

# FINCHILD: The Missing Child Finder Application

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## Abstract -

"FINCHILD" is an innovative and user-friendly mobile application designed to address the critical issue of missing children by leveraging real-time tracking technology. The application aims to empower parents, guardians, and law enforcement agencies with an effective tool to locate and recover missing children swiftly and efficiently. In a world where child safety is paramount, FINCHILD fills a significant gap by harnessing the power of real-time location tracking, geofencing, and community engagement. The application provides a comprehensive platform that integrates the latest advancements in mobile technology and data analytics to ensure a rapid and coordinated response in the event a child goes missing. The FINCHILD application is a cutting-edge real-time solution designed to address the critical issue of missing children. Leveraging advanced technologies, including GPS tracking, facial recognition, and real-time data analytics, FINCHILD aims to significantly reduce the response time and enhance the efficiency of locating missing children.

## Key Words:

GPS Tracking, Facial Recognition, Real-Time Alerts, Community Engagement.

## 1.INTRODUCTION

FINCHILD represents a groundbreaking leap forward in child safety technology, combining real-time GPS tracking and advanced facial recognition to swiftly locate missing children. Its seamless community engagement fosters immediate communication between parents, guardians, law enforcement, and the community, creating a robust network for recovery efforts. With a secure platform ensuring privacy and accessibility, FINCHILD empowers users to report, search, and share information about missing children efficiently. By harnessing cutting-edge technology and collaborative efforts, FINCHILD is poised to make a significant impact in ensuring the safety and security of our children in real-time.

### Geo-Fencing Unveiled:

Geo-fencing is a technological marvel that allows for the establishment of virtual boundaries around geographical locations, transforming them into dynamic zones of engagement. When a mobile device crosses the threshold of these digital perimeters, geo-fencing can orchestrate a symphony of actions, from sending notifications and offers to influencing user behavior. It serves as a bridge between the

digital and physical worlds, paving the way for context-aware, location-specific services.

### Navigating the Shopping Landscape:

This system is centered around the premise of enhancing the shopping experience, a quintessential aspect of daily life. In a world where convenience, personalized offers, and informed decision-making are prized attributes, "Location-Based Services Using GeoFencing" emerges as a beacon of innovation. Imagine a scenario where, as users traverse their neighborhoods or cities, their smartphones seamlessly transition into personal shopping companions. These devices become attuned to the user's preferences and their immediate surroundings, directing them toward the best deals, offers, and product comparisons.

### Modules that Transform:

The heart of this system beats with three dynamic modules:

#### 1)Complaint registration of child by parent:

Parents first need to register themselves within the app. Once registered, they can proceed to submit a missing child complaint. During this process, parents provide details such as the child's age, name, physical description, and any other relevant information.

#### 2)Complaint registration of child by guest user:

After locating the missing child, guests are prompted to register within the application. Once registered, they gain the ability to add details about the child, including age, name, physical description, and any other pertinent information.

#### 3)Complaint verification by the police officer:

To verify the identity of both the child and their parents, an officer must authenticate the complaint and the parent's identity. After successful verification, the child will be safely handed over to their parents.

### A Glimpse into the Future:

This research paper goes beyond traditional documentation, highlighting the transformative potential of the FINCHILD missing child finder app. It explores a vision where the virtual and physical realms merge, offering enriched user experiences through innovative approaches. Rather than focusing solely on app development, it emphasizes creating a holistic experience. In this future, ensuring child safety becomes more than a task; it becomes a journey of empowerment. Users are equipped

with real-time information, reshaping daily life to swiftly locate and reunite missing children with their families

## 2.Existing System

Identifying Missing Children: Face Age-Progression via Deep Feature [1],This paper discusses using face recognition technology to identify individuals by mapping their facial features as mathematical representations. The system searches a database for matches and notifies authorities and guardians upon finding one. Leveraging Tensor Flow, a Machine Learning framework, enhances face detection accuracy for effective missing person retrieval.

The research paper " Find Missing Person Using Ai (AndroidApplication)".[2] This paper explores the use of face recognition technology to identify individuals by mathematically mapping their facial features into face prints stored in a database. The system matches captured faces with database records, notifying authorities and guardians upon finding a match. Leveraging Tensor Flow, a Machine Learning framework, enhances face detection accuracy for effective missing person retrieval

" Android based Application – Missing Person " [3] This application aims to simplify the process of finding missing persons by enabling users to file complaints of lost individuals. These complaints are uploaded to an AWS web server, accessible to Government Officials and local residents. Utilizing Face Recognition technology on Android platforms, the system matches images of missing individuals to aid in their recovery efforts. The project comprises three modules: User, Police, and Admin, ensuring efficient database management and automatic updates as users interact with the application..

Children Security and Tracking System Using Bluetooth and GPS Technology ". [4] This paper presents, the child-tracking system presented in the literature serves as a promising solution to enhance child safety in public places. By integrating GPS and Bluetooth technologies, the project aligns with the contemporary need for advanced measures in preventing incidents of missing children. The educational context further emphasizes the practical application of engineering skills in addressing real-world challenges. GPS is highlighted as a crucial technology for providing accurate and global location information independently of time and weather conditions. The system exploits GPS to track the location of people, vehicles, and, in this case, children.

[5] "research presents an innovative solution to a critical societal issue, demonstrating the importance of adapting biometric technologies to the unique challenges posed by the age progression of individuals, especially children, in the context of missing persons cases. Human trafficking,

especially involving children, is a significant global issue, with a substantial number of cases going unreported

[6] "The educational context further emphasizes the practical application of engineering skills in addressing real-world challenges. GPS is highlighted as a crucial technology for providing accurate and global location information independently of time and weather conditions. The system exploits GPS to track the location of people, vehicles, and, in this case, children.

## 3.Methodology

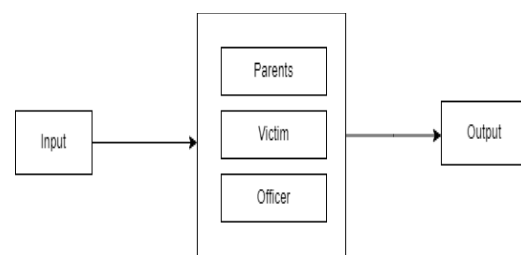
User Registration/Login: 1) Users can create accounts or log in to the system: User profiles store preferences and settings for a personalized experience.

2) Parent registration : parents can register them after that the parents can register the complaint of child.

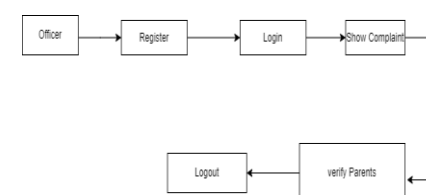
3) Guest registration : An unidentified individual who discovers a lost child has the option to both register themselves as the finder and file a missing child report. Additionally, they may choose to provide care for the child until further assistance is obtained.

### Data Flow Diagram (DFD1) :

The Data Flow Diagram (DFD) Level 1 for FINCHILD outlines its key components and interactions. Users submit missing child reports, which are stored in the Missing Child Database. Police and Admins can search and update the database as needed. This ensures efficient communication and access to critical information, enhancing missing child reporting and search efforts.



### Data Flow Diagram (DFD2) :



Users submit reports, police receive notifications, admins manage accounts and database. Efficient communication and data integrity drive missing child reporting and search efforts..

**Tool Used:**

The tools used in this system include:

1. **Firestore Realtime Database:** For storing and retrieving real-time data such as user information, shop details, product prices, and offers.
2. **Android Studio:** Integrated Development Environment (IDE) used for Android app development, including coding, debugging, and testing.
3. **Kotlin Programming Language:** Used for developing the Android application due to its concise syntax, null safety, and interoperability with Java.

**Algorithm Explanation:**

The K-Nearest Neighbors (KNN) algorithm is a straightforward and effective method for finding the nearest neighbors or data points to a given query point. In the context of our system, the KNN algorithm is utilized to identify the nearest shops to a user's current location. Here's how it works:

1. **Data Preparation:**

Before employing KNN, FINCHILD requires a dataset comprising the locations where missing children were last seen or reported. Each entry in this dataset includes the geographical coordinates (latitude and longitude) corresponding to the location.

2. **Finding Neighbors:**

Once the dataset is established, KNN calculates the distances between the user's location and the known locations of missing children. It then identifies the 'k' nearest instances, where 'k' represents the predetermined or dynamically determined number of nearest neighbors to consider..

3. **Displaying Nearest location:**

FINCHILD presents the selected nearest locations to the user, potentially through a map interface or a list view. This allows users, including law enforcement and community members, to access vital information about nearby missing child incidents and potentially aid in search and rescue efforts.n.

Users can then explore the details of these nearest shops, including their offers and products.

4. **Dynamic Updating:**

To ensure the relevance and accuracy of the nearest shops, the system may periodically update the dataset and recalibrate the KNN algorithm based on real-time data and user interactions.

By leveraging the KNN algorithm, our system efficiently identifies and presents nearby shops to users, enhancing their shopping experience and facilitating informed decision-making.

**Using FireBase query for product price comparison:**

User have to follow the following steps:

1. **Registration of the child complaint:** parents can register them after that the parents can register the complaint of child.

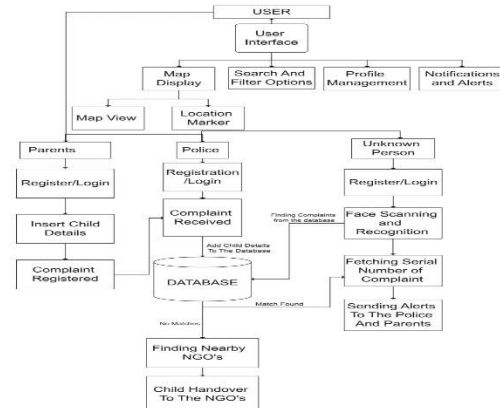
2. **Verification of the complaint by officer:**After finding the child the complaint is verified by the officer.

3. **Handing over the child:**

Once the child's details and the identity of their parents are verified, the officer will return the child to their parents..

**4.System Architecture**

The system architecture of the "FindChild" app serves as its backbone, enabling the delivery of location-specific services such as immediate alerts on nearby missing children sightings and facilitating real-time collaboration between users and authorities. By leveraging advanced geolocation technology, the app swiftly pinpoints the whereabouts of missing children and relays this critical information to users in proximity, fostering community engagement in search efforts. Through seamless communication channels and robust security measures, the architecture ensures efficient coordination and safeguards user privacy, ultimately enhancing the effectiveness of search and rescue operations.

**4.Implementation**

The System process takes place in the following way:

**Admin Section:**

1. **Parent Login:**

parents can register them after that the parents can register the complaint of child.

2. **Guest login:**

An unidentified individual who discovers a lost child has the option to both register themselves as the finder and file a missing child report. Additionally, they may choose to provide care for the child until further assistance is obtained.

3. **Officer login:**

After finding the child the complaint is verified by the officer.

**User Section:**

1. **Parent Login:**

Users can log in using their email and password. Alternatively, new users can create an account by providing necessary details. The system also includes a "Forgot Password" option for users to reset their passwords if needed.

2. **Guest login:**

An unidentified individual who discovers a lost child has the option to both register themselves as the finder and file a

missing child report. Additionally, they may choose to provide care for the child until further assistance is obtained.

If no complaint has been lodged, guests can access a list of NGOs to facilitate the handover of the child to these organizations..

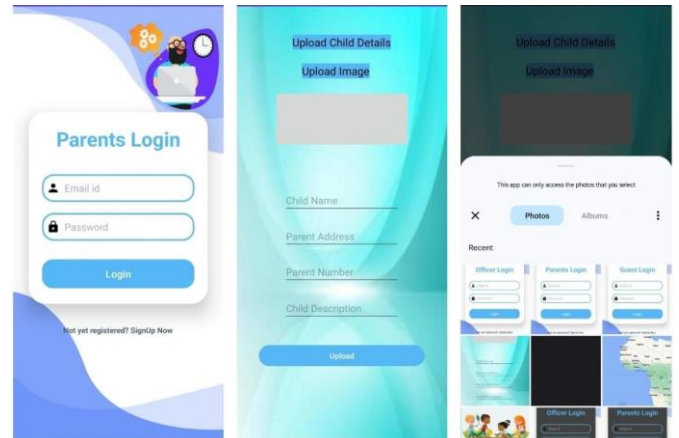
Guests have the option to search for nearby NGOs and proceed to hand over the child to the selected NGO.

### 3. Notifications/Alerts:

The system sends notifications or alerts when a guest finds the child, notifying relevant parties about the successful location of the child..

### 4. Verification of the child by officer:

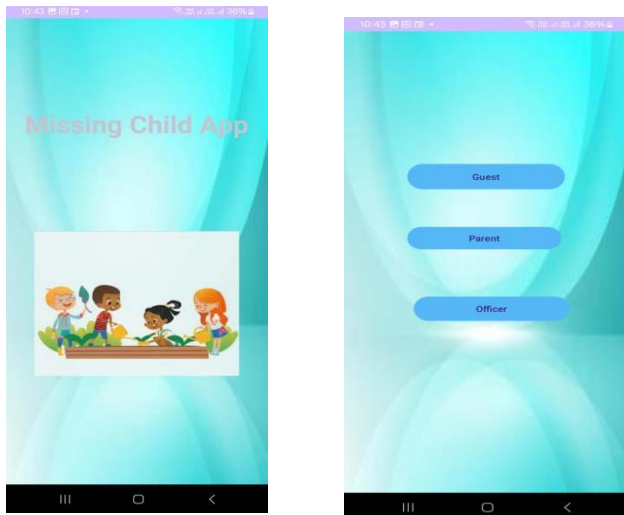
Once the child's details and the identity of their parents are verified, the officer will return the child to their parents.



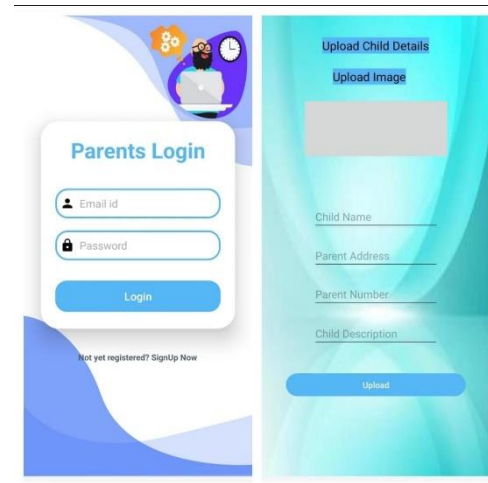
uploading photo of child

## 5.Result

Below is the snapshot of our system:

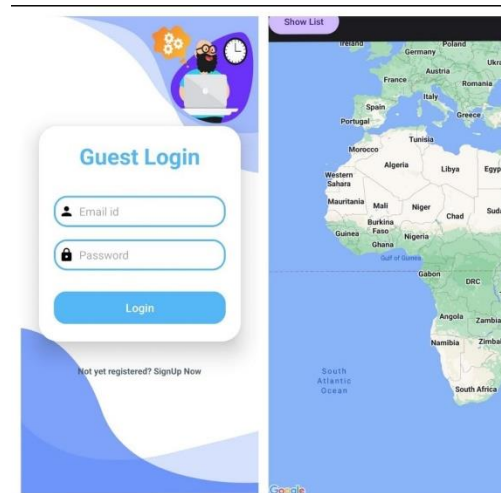


1)Parents registration



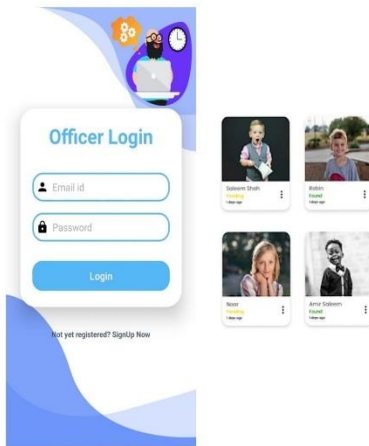
1)Parent Login  
filling the details of child

### Parent login:



3)Complaint database





## 6. Software and Hardware Requirements

1. Laptop or mobile, Key Board
2. Windows 7 or higher
3. I3 processor system or higher
4. 8 gb ram or higher, Hard-Disk : 500 GB, 512 GB
5. IDE- Android Studio
6. Frontend -XML
7. Kotlin
8. KOTLIN LANGUAGE

## 7. Conclusions

The FinChild app employs advanced technology and collaboration to quickly locate missing children and it enhances response time, share vital information and ensure child safety through features like GPS tracking and facial recognition. The FinChild app revolutionizes missing child searches with advanced technology, featuring GPS tracking for real-time location monitoring and facial recognition for enhanced identification. The app fosters collaboration, serving as a centralized platform for users, law enforcement, and organizations to share vital information. In doing so, FinChild significantly improves response time, increasing the likelihood of quickly locating and ensuring the safety of missing children.

## 8. References

[1] Deb, D., Aggarwal, D., & Jain, A. K. (2021, January). Identifying missing children: Face ageprogression via deep feature aging. In *2020 25th International Conference on Pattern Recognition (ICPR)* (pp. 10540-10547). IEEE.

[2] Pawar, S., Bhadane, L., Shaikh, A., Kumbhejkar, A., & Jakkan, S. (2022). FIND MISSING PERSON USING AI (ANDROID APPLICATION).

[3] Ansari, A., Singh, A., & Sagar, A. (2020). Komal,“. *Android-based Application–Missing Person*", *IRJET*, 7(03).

[4] Isa, M. Z. M., Jamil, M. M. A., Ibrahim, T. N. T., Ahmad, M. S., Abd Rahman, N. A., & Adon, M. N. (2019, November). Children security and tracking system using bluetooth and gps technology. In *2019 9th IEEE International Conference on Control System, Computing and Engineering (ICCSCE)* (pp. 184-187). IEEE.

[5] Ayyappan, S., & Matilda, S. (2020, July). Criminals and missing children identification using face recognition and web scrapping. In *2020 International Conference on System, Computation, Automation and Networking (ICSCAN)* (pp. 1-5). IEEE.

[6] Chandran, P. S., Byju, N. B., Deepak, R. U., Nishakumari, K. N., Devanand, P., & Sasi, P. M. (2018, December). Missing child identification system using deep learning and multiclass SVM. In *2018 IEEE Recent Advances in Intelligent Computational Systems (RAICS)* (pp. 113-116). IEEE.