# Missing Person Finder Android App

**Prof. Jyoti Gavhane[1], Chaitanya Pandey[2], Pooja Mane[3], Vaishnavi Bhapkar[4]**

School of Computing, MIT ADT University, Pune, Maharashtra, India

chaitanyapandey23@gmail.com, manepooja2002@gmail.com, vaishnavibhapkar365@gmail.com

**Abstract***: The Missing Person Finder Android app is a powerful, user-friendly tool designed to aid in the search for missing individuals. Leveraging advanced photo recognition technology and a comprehensive database, the app enables users to search for missing persons using photographs and detailed descriptions. This application assists family members, friends, and the general public by providing a centralized platform for information dissemination and search operations.*

*The app's database is regularly updated by police authorities, who input new cases and update existing ones with the latest information, ensuring the most current and accurate data. This enhances the chances of finding missing persons quickly. The integration of machine learning algorithms and facial recognition technology increases search accuracy, allowing identification even from low-quality images.*

*The Missing Person Finder app aims to be a crucial tool in locating missing individuals by utilizing modern technology to streamline the search process and improve collaboration between the public and police forces.*

**Keywords:** Android App, Firebase, AI/ML, Missing Person

## I. INTRODUCTION

In the digital age, the search for missing persons can be significantly enhanced through the power of modern technology.[1] The Missing Person Finder Android app is designed to harness this potential, offering an advanced platform for locating missing individuals using photographs and detailed personal information. Central to its functionality is integration with the Firebase Realtime Database, which provides a robust, scalable, and real-time infrastructure for storing and retrieving crucial data on missing persons.

Time is often critical in missing person cases, and access to the latest information can be a decisive factor.[2] The app ensures that users have the most current data available, thanks to instantaneous updates by police authorities via Firebase Realtime Database. This continuous flow of up-to-date information enhances the efficiency and effectiveness of search efforts.

Users can contribute by uploading photos and detailed descriptions of missing individuals, including age, height, last known location, and distinguishing features. The app employs advanced photo recognition technology and machine learning algorithms to compare these inputs against the database, capable of identifying individuals even from low-quality images.[3] This sophisticated search mechanism is designed to yield accurate and rapid results, significantly boosting the chances of successful reunions.

## II. PROBLEM STATEMENT

The search for missing persons is often hampered by outdated information, inefficient data sharing, and limited public engagement. Traditional methods rely heavily on manual processes and fragmented databases, leading to delays in disseminating crucial information. These delays can significantly reduce the chances of locating missing individuals, especially in the critical early stages of a search.

Family members, friends, and law enforcement agencies face challenges in efficiently sharing and accessing up-to-date information.[4] The lack of a centralized platform that integrates real-time data, advanced search technologies, and wide public participation exacerbates these issues. Consequently, search efforts can become disorganized, and valuable time can be lost.

To address these challenges, there is a need for a solution that leverages modern technology to provide a comprehensive, real-time, and user-friendly platform for managing and conducting searches for missing persons.[6]

This solution should facilitate immediate data updates, utilize advanced recognition technologies, and promote collaboration between the public and law enforcement agencies to improve the effectiveness and efficiency of search operations.

A streamlined, technologically advanced app can alleviate some of this burden by providing a single, reliable source of up-to-date information and robust search capabilities.

## III. PROPOSED SYSTEM

The Missing Person Finder Android app aims to provide a comprehensive and efficient solution for locating missing individuals by leveraging Firebase Realtime Database and Firebase ML Vision Face Detection technology. The proposed system will consist of the following key components:

**User Interface (UI):**

- **Registration and Login:** Users, including family members, friends, and law enforcement officials, can register and log in securely.
- **Profile Creation:** Users can create detailed profiles for missing persons, including photographs, personal information (age, height, weight, distinguishing features), and last known location.
- **Search Functionality:** A user-friendly search interface that allows users to input or upload a photograph to find potential matches in the database.

**Data Storage and Management:**

- **Firebase Realtime Database:** A robust, scalable platform that stores all missing person profiles, enabling real-time data updates and retrieval. Police authorities and authorized users can update profiles with new information, ensuring the database is always current.
- **Data Security:** Implementation of security protocols to protect sensitive information and ensure that only authorized users can add or modify data.

**Photo Recognition and Matching:**

- **Firebase ML Vision Face Detection:** Utilizes machine learning algorithms to analyze uploaded photographs. The system can detect and extract facial features, even from low-quality images.
- **Face Matching Algorithm:** The extracted facial features are compared against those stored in the Firebase Real-time Database. The algorithm searches for potential matches and ranks them based on similarity, providing users with a list of likely matches.

**Notification and Reporting System:**

- **Real-time Notifications:** Users receive notifications about nearby missing person cases, updates on their submitted profiles, and potential matches found through searches.
- **Reporting Sightings:** A secure channel for users to report sightings or provide tips, which are then forwarded to the relevant law enforcement agencies for further action.

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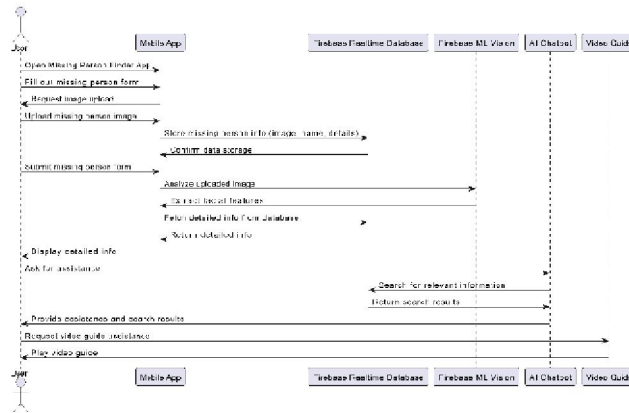345

**A. Block Diagram/ Sequence Diagram:**



Fig. 1: Sequence Diagram of Proposed system

The sequence diagram for the Missing Person Finder app outlines the interactions between the user, the mobile app, Firebase Realtime Database, Firebase ML Vision, AI Chatbot, and Video Guide. Here's a brief explanation of the sequence:

**User Interaction**:
- The user opens the Missing Person Finder app and fills out the form with the missing person's details.
- The app requests an image upload, which the user provides.

**Data Storage and Analysis**:
- The app stores the missing person's info, including the image, in the Firebase Realtime Database.
- Upon form submission, the app sends the uploaded image to Firebase ML Vision for analysis, extracting facial features.

**Information Retrieval**:
- The app fetches detailed information from the database using the extracted facial features and displays it to the user.

**AI Chatbot Assistance**:
- The user interacts with the AI Chatbot for additional help in finding the missing person.
- The chatbot searches the database for relevant information and provides the results to the user.

**Video Guide**:
- The user can request assistance from the video guide, which then plays a video to provide further assistance.

**B. Flow Diagram**

This flow diagram code represents the steps involved in using the Missing Person Finder app, including form submission, image upload, data analysis, and optional assistance through an AI Chatbot and video guide.

The flow diagram for the Missing Person Finder app encapsulates the user journey from initiating a search to accessing detailed information. It begins with the user inputting data and uploading an image, which are then stored in the Firebase Realtime Database. The system analyzes the image using Firebase ML Vision to extract facial features. Simultaneously, the app retrieves detailed information from the database based on the extracted features.

If needed, users can engage with an AI Chatbot for additional assistance or opt for a video guide. This comprehensive approach ensures efficient search operations and user support within the app's ecosystem.
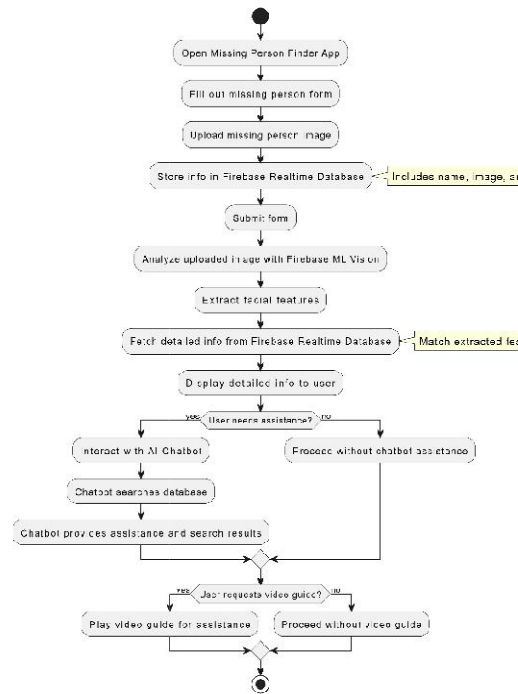
Fig 2: Flow Diagram

## IV. SOFTWARE / HARDWARE RELATED TO PROPOSED SYSTEM

**Hardware Requirement:**
- **Operating System:** Windows, macOS, or Linux.
- **Processor:** Minimum Intel i5 or equivalent AMD processor.
- **RAM:** At least 8GB for smooth development experience, 16GB recommended.
- **Storage:** SSD with ample storage space for Android Studio and project files.
- **Graphics Card:** Not crucial, but a dedicated GPU can improve performance.

**Software Requirement:**
- **Operating System:** Android OS for mobile app compatibility.
- **Android Studio:** IDE for Android app development.
- **Firebase SDK:** Integration for Real-time Database, ML Vision, Authentication.
- **Programming Languages:** Java.

## V. WORKING AND EXPERIMENTAL RESULTS

The "Missing Person Finder" Android project operates as a comprehensive tool designed to facilitate the search and retrieval of missing individuals. Here's a detailed breakdown of its functionality:

- **User Interface (UI):** The app welcomes users with an intuitive interface, presenting options for initiating a search, reporting sightings, and accessing additional support features such as the AI Chatbot and video guide.
- **Form Submission:** Upon opening the app, users are prompted to complete a form detailing pertinent information about the missing person. This includes their name, age, physical attributes, and the last known location. Users are also encouraged to upload a recent photograph of the missing individual directly through the app.

- **Data Handling and Storage:** Information submitted via the form is securely stored within the Firebase Realtime Database. This encompasses the uploaded image, the missing person's name, detailed descriptions, and any supplementary data provided. The Firebase platform ensures seamless synchronization of data across all devices and users in real-time.

- **Image Analysis:** After the form submission, the app forwards the uploaded image to Firebase ML Vision for thorough analysis. ML Vision employs advanced algorithms to extract crucial facial features from the image, which serve as key identifiers for potential matches within the database.

- **Information Retrieval:** Drawing from the extracted facial features, the app retrieves detailed information regarding missing persons stored within the database. In the event of potential matches, the app swiftly presents relevant data to the user for further consideration and action.

- **AI Chatbot Assistance:** Users can engage with an AI-powered Chatbot for additional support and guidance in their quest to locate missing persons. Leveraging the database's information, the Chatbot efficiently responds to user queries, providing valuable insights and assistance tailored to individual needs.

- **Video Guide Support:** For users seeking comprehensive assistance, the app offers a video guide feature. This feature provides step-by-step instructions and demonstrations, empowering users with the knowledge and skills necessary to effectively utilize the app's functionalities in their search efforts.

- **Notification System:** To keep users informed and engaged, the app employs a real-time notification system. Users receive timely updates regarding nearby missing person cases, status updates on their submitted profiles, and potential matches discovered through ongoing searches.

- **Reporting System:** The app streamlines the process of reporting sightings or providing tips by offering a direct reporting channel within the platform. Submitted reports are promptly relayed to law enforcement agencies for further investigation and action, bolstering collaborative efforts in the search and recovery process.

Through the seamless integration of these features, the "Missing Person Finder" Android app serves as a vital tool in mobilizing public assistance, optimizing search operations, and ultimately increasing the likelihood of reuniting missing individuals with their loved ones.

## V. RESULTS
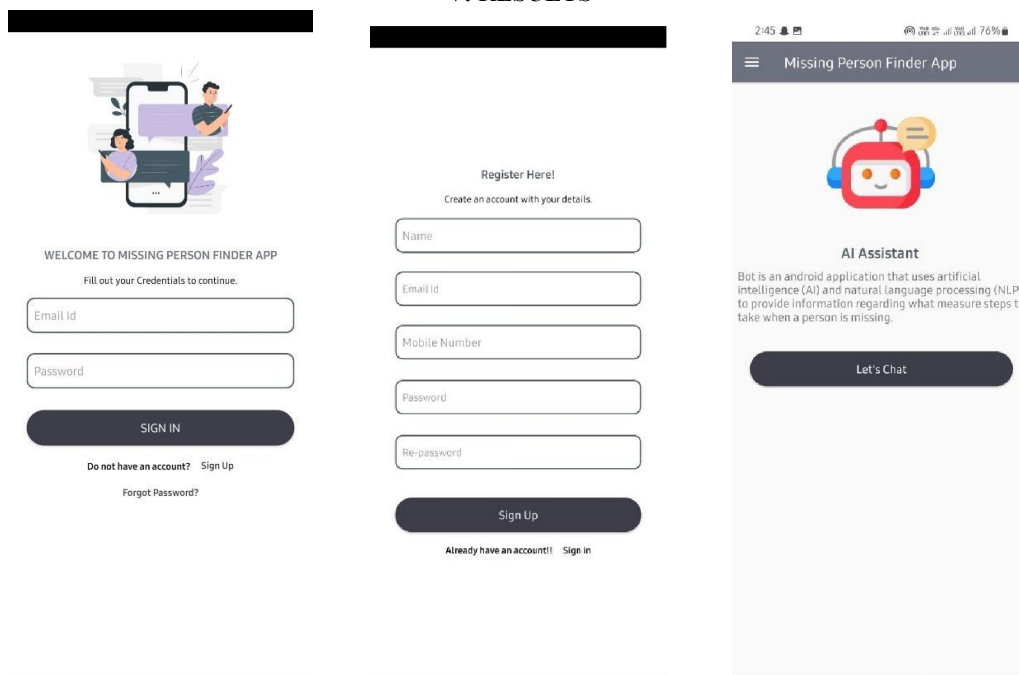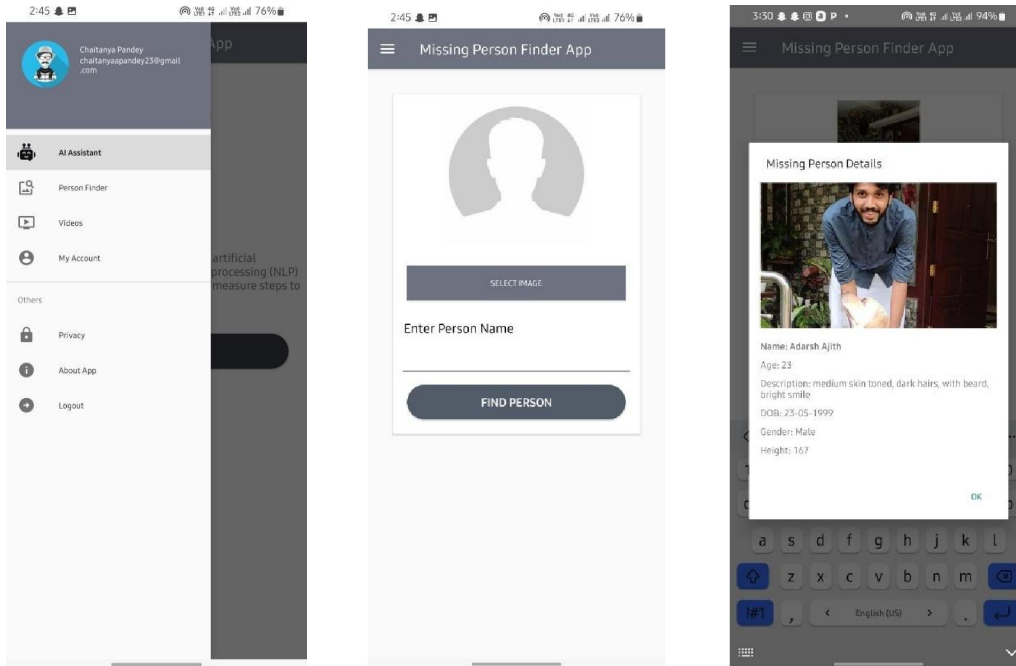
## VI. FUTURE SCOPE

The future scope of the "Missing Person Finder" Android project encompasses various avenues for enhancing its effectiveness, reach, and user engagement:

- **Advanced Search Mechanisms:** Revolutionize the search capabilities through the integration of state-of-the-art algorithms, particularly leveraging facial recognition technology. This enhancement ensures unparalleled accuracy and efficiency in locating missing individuals, elevating the effectiveness of the app's search functionalities to new heights.

- **Geolocation Fusion:** Seamlessly fuse geolocation services into the app's framework, enabling precise location-based search results and notifications. By harnessing the power of geospatial data, users can swiftly and effectively identify missing persons within their immediate vicinity, amplifying the app's utility and impact.

- **Social Media Synergy:** Forge a seamless connection with various social media platforms, empowering users to effortlessly share missing person profiles across their social networks. This innovative integration expands the reach and visibility of search efforts, fostering a collaborative environment where communities can unite to aid in locating missing individuals.

- **Crowdsourced Collaboration:** Pioneer crowdsourcing functionalities within the app, allowing users to actively participate in the search for missing persons by submitting tips, sightings, and relevant information. This collective engagement harnesses the collective wisdom of the crowd, enhancing the effectiveness and scope of search operations.

- **Inclusive Accessibility Initiatives:** Champion inclusivity by implementing comprehensive accessibility enhancements, ensuring the app is accessible to users of all abilities. From screen reader compatibility to alternative input methods, these initiatives uphold the principles of accessibility, empowering every individual to contribute to the search efforts without barriers.

## VIII. ONCLUSION

In conclusion, the "Missing Person Finder" Android project represents a pivotal step forward in leveraging technology to address the critical issue of locating missing individuals. Through the integration of advanced search algorithms,

geolocation services, social media integration, crowdsourcing functionalities, and inclusive accessibility initiatives, the project aims to revolutionize the search and recovery process.

By harnessing the collective power of technology, community engagement, and collaboration, the project endeavors to make a tangible impact in reuniting missing persons with their loved ones. Moving forward, continued innovation, partnership building, and user feedback will be essential in further enhancing the app's capabilities and expanding its reach.

Ultimately, the "Missing Person Finder" project embodies the spirit of compassion, solidarity, and innovation, demonstrating how technology can be harnessed for the greater good to bring hope and closure to families and communities affected by the tragedy of missing persons.

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