

# FIND ME

A Project Report

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in Partial Fulfilment For the Award of

the Degree of

**BACHELOR OF TECHNOLOGY**

**COMPUTER SCIENCE & ENGINEERING**

Under the Guidance of

**Prof. Maheshwari Sagar**

Assistant Professor





# PARUL UNIVERSITY

## CERTIFICATE

This is to Certify that Project - 1 (203105499) of 6<sup>th</sup> Semester entitled “Find Me” of Group No. PUCSE\_33 has been successfully completed by Rushikesh Gaware - 2203031247013.

under my guidance in partial fulfillment of the Bachelor of Technology (B.Tech) in Computer Science & Engineering of Parul University in Academic Year 2023- 2024.

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## **Acknowledgement**

We express our deepest gratitude to all those who have contributed to the development and success of our revolutionary web application for locating individuals. First and foremost, we extend our heartfelt thanks to our dedicated team of developers, engineers, and researchers whose expertise and hard work have brought this project to fruition. Their tireless efforts and innovative thinking have been instrumental in creating a cutting-edge platform that promises to transform the landscape of search and discovery. We also extend our appreciation to our partners and collaborators. Furthermore, we are grateful to the users and testers who have provided feedback and input, helping us to fine-tune our application and enhance its usability. Their participation has been crucial in shaping the features and functionalities of our platform to meet the needs of our diverse user base.

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## **Abstract**

FindME is a MERN stack application designed to help locate missing persons by using facial recognition technology. Users can submit forms for lost or found individuals, including detailed information and an image, which are stored in separate databases. The backend, powered by face-api.js, compares these images to identify potential matches. If a match is found between a lost and found person's image, the result is displayed to the user in the Match Result section, where they can view the matched details. Future plans include enhancing the algorithm, adding geolocation, notifications, and expanding the platform with a mobile app.

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# **Chapter 1**

## **Introduction**

**(”Empowerment through technology: Reuniting people, one photo at a time. Welcome to the future of search and discovery.)**

### **1.1 INTRODUCTION OF PROJECT**

Introducing our revolutionary web application equipped with state-of-the-art that brings a new level of efficiency and accuracy to locating individuals. By simply uploading a photo of the person in question, our application swiftly user scans and cross-references the image against an extensive database. This cutting-edge approach expedites the search process, eliminating the need for cumbersome manual searches and dramatically increasing the chances of locating the individual. With this intuitive and user-friendly tool, users can harness the power of searching to bring loved ones back together, provide swift assistance in emergency situations, and contribute to community safety in an unprecedented way. Embrace the future of search and discovery with web application, and experience firsthand the transformational impact it can have on reuniting people, one photo at a time.

### **1.2 SCOPE OF THE PROJECT**

The scope of our project encompasses the development, implementation, and deployment of a revolutionary web application designed to streamline the process of locating individuals. Key aspects within the scope of the project include: Development of the Web Application: Designing and developing a user-friendly web interface that access users to upload photos of individuals they are searching for. Integration of State-of-the-Art Technology: Implementing advanced image recognition algorithms and technologies to swiftly scan and cross-reference uploaded photos

against an extensive database of known individuals. This involves selecting and integrating appropriate software libraries or developing custom algorithms for efficient image processing and matching. Database Management: Establishing and managing a comprehensive database containing information on individuals to be searched. This includes organizing and structuring the database in a way that facilitates efficient search and retrieval of relevant information

### **1.3 AIM OF THE PROJECT**

The primary aim of our project is to introduce a revolutionary web application equipped with state-of-the-art technology to enhance the efficiency and accuracy of locating individuals. By simplifying the process to a mere upload of a photo, our application swiftly scans and cross-references the image against an extensive database. This cutting-edge approach expedites the search process, eliminating the need for cumbersome manual searches and significantly increasing the chances of locating the individual.

## **Chapter 2**

# **Literature Survey**

### **2.1 PAPER:1 Using a Mobile Based Web Service to Search for Missing People.<sup>1</sup>**

AUTHORS :- Thomas M. Omweri and Andrew Mwaura Kahonge.

ABSTRACT: - It is understandable that being away from a loved one and not getting in touch with them is very worrisome and awful. There exists a variety of profiles where people have gone missing for many years, where for the most searches no success can be asserted. To enable families and friends to be in the position of getting back their missing relatives, a mechanism that will facilitate the locating of the lost persons comes forth. In the assessment of this solution, it was simulated an F1 score test, under 20 situations, where very decent score of 0.72 was realized. The research puts forth that out mobile based technology should be put to use to find an easier and quicker way of looking for missing people.

### **2.2 PAPER:2 Missing Persons.<sup>2</sup>**

AUTHOR:- Bruce Swanton and Paul-Wilson

ABSTRACT: The volume of the definition and estimation of the numbers is very different. In 1985 almost 24000 people were reported as missing to the police, these included absconders from institutions. Of these, approximately 7,000 were adults, non-juvenile, while almost 17,000. At any one moment there are about 250 such cases registered. An overview reveals that all police organizations have a file containing missing persons data. Nevertheless, their structures and functions as to the missing persons issue vary. Police officers make subjective, intuitive choices distinguishing hazards of low and high urgency; reports about the missing are included in the latter category. Further measures to prevent missing persons or locating those who have gone missing are

all – prevention, media coverage, follow ups on posters with employee photographs, more active missing persons week/days, more clear cut definitions of missing persons used by the police, and better criteria based upon actual missing person cases Tackling the issue more active following of the studies of the missing person support information centers if these are appropriate and useful and bringing out the issue to the media. Further readings include a list of 6 titles.

## **2.3 PAPER:3 Face Detection in Extreme Conditions: A Machine-learning Approach.<sup>3</sup>**

AUTHOR :- Sameer Aqib Hashmi

ABSTRACT:- Because of variability in expressions, brightness, and coloration fringing, face detection in non-conventional situations has been a challenge for years. But as recent studies state, deep learning approaches internalization of methods will produce incredible results especially when it comes to the detection of different devices and patterns. This face detection in hostile surroundings is not an easy task due to different angles, luminosities, and even obscuration in some cases. Imaging recognition of an individual's face has even been popularized in the mass media. However, it is more vulnerable to a fingerprint or to the retina. The paper at hand explains how deep learning algorithms could accomplish impressive results with these two tasks. In this work, I propose a new deep multi-tier structure which is based on deep coupling among multi-venture systems in order to enhance their quickness. To this end, however, my system is implemented in a cascading architecture where three stages of precisely constructed deep convolutional networks are used to sequentially coarse and refine the face and landmark detection tasks. Additionally, during the learning stage, I introduce a novel online hard sample mining and training method that can improve the effectiveness of the system plate without any human intervention.

## **2.4 PAPER:4 Searchious:Locating missing people using an optimised face recognition algorithm.<sup>4</sup>**

AUTHORS:-Vishakha Shelke, Gunjan Mehta, Prajakta Gomase, Trisha Bangera.

ABSTRACT:- Outlook on the relevance of face recognition systems has changed in the last few decades. This is in fact, part of the biometric recognition system. Every day, there are people that go missing all over the world. These people are either abducted, put into sex slaves and illegal child labor, beg in train stations, small shops or are pushed to prostitution, human slavery or any other illegal practices. Our daily lives too, have high chances of encountering posters of missing persons

on social networks, TV news, newspapers etc. The aim of the authors of this work is to facilitate this process of missing individuals' search. This is achieved through the use of the proposed tool, "Searchious", whereby, it decreases the period taken to locate an individual and enhances the activity of recovering that individual. Searchious will be able to find missing persons and even file case for a new face entry even though new features which are not presently in the data base are engaged. Searchious owns a mobile app for ordinary people and the police KNN-based search assistant application.

## **2.5 PAPER:5 Finding Missing Person Using Artificial Intelligence.<sup>5</sup>**

AUTHORS:- A.Ponnalar,B.Sandhiya, M.Bhuvaneswari, M.Gayathri,GKR Bhavana, S.Aarthi.

ABSTRACT:- Looking for a missing person nowadays is an effort which has become very complex, even though everyone is updated thanks to social media, a lot of documentation is needed, it is time consuming for a task that may not yield much results. The general public and the police department's welfare are enhanced by decentralizing the processes involved in searching for faces lost in crowds or other recognition based systems. For this system to work, the right protector of the missing person has to place the particular image which is then going to be kept in our server. After which a match for that individual in the stored information is searched for using the face recognition feature of the software. If any matches are found, both the police and the child or individual would be the guardians will be notified. In face recognition technologies, the process of capturing the face of a user is termed as "face plan". In this way, the complete depiction of a person's face is stored or graphically arranged using computer codes meant for getting that person's face. Our system's model of face recognition will seek to find and print an image on its internal database of every person corresponding to that individual. In the event that there is a positive identification, the police and the child's guardian or parent will be notified.

## **2.6 PAPER 6: Android Based Application - Missing Person Finder.<sup>6</sup>**

AUTHORS:-Birari Hetal, Sanyashiv Rakesh, Porje Rohan, Salve Harish.

ABSTRACT:- This project Finding Missing Person using Face Detection on Android Application comes up with a solution to this problem, it is a scheme that is used on android mobile to capturing images and upload that into application so as to get results on the basis of face detection. SWF-SIFT algorithm is being implemented for performing the comparison of two images, the system assures of a span of 70-80 per result on the basis of compared images. Four modules User, Police, Compliant holder and Admin are used for getting the appropriate result. Admins recurrently Update databases

and Remove unneeded data. The proposed system helps to find out a particular person in the least time and less effort.

## **2.7 PAPER:7 Missing person identification system.<sup>7</sup>**

AUTHORS:-G.Anitha, E.Gurumohan Rao, V.Pavan Kumar, M.Prashanth, A.Balaram.

ABSTRACT:-In this paper, a new application of deep learning technology is proposed, which makes it possible to recognize the relative missing image among the pictures of many people based on the help of pictures. Pictures of doubtful individuals might be posted in a communal site along with the place and the time. This photograph would be associated with pictures from the database of the missing person. One input individual image is identified, and one image from the archive of missing people is retrieved with the close resemblance. There is an algorithm learned that enables us to trace a face from image of missing person using internal background with people's faces reported missing faces as generated catalogues. People accept public pictures of missing people and train the faces with CNN inside the public responsive application. The face feature data is obtained from images by using a previously trained VGG-Face Deep Convolutional Neural Network(CNN) model. Other methods, such as other deep learning algorithms, use AI to accomplish tasks as high level convolutional networks do not provide constructive individual acknowledgment as military classifiers such as KNN combine feature acquisition and recognition. VGG-Face is the best-performing Convolutional Neural Network, as long as it is properly prepared, in which a separate deep learning model is obtained that effectively facilitates face detection irrespective of distortion, lighting, and person age and outperforms earlier approaches to facial recognition based misclassification.

## **2.8 PAPER:8 AI for Detection of Missing Person.<sup>8</sup>**

AUTHORS:-B.Vinavatani, Medha Rachel Panna, Premila H Singha, G.Jasper Willsie Kathrine.

ABSTRACT:- There is no denying that the facial recognition technologies have gained traction over the years. A facial recognition system is a software application which either identifies or verifies a human being by examining a photograph or a video image. Detection and recognition of facial attributes is fully integrative in different societal cultures and technologies. Artificial intelligence on the contrary has offered remedies to the problems of the ultramodern world. It is evident that AI focused on making the communication between a human and a machine effective was engineered with regard to the present and future copulation patterns. The mechanism has been in practice where it is able to detect a face with an accuracy of 90

## **2.9 PAPER:9 Identification of Missing Person using CNN.<sup>9</sup>**

AUTHORS:- J.Dhanalakshmi,Ashok Kumar M,Shalini J,Soundharya Devi M.

ABSTRACT:- The principal goal of our project consists of employing Convolutional Neural Networks (CNN) in the processes associated with searching for missing persons. CNN is a type of deep learning networks that is used in image recognition, and is expected to help in speeding up and improving the whole identification chain. The project strives to create a system based on CNN models that enhances identification of individuals who are unrecognizable from the images and matches them with population missing persons' data bases. The proposed approach will, therefore, assist law enforcement and missing persons organizations in the effective and efficient image comparison among multiple sources of images including but not limited to surveillance, social media and even public images. Furthermore, since the incorporation of these markers does not limit the versatility of CNNs; other markers like fingerprints and voice identification can be utilized to make identification more accurate and dependable. This research makes an effort stressing out the relevance of the involvement of artificial intelligence and machine learning in the project social impact thus affecting the possibility of the technology against missing people and their families. Further directions will be aimed at improving the model, protecting the privacy of data, and preventing misuse of the technology in practice.

## **2.10 PAPER:10 A Web Portal for Tracking and Finding Missing Person Using Aadhaar Enabled Biometrics.<sup>10</sup>**

AUTHORS:-Prema A,Vigneshwar B,Jai Kishan M.

ABSTRACT:- The research on the Aadhar-enabled Biometric Web Portal for Finding Missing Persons seeks to resolve the problem of finding missing persons using the unique information existing in the Aadhar Biometric. Given that Aadhar cards are very popular in India, the study here extends to the web portal with the use of Aadhar linked biometric data. This portal allows users to submit different biometrics such as fingerprints or iris scans, which are cross-matched with the Aadhar database. The system also employs features aterial biometric fabs that accelerate the recognition of potential candidates, thereby enhancing the search for missing persons. In this research, a biometric web application has also been configured to work with Aadhar enabled based biometric devices. A system which would rely heavily on Aadhar enabled biometric devices, Any system for Asha that actually works to help restore lost children to parents and families will work through the use of Aadhar ID cards.

# **Chapter 3**

## **Analysis / Software Requirements Specification (SRS)**

### **3.1 Introduction**

Purpose: - Introducing FindMe, an innovative web application that seamlessly integrates comprehensive documentation capabilities to help locate individuals swiftly and efficiently. Designed to address both documentation and search needs, FindMe empowers users to create a detailed profile of a person while for accurate identification and search efforts.

### **3.2 Feasibility Study**

A feasibility study is a comprehensive analysis that assesses the viability of a project before proceeding with its execution. It is a critical document that helps stakeholders make informed decisions about whether to pursue a project, outlining its potential risks, benefits, costs, and overall feasibility. Here is a general outline for a feasibility study documentation:

### **3.3 Technical Feasibility**

Technical feasibility is a crucial aspect of assessing the viability of a project. It involves evaluating whether the project can be successfully implemented from a technical perspective, considering factors such as technology, resources, infrastructure, and expertise. Technical feasibility assesses whether the project's proposed solution is achievable from a technological standpoint. It focuses on the technical requirements, constraints, and capabilities needed to implement the project effectively

## **3.4 Users of The System**

- User who found Someone
- User who lost Someone

## **3.5 Hardware Requirement**

- Central Processing Unit (CPU): minimum i3, Ryzen 3
- Memory (RAM): 4 GB
- Storage (Hard Drive/SSD): 4GB
- Graphics Processing Unit (GPU): Intergraded Graphic is Enough

## **3.6 Software Requirement**

- Chrome, Browser
- XAMP

## **3.7 Use Case**

A project focused on finding and registering a missing person is a critical and impactful initiative that can be used to address various real-world scenarios. Here's a use case for such a project:

## **3.8 Operational Feasibility**

Operational feasibility evaluates whether the project can be smoothly integrated into existing workflows and systems. It assesses the practicality of implementing and sustaining the project's operations, considering factors such as process changes, resource allocation, and staff readiness. This analysis aims to determine whether the project aligns with the organization's capabilities and if it can be efficiently managed and maintained over the long term, ensuring that it contributes positively to the organization's objectives while minimizing disruptions and operational bottlenecks.

## **3.9 Other Non-Functional Requirements**

**Scalability:** The application can be able to handle a more number of concurrent users and a growing database of individuals without compromising performance. It should scale horizontally to accommodate increased demand and data volume.

**Reliability:** The application should be highly reliable, with minimal downtime and robust error handling mechanisms in place. It should recover gracefully from failures and maintain data integrity at all times.

Security: The application should implement stringent security measures, privacy. This includes encryption of sensitive information, secure authentication and authorization mechanisms, and protection against common security threats.

Compliance: The application should comply with relevant regulations and standards, such as GDPR, HIPAA and any other applicable data protection laws. It should also adhere to industry best practices for data handling and security.

Performance: The application should be optimized for performance, with fast response times and minimal latency. This includes efficient querying of the database, optimized image processing algorithms, and caching mechanisms to reduce server load.

Accessibility: The application should be accessible to users with disabilities, complying with accessibility standards. This includes providing alternative text for images, keyboard navigation support, and compatibility with screen readers.

### **3.10 Privacy and Data Security**

Ensure the privacy and data security of all users involved, especially for minors, by implementing strict data protection measures.

# **Chapter 4**

## **System Design**

### **4.1 Frontend:**

User Interface: Design a user-friendly interface that allows users to easily upload photos and interact with the application.

Client-Side Validation: Implement client-side validation to ensure that uploaded images meet the required criteria and format.

User Authentication: Incorporate user authentication mechanisms to secure user accounts and access to the application

### **4.2 Backend:**

Server Architecture: Design a scalable and reliable server architecture to handle incoming requests and process image uploads.

Image Processing: Implement image processing algorithms to analyze uploaded photos and extract relevant features for comparison.

Database Management: Design and optimize a database schema to store information about individuals and facilitate efficient search and retrieval operations.

API Development: Develop RESTful APIs to enable communication between the frontend and backend components of the application

### **4.3 Image Recognition:**

Algorithm Selection: Choose suitable image recognition algorithms to analyze and compare uploaded images with the database.

Training and Testing: Train and test the selected algorithms using a diverse dataset of images to ensure accurate and reliable results.

Integration: Integrate the trained models into the backend system to perform real-time image recognition and matching.

#### **4.4 Database Management**

Database Schema: Design a relational database schema to store information about individuals, including their images, metadata, and related attributes.

Indexing and Optimization: Implement indexing and optimization techniques to improve query performance and minimize response times.

Data Maintenance: Develop scripts or tools for data maintenance tasks, such as data cleaning, deduplication, and periodic updates.

#### **4.5 Scalability and Performance:**

Load Balancing: Implement load balancing mechanisms to distribute incoming traffic across multiple servers. Caching: Utilize caching mechanisms to store frequently accessed data, reduce database load and to improve system performance. Horizontal Scaling: Design the system to scale horizontally by adding more server instances or using cloud-based services to accommodate increased user traffic and data volume

# **Chapter 5**

## **Methodology**

### **5.1 Requirement Analysis:**

- o Conduct thorough market research and user surveys to understand the needs and preferences of the target audience.
- o Define functional and non-functional requirements based on the gathered insights, focusing on usability, performance, security, and scalability.

### **5.2 Technology Selection:**

- o Evaluate and select appropriate technologies for frontend and backend development, considering factors needed.
- o Choose image recognition algorithms and frameworks that are well-suited for analyzing and comparing uploaded photos against the database.

### **5.3 System Design:**

- o Design the architecture of the web application, including frontend UI/UX design, backend server architecture, database schema, and image recognition pipeline.
- o Define the interactions between different components of the system and establish protocols for data transmission and processing..

### **5.4 Development**

- o Implement the frontend of the web application using modern web development technologies.
- o Develop the backend server using appropriate programming languages (e.g., PHP/Python, Node.js) and frameworks (e.g., Django, Flask) to handle user requests, process images, and interact with the database.

- o Implement image recognition algorithms and integrate them into the backend system to perform real-time scanning and cross-referencing of uploaded photos.

### **5.5 Database Implementation:**

- o Set up and configure the database management system (e.g., MySQL, MongoDB, PostgreSQL) to store information about individuals, including their images and related metadata.
- o Design and optimize the database schema to ensure efficient storage and retrieval of data, considering factors such as indexing, normalization, and denormalization.

### **5.6 Testing:**

- o Conduct comprehensive testing of the web application to ensure functionality, performance and reliability.
- o Perform different types of testing to identify and fix any bugs or issues.
- o Test the accuracy and efficiency of the image recognition algorithms using a diverse dataset of images to verify their effectiveness.

### **5.7 Deployment:**

- o Deploy the web application on a reliable hosting infrastructure, such as cloud-based services (e.g., AWS, Azure) or dedicated servers.
- o Configure the server environment and set up monitoring tools to track system performance and ensure uptime and reliability.
- o Conduct user acceptance testing (UAT) to gather feedback and make any necessary adjustments before full-scale deployment.

# Chapter 6

## Implementation

### 6.1 Registration Page

The User Registration Page is a crucial component of our project, designed to provide secure onboarding experience for users. This page serves as the gateway for individuals to create accounts and access the full range of features and functionalities our project has to offer. Below is a detailed description of the User Registration Page.

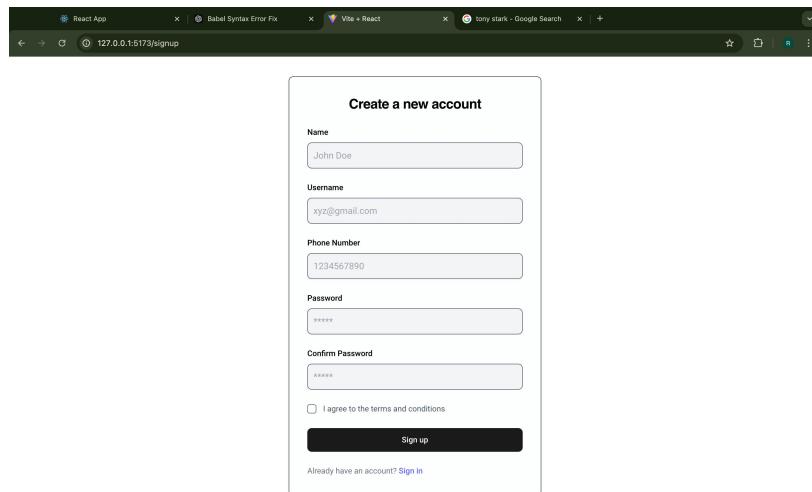


Figure 6.1: Registration

### 6.2 Login Page

User-Friendly Interface: The login page features an intuitive and user-friendly design, aimed at providing a hassle-free login experience for users of all levels of technical expertise. . If any information is entered wrong it will display error




Figure 6.2: Sign In

### 6.3 Choice Page

The Choices Page for Photo Upload or Find Photo is a pivotal interface within our project, providing users with the flexibility to either upload their own images or discover and use existing photos. This page serves as the gateway to visually enhance and personalize their project experience. Below is a detailed description of this Choices Page: User-Friendly Interface: The page features an intuitive and visually appealing design, ensuring a user-friendly experience for individuals with various levels of technical expertise

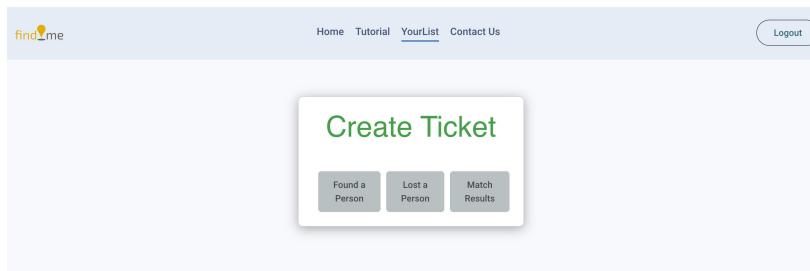


Figure 6.3: Create Ticket

### 6.4 Home Page

Our home page serves as a comprehensive portal where users can access vital information about missing and found individuals. This platform is dedicated to reuniting families and communities by providing a central hub for sharing, searching, and discovering information about lost and found persons.

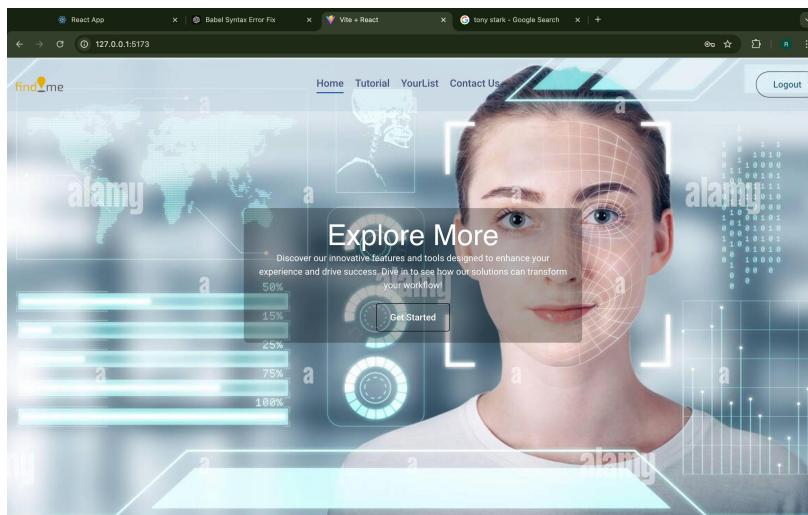


Figure 6.4: a.Home Page

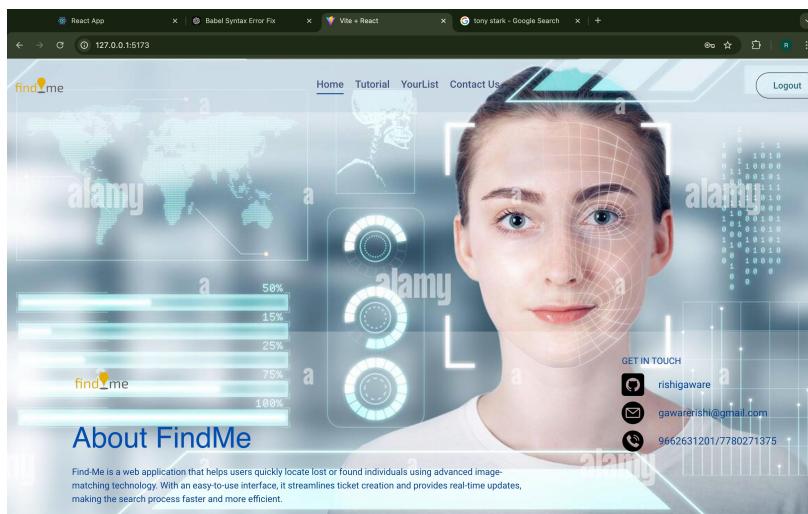


Figure 6.5: b.Home Page

## 6.5 Found Person Form

The Found Person Page is a pivotal component of our onboarding process, designed to provide users with a seamless entry into our platform. It features comprehensive form fields for essential information, including real-time validation to ensure accuracy and security. With an emphasis on secure authentication, optional two-factor authentication adds an extra layer of protection. The page is optimized for responsiveness, making it accessible on both mobile and desktop devices, and its intuitive layout enhances the user experience. Clear links to help and support ensure users feel guided throughout the process. A transparent privacy policy and consent checkboxes build trust, while integration with third-party authentication options simplifies registration. Overall, this approach creates a welcoming environment that fosters engagement and satisfaction from the very start.

Fill the information of the Person you found

Name:

Phone Number:  Please fill in this field.

City where you found them:

State where you found them:

Age:

Choose a picture:  Choose file

**Submit**

Figure 6.6: Found Person Detail

## 6.6 Lost Person Form

The Found Person Page is a crucial component of our project, designed for secure onboarding experience for users. This page serves as the gateway for individuals to create accounts and access the full range of features and functionalities our project has to offer. Below is a detailed description of the Found Person Page.

Fill in the details of the lost person

Name:

Phone Number:

Address:

Aadhar Card Number:  Please fill in this field.

City of Loss:

State of Discovery:

Age:

Choose a picture:  Choose file

**Submit**

Figure 6.7: Lost Person Detail

## 6.7 Found person List

The "Lost Person List Page" serves as a crucial component of our platform, providing a comprehensive and accessible repository of information about individuals who are currently

reported as missing. Here, users can find a curated list of cases, each representing a person whose whereabouts are unknown. These listings include vital details such as the individual's name, age, physical description, and the circumstances surrounding their disappearance. Our "Lost Person List Page" is a hub of hope and shared effort, where users can browse cases, raise awareness, and potentially contribute information or assistance. It's a place where communities come together to support the families and friends of those who are desperately seeking to be reunited with their loved ones. Your visit to this page is not just an act of engagement; it's a gesture of compassion and solidarity, and we thank you for being a part of this collective effort to make a difference.

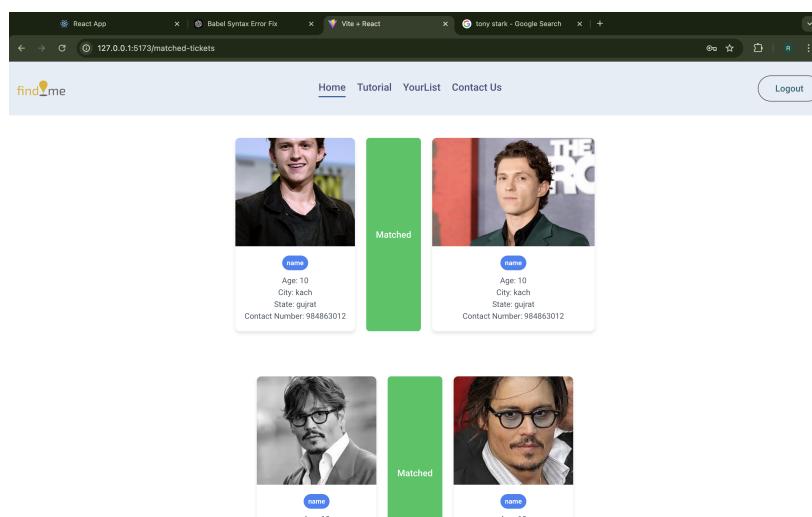


Figure 6.8: Matched

## 6.8 Your List

This essential component of our platform. This page provides users with a real-time view of individuals who have been successfully registered in our system. Each entry represents a person who has taken the initiative to create a profile or report information related to missing or found individuals. The list includes the names and key details of these registered individuals, demonstrating their commitment to making a difference in reuniting families or assisting in missing persons cases. By utilizing this page, users can explore the community of compassionate individuals who actively contribute to our mission. It's a place where the collective effort of registration and involvement comes to life, and we extend our gratitude to those who have joined us in this shared endeavor.

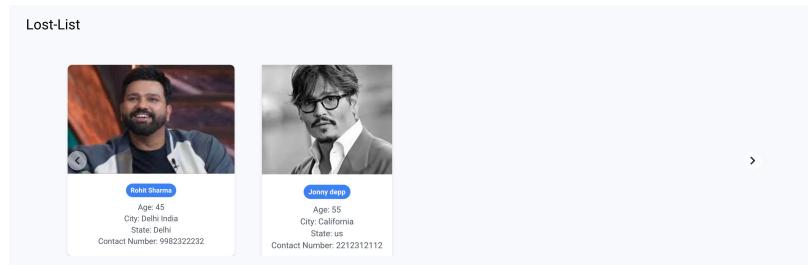


Figure 6.9: Lost List

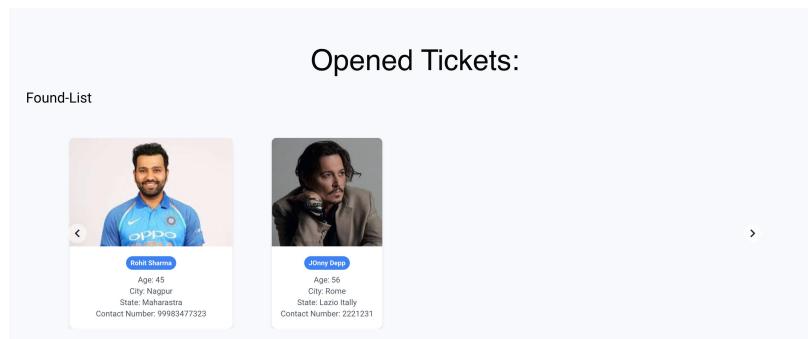


Figure 6.10: Opened Ticket-Found List

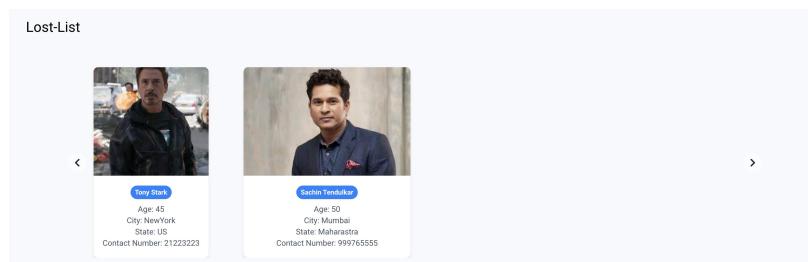


Figure 6.11: Opened Ticket-Lost List

### Closed Ticket

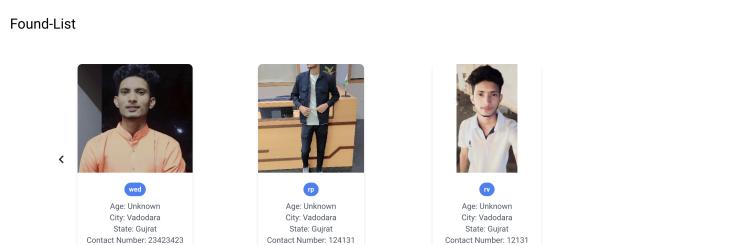


Figure 6.12: Closed Ticket-Found List

# **Chapter 7**

## **Testing**

### **7.1 Face Detection Threshold Impact:**

In the face detection system used for comparing lost and found persons, the results exhibit a notable transition. When comparing face descriptors, a threshold of 0.6 serves as the boundary where faces are determined to either match or not. The system accurately identifies if two images represent the same person when the Euclidean distance between face descriptors is within this threshold. This sharp change in results shows the model's ability to classify whether two faces belong to the same individual, critical in identifying missing persons.

### **7.2 Implications for Lost Person Matching:**

The integration of face recognition with traditional person-finding approaches marks a significant improvement in the search for lost individuals. By evaluating facial similarities between lost and found persons alongside identifying details (like names and photos), this method offers a more personalized and accurate approach to locating missing people. This face comparison system holds great potential for improving the success rate of reunions by providing a more reliable method than relying solely on basic identifying features.

### **7.3 Scalability and Real-time Performance:**

In a real-world application where thousands of cases of missing and found persons are reported, ensuring that the system can scale and operate in real time is crucial. The current face detection algorithm, powered by face-api.js, demonstrates high accuracy. However, optimizations are required to ensure the system maintains its efficiency when handling a growing number of lost and found cases simultaneously. This system's ability to compare faces on a large scale is essential for timely reunions.

# **Chapter 8**

## **Conclusion**

In conclusion, the introduction of our revolutionary web application marks a significant milestone in the field of search and discovery. The simple act of uploading a photo allows users to swiftly scan and cross-reference it against an extensive database, eliminating the need for laborious manual searches.

FindME successfully leverages the power of the MERN stack and facial recognition technology to assist in reuniting lost individuals with their families. By allowing users to submit detailed information and images of lost and found persons, the system efficiently compares these images and provides accurate matches, displayed in the Match Result section. The application demonstrates a practical and impactful solution for missing person identification.

# **Chapter 9**

## **Future Work**

### **9.1 Expansion of Database:**

Continuously updating and expanding the database of known individuals to improve search results and accommodate a wider range of scenarios. Collaborating with organizations, agencies, and communities to access additional data sources and enhance the comprehensiveness of the database. Exploring opportunities to integrate the application with other data sources, such as social media platforms, public records databases, and surveillance systems, to further enhance the accuracy and breadth of search results.

### **9.2 Geolocation Integration:**

Incorporating geolocation features will allow users to input the last known location of a lost person, helping to refine search results and increase the chances of finding a match based on geographic proximity.

### **9.3 Mobile Application Development:**

Developing a mobile app for iOS and Android will provide users with easier access to the platform, enabling them to submit forms, view matches, and receive notifications directly from their mobile devices.

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