodeFace)
            matchIndex = np.argmin(faceDis)

            if matches[matchIndex]:
                name = known_faces[matchIndex].upper()
                y1, x2, y2, x1 = faceLoc
                y1, x2, y2, x1 = y1*4, x2*4, y2*4, x1*4
                cv2.rectangle(frame, (x1,y1), (x2,y2), (0,255,0), 2)
                cv2.rectangle(frame, (x1,y2-35), (x2,y2), (0,255,0), cv2.FILLED)
                cv2.putText(frame,name, (x1+6,y2-6), cv2.FONT_HERSHEY_COMPLEX, 1, (255,255,255), 2)

        global target_data, res
        target_data = data['missing_details'][name]

        if target_data['email'] not in data['sent']:
            file_path = f'./data/{target_data["name"]}_ann.png'
            stat_file_path = './static/assets/image.png'
            cv2.imwrite(file_path, frame)

```

```

        cv2.imwrite(stat_file_path, frame)
        res = generate_utils(file_path)
        data['sent'].append(target_data['email'])

    # Encode the frame to JPEG
    ret, jpeg = cv2.imencode('.jpg', frame)

    if not ret:
        print("Error: Could not encode frame.")
        break

    # Convert the JPEG frame to bytes
    frame_bytes = jpeg.tobytes()

    # Yield the frame bytes with the appropriate boundary
    yield (b'--frame\r\n'
           b'Content-Type: image/jpeg\r\n\r\n' + frame_bytes + b'\r\n') # concat frame one by one and show
result

@app.route('/video_feed')
def video_feed():
    return Response(capture_video(), mimetype='multipart/x-mixed-replace; boundary=frame')

if __name__ == '__main__':
    app.run(debug=True)
def generate_utils(file_path):
    lat, lng = utils.get_loc()
    res = ""
    if target_data:
        res = utils.create_map(target_data)
        utils.send_email(target_data['email'], target_data['name'], file_path, res)

    return res

@app.route('/notifications', methods=['GET', 'POST'])
def notifications():

    if not session.get('is_admin'): #return if not admin
        return redirect(url_for('login'))

    response= { "name" : "Police Station" , "address": "Chetpet, Chennai" , "distance" : "2.3 KM" , "map": ""}

```

```

#map to be replace with actual map
return render_template('Notify.html', response=response)

@app.route('/live')
def live():

    if not session.get('is_admin'):      #return if not admin
        return redirect(url_for('login'))

    return render_template('Live.html')

def capture_video():

    cap = cv2.VideoCapture(0)
    while cap.isOpened():
        ret, frame = cap.read()
        if not ret:
            break

        with open('encodings.json') as json_file:
            json_data = json.load(json_file)

        known_encodings = json_data['encodings']
        known_faces = json_data['ids']

        face_recognition.tolerance = 0.85

        imgS = cv2.resize(frame
def capture_video():

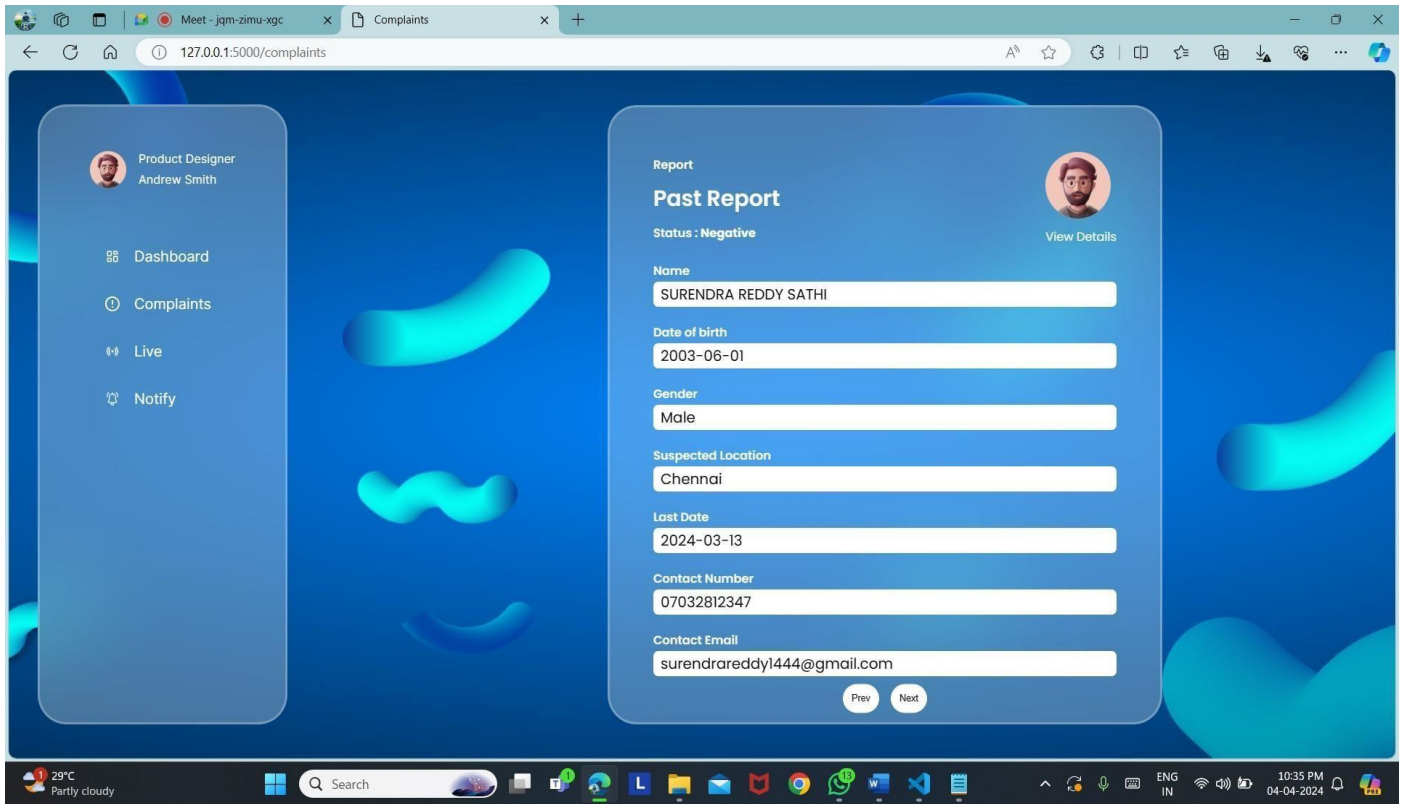
    cap = cv2.VideoCapture(0)
    while cap.isOpened():
        ret, frame = cap.read()
        if not ret:
            break

        with open('encodings.json') as json_file:
            json_data = json.load(json_file)

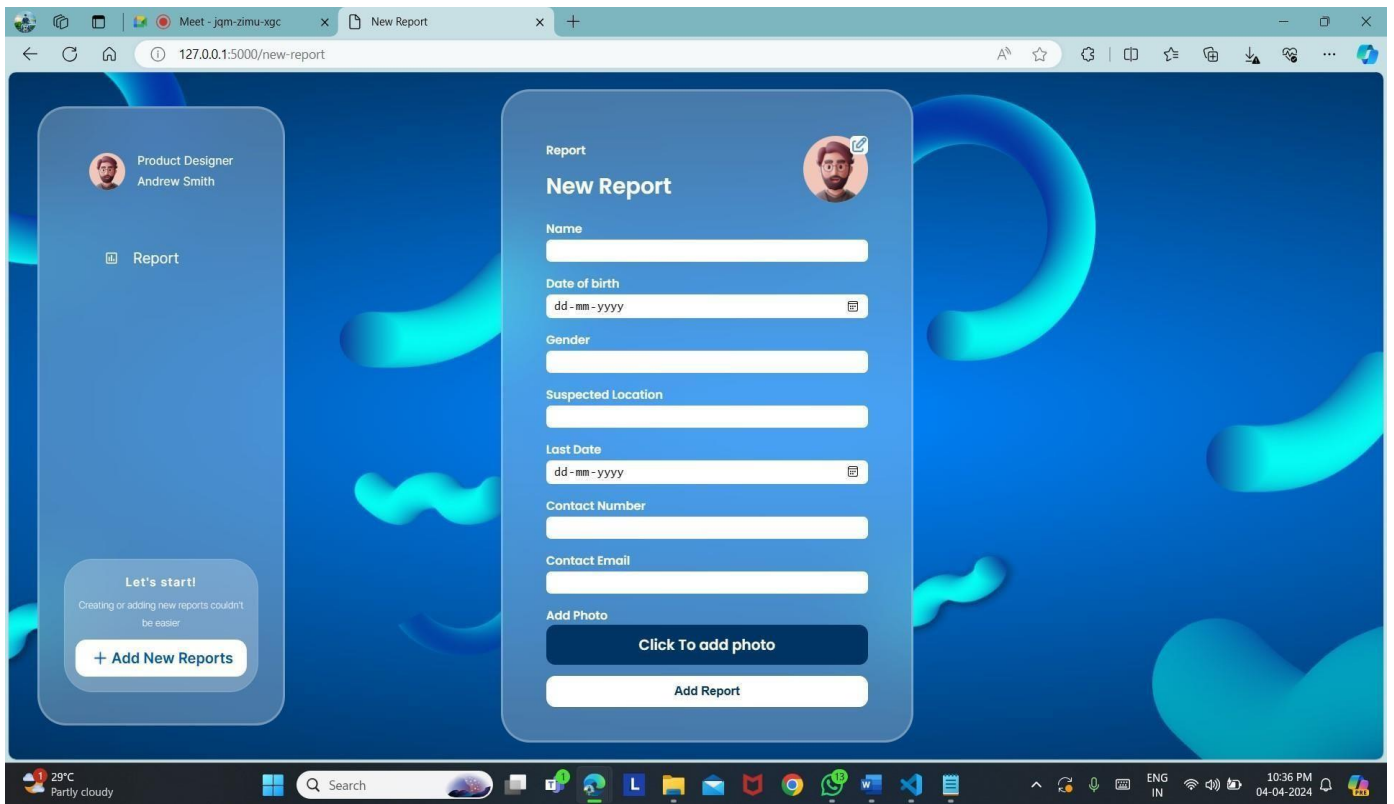
        known_encodings = json_data['encodings']
        known_faces = json_data['ids']

```

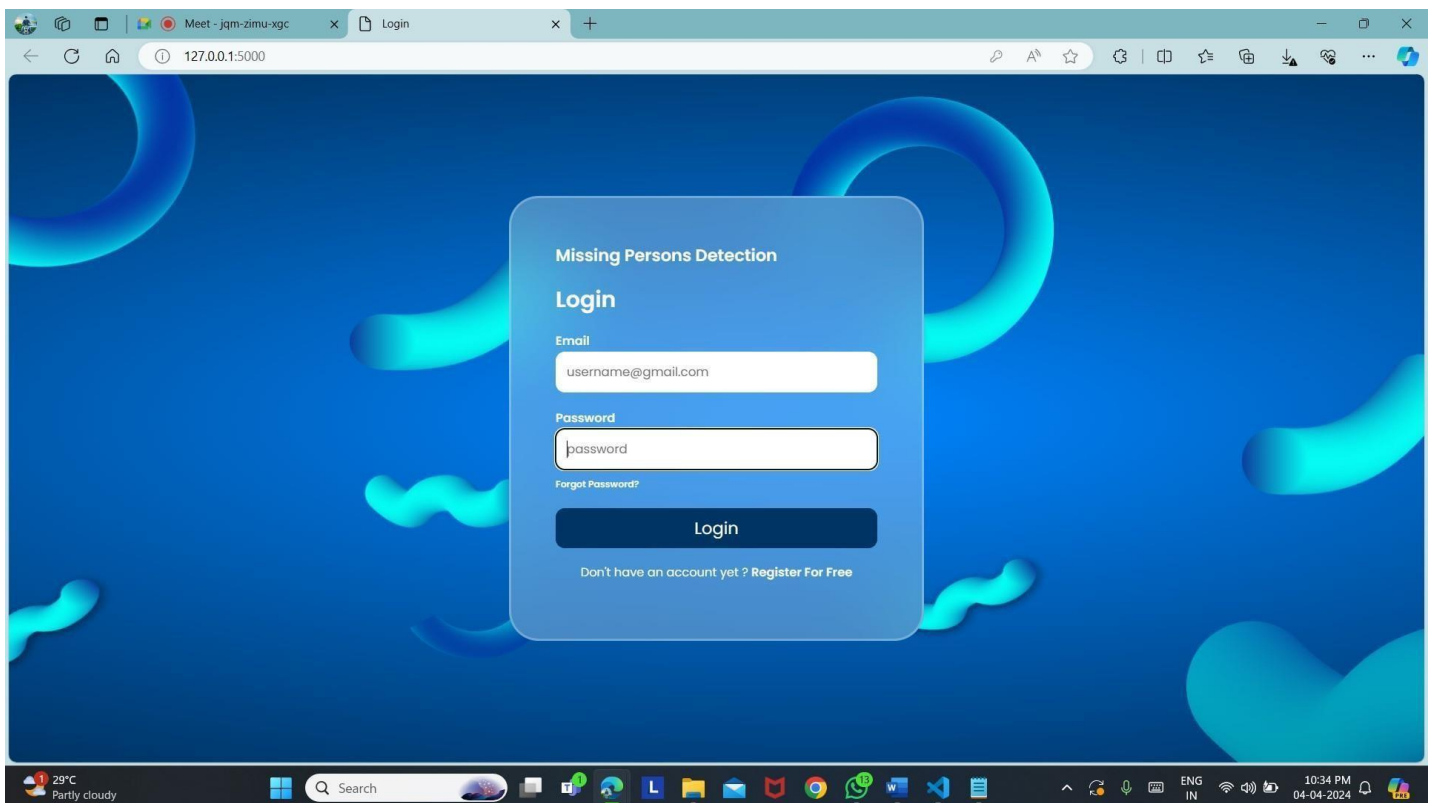
SCREEN SHORT :



Admin Interface



User's interface



Login page

CHAPTER 6

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Conference Certification



Missing Persons Identification Using SQL Database and Email Alert System with Facial Matching Techniques

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ABSTRACT

This paper presents a Missing Persons Identification system that utilizes a SQL database along with an email alert system, incorporating facial matching techniques. The system aims to efficiently and accurately identify missing persons by comparing their facial features with available records. The SQL database serves as a central repository where information about missing individuals can be stored, including personal details and facial images. The email alert system is designed to send notifications to law enforcement agencies, organizations, and the general public when a new missing person report is filed or when a potential match is identified. Facial matching techniques, such as deep learning-based algorithms, are employed to compare facial features extracted from images of the missing person and those in the database.

Keywords: *Missing Persons, Identification, SQL Database, Email Alert System, Facial Matching Techniques.*

matching algorithms to expedite the search for missing persons.

The core component of this system is the SQL database, which functions as a centralized repository for storing and managing crucial

I. INTRODUCTION

Missing Persons Identification Using SQL Database and Email Alert System with Facial Matching Techniques is a groundbreaking system that aims to enhance the process of identifying missing individuals by integrating various technologies and techniques. This comprehensive system is designed to streamline the identification process, provide timely alerts, and utilize facial

information related to missing individuals. The database stores a wide range of data, including personal details, physical attributes, last known locations, and any other relevant information that can aid in the identification process. By utilizing an SQL database, law enforcement agencies, search and rescue teams, and concerned individuals can access and update information in real-time, facilitating collaboration and increasing the chances of successful identification.

II. RELATED WORKS

[1] The field of missing persons identification has been a topic of great interest and importance in recent years. Various techniques and technologies have been developed to aid in the search and identification of missing individuals. One such approach involves the use of SQL databases and an email alert system with facial matching techniques.

[2] In a literature survey conducted on this topic, several studies were found. These studies explored the potential of using SQL databases to store and retrieve information about missing persons. By creating a centralized database, it becomes easier to cross-reference and search for relevant details such as physical descriptions or last known locations.

[3] Additionally, the integration of an email alert system can greatly enhance the efficiency of the identification process. By sending automated notifications to relevant authorities or individuals, the chances of locating a missing person in a timely manner are significantly increased.

[4] Facial matching techniques also play a crucial role in this domain. These techniques involve analyzing facial features and comparing

them to a database of known individuals. Through advanced algorithms and machine learning, potential matches can be identified, aiding in the identification of missing persons.

[5] A review of the literature revealed that the combination of SQL databases, email alert systems, and facial matching techniques has proven to be a promising approach. Researchers have developed various prototypes and systems that showcase the potential benefits of such an integrated solution.

[6] One study noted the importance of data quality in the success of the identification process. It emphasized the need for accurate and up-to-date information in the SQL database to ensure reliable search results.

[7] Another research paper highlighted the importance of privacy and security measures in handling sensitive personal information and costly within the system. It discussed the implementation of encryption protocols and Secondly, the email alert system in this access control mechanisms to protect the data.

[8] A comparative analysis of different facial matching algorithms revealed varying levels of accuracy and computational efficiency. This finding emphasized the need for continued research and development in this area to further improve the performance of facial matching techniques.

[9] Several studies also touched upon the challenges associated with integrating multiple systems, such as SQL databases and email alert Missing Persons Identification Using SQL Database and Email Alert System with Facial Matching Techniques has a number of disadvantages, including limitations in scalability and flexibility, inefficient communication methods, inaccuracies in facial matching, lack of integration with other technologies, and potential privacy and data security concerns. Addressing these shortcomings is crucial to developing a more effective and reliable system for identifying missing persons.

IV. PROPOSED SYSTEM

The proposed work aims to develop a system

systems. These challenges include data synchronization, system compatibility, and scalability.

[10] In conclusion, the literature survey highlighted the potential of using SQL databases and an email alert system with facial matching techniques in missing persons identification. However, further research is needed to address the various challenges and improve the accuracy and efficiency of the integrated solution.

III. EXISTING SYSTEM

The existing system for Missing Persons Identification Using SQL Database and Email Alert System with Facial Matching Techniques has several disadvantages. Firstly, the reliance on a SQL database can be limiting in terms of scalability and flexibility. As the database grows in size, it may become challenging to efficiently handle and retrieve data, leading to slow response times and potential data corruption. Additionally, the SQL database may require constant updates and maintenance to ensure its integrity, which can be time-consuming existing system may not be the most effective means of communication. Email alerts can easily go unnoticed or be overlooked, especially in urgent situations where immediate action is required. Furthermore, there is no guarantee that the intended recipients of the email alerts will regularly check their emails, which can lead to delays in response times and potentially hinder the successful identification of missing persons.

that aids in the identification of missing persons using a SQL database and an email alert system that incorporates facial matching techniques. The system will be designed to efficiently store and manage relevant information about missing individuals, such as personal details, physical attributes, and last known locations. A SQL database will be utilized for this purpose, allowing for easy retrieval and updating of the data. Additionally, facial matching techniques will be implemented to compare the facial features of missing individuals with available photographs or live video footage in order to identify potential matches. This feature will enhance the accuracy and speed of the

identification process. applications. The absence of such integrations can prevent the system from leveraging a broader range of data sources and functionalities, potentially limiting its overall effectiveness in identifying missing persons.

Lastly, privacy and data security concerns are critical considerations in any system that handles sensitive personal information. It is essential to ensure that user data, including facial images and personal details, is securely stored and protected from unauthorized access. Another disadvantage of this existing system is its lack of integration with other technologies or platforms. Modern systems often require interoperability and seamless data exchange with other systems such as social media platforms, law enforcement databases, or mobile

V. SYSTEM ARCHITECTURE



Fig. 1. System Architecture

VI. METHODOLOGY

1. **Missing Persons Database Management:** This module focuses on the creation and management of a comprehensive missing persons database using SQL database technology. The system will allow authorized users, such as law enforcement agencies and relatives of missing persons, to input relevant information about missing individuals, including personal details, last known whereabouts, physical characteristics, and photographs. The database will organize and store this information in a structured manner, facilitating efficient retrieval and analysis.

2. **Facial Matching Techniques:**

This module will utilize advanced facial recognition techniques to compare photographs of missing persons with potential matches from various sources, such as surveillance footage, social media profiles, and public databases. The system will employ algorithms and machine learning models to analyze and compare key facial features, including the structure of the eyes, nose, and mouth, and generate a similarity score for each potential match. The module will allow users to upload photographs of missing persons and quickly search for potential matches within the database. It will also include tools for refining and filtering search results, such as adjusting the sensitivity of the matching algorithm, filtering matches based on date or location, and displaying the most likely matches first.

3. **Email Alert System:**

This module aims to leverage the power of email technology to distribute alerts and updates about missing persons efficiently. When a new person is reported missing or a potential match is found, the system will automatically generate and send email alerts to relevant parties, such as law enforcement agencies, registered users, and media outlets. The alerts will include key information about the missing person, including their photograph, physical description, and last known location. The module will allow users to subscribe to receive email alerts based on their specific preferences and geographical areas of interest. It will also provide tools for managing

and tracking the delivery of email alerts, including bounce-back notifications and analytics on open rates and click-through rates.

VII. RESULT AND DISCUSSION

Table.1. Performance Metrics

Accuracy	Precision	Recall	F1 score
96.3	96.4	97.3	97.7

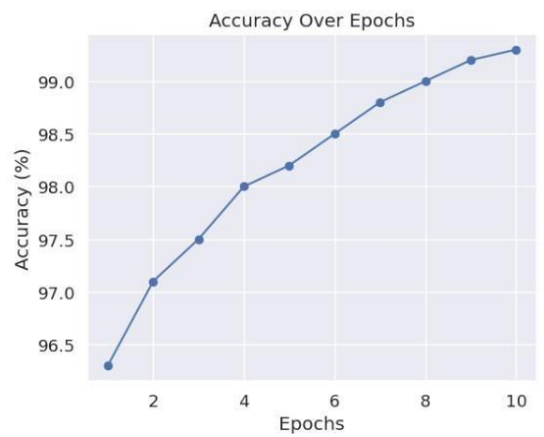


Fig.1.Accuracy Graph

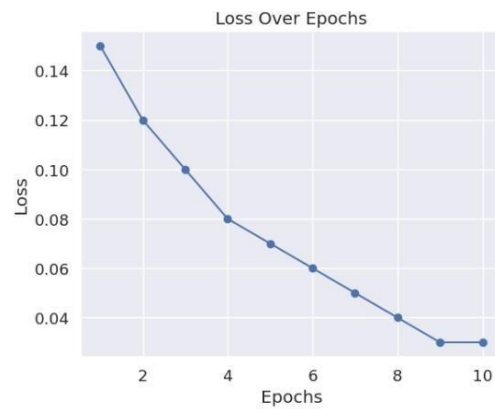


Fig.2.Loss Graph

The system for Missing Persons Identification Using SQL Database and Email Alert System with Facial Matching Techniques aims to address the critical issue of locating missing persons more efficiently and effectively. Through this database, law enforcement agencies, organizations, and individuals can submit and access information about missing persons, aiding in the identification process.

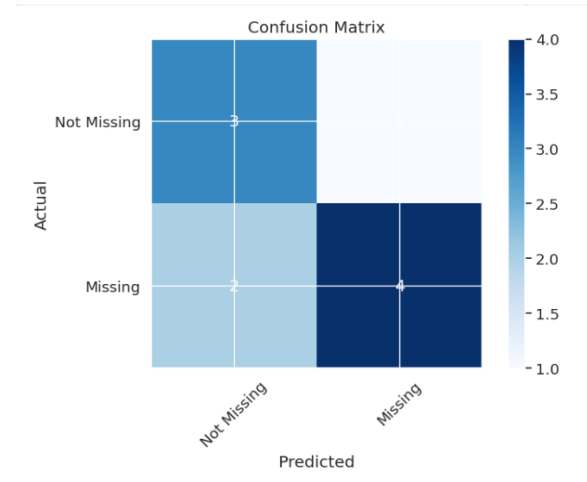


Fig.3.Confusion Matrix

Furthermore, this system incorporates an email alert system that enables registered users to receive notifications when a new missing person case is added to the database. By promptly disseminating this information via email, it increases the likelihood of generating leads and increasing public awareness, ultimately enhancing the chances of locating missing individuals.

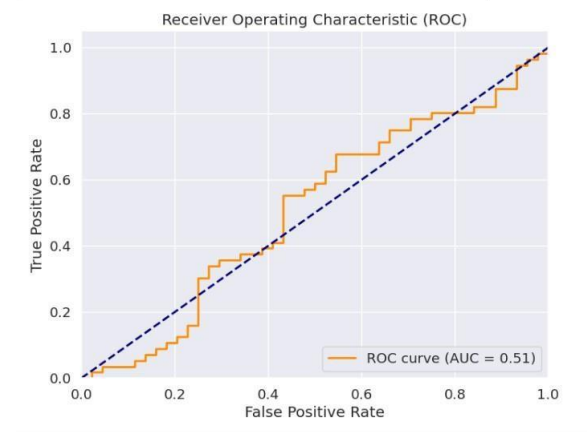


Fig.4.ROC Curve

VIII. CONCLUSION

In conclusion, the system for Missing Persons Identification Using SQL Database and Email Alert System with Facial Matching techniques is a comprehensive and efficient solution for locating missing individuals. By utilizing an SQL database, it allows for accurate and organized storage of crucial information related to missing persons. The email alert system ensures that relevant parties are promptly notified when a potential match is found,

increasing the chances of a successful identification.

IX. FUTURE WORK

The future work for the system on Missing Persons Identification using SQL Database and Email Alert System with Facial Matching Techniques will focus on enhancing the accuracy and efficiency of the system. Firstly, there is a need to improve the facial recognition algorithms, implementing deep learning techniques for better identification and matching of missing persons. Additionally, incorporating other biometric identifiers like fingerprints and DNA profiles can provide a more comprehensive approach to identification.

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