Project Team #: 20CSM_B03

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Project Name:

Develop a Mobile App through which a citizen can check whether an unattended child is a missing child from ‘’Track the missing child' database of WCD Ministry using Facial Recognition Software of Delhi Police ‘’

Abstract:

The "AI-Powered Missing Child Locator" project introduces a cutting-edge mobile app designed to revolutionize the process of locating missing children. This app leverages the capabilities of Artificial Intelligence (AI) and facial recognition technology to enhance and streamline the identification and search process. By overcoming the limitations of the existing system, which relies on manual methods and fragmented databases, this project aims to provide a comprehensive, efficient, and user-friendly solution.

The existing challenges in locating missing children stem from the reliance on traditional methods of identification and data management. The current system lacks a unified database and efficient means of matching and verifying unattended children with reported missing cases. This project addresses these shortcomings by introducing a centralized platform where citizens can easily report missing children and contribute to a shared database. The integration of AI-powered facial recognition technology enhances the accuracy and speed of identifying potential matches, thereby increasing the chances of reuniting missing children with their families.

Through the development of this mobile app, users will experience a streamlined process of reporting missing children and receiving real-time updates on potential matches. The app's intuitive interface and interactive map display empower users to actively participate in the search efforts. By leveraging AI and automation, the "AI-Powered Missing Child Locator" project offers a more efficient, scalable, and accurate solution to a critical societal issue, fostering community engagement and contributing to the well-being of children and families.

This innovative app will offer a unified platform for citizens to report unattended children and match them against a comprehensive database of missing cases. Through real-time facial recognition, accurate identifications can be swiftly made, enhancing the chances of reuniting missing children with their families. The project envisions an efficient, accessible, and community-driven solution that places advanced technology at the forefront of the critical mission to ensure child safety and family well-being.

Title	AI-Powered Missing Child Locator
Clients	Cyber Crime Unit, Special Cell, Delhi Police, MHA
Objective	The main objective of the "AI-Powered Missing Child Locator" project is to develop a technologically advanced and user-centric mobile app that harnesses the capabilities of Artificial Intelligence (AI) and facial recognitio technology to overcome the limitations of the existing system for locating missing children. By creating a centralized and efficient platform, the project aims to revolutionize the way missing children are identified, reported, and matched with existing databases. The app's primary goal is to enhance the speed, accuracy, and effectiveness of reuniting missing children with their families by providing real-time identification and notifications to users. Through the implementation of facial recognition technology, the app will enable users to submit photos of unattended children and compare them against a centralized database of missing children. The AI-powered matchin algorithm will analyze facial features and patterns, providing real-time resul and potential matches to users within seconds.
Users	1. Citizens/Public Users 2. Law Enforcement and Authorities 3. Women and Child Development Ministry 4. App Developers and Technical Team 5. Data Protection Authorities 6. Child Protection Organizations and NGOs
Functional Requirements	**F1: User Registration and Authentication:** Users should be able to register an account securely using their email or phone number. The app should implement a robust authentication system to ensure secure login and protect user data. **F2: Missing Child Report Submission:** Users should have the capability to submit reports of missing children through the app. The report submission feature should allow users to provide essential details such as a photo, location, and additional information. **F3: Facial Recognition Matching:** The app should utilize facial recognition technology to compare the facial features of unattended children with the database of missing children. This feature aims to identify potential matches to aid in locating missing children. **F4: Real-Time Notifications:** Users should receive real-time notifications about potential matches based on facial recognition results or updates on reported missing children cases. Real-time notifications keep users informed and engaged with the app's mission.

	F5: Interactive Map Display: The app should feature an interactive map that displays markers indicating the locations of reported missing children and potential matches. Users can interact with the map to view details and zoom in on specific areas for enhanced visualization. **F6: Search and Filter Functionality:** Users should have the ability to search for missing children using filters such as location, age, gender, and date. The search and filter options help users narrow down their search and access relevant information more efficiently. **F7: Profile Management:** The app should provide a user profile section where users can manage their accounts, update contact information, and review their reported cases. Profile management enhances user engagement and allows users to keep their information up-to-date. **F8: Emergency Contacts Integration:** Users should be able to add emergency contacts whom the app can notify in case a missing child match is identified. This feature adds an extra layer of support and coordination during critical situations. **F9: Reporting and Analytics:** The app should track and analyze user engagement, including the number of reported missing children, potential matches, and active users. Reporting and analytics help in monitoring the app's effectiveness and performance over time.
Non-Functional Requiremen	**NF1: Performance:** Achieving performance involves optimizing the app's response time and ensuring it runs efficiently even under heavy loads. Techniques such as caching, database indexing, and using efficient algorithms can enhance performance. Regular performance testing and optimization based on user feedback will help achieve this requirement. **NF2: Scalability:** To achieve scalability, the app's architecture and infrastructure should be designed to handle increasing user demands. Cloud-based solutions like AW or Google Cloud can provide auto-scaling capabilities, allowing the app to allocate additional resources as the user base grows. **NF3: Security and Data Privacy:** Implement robust security measures such as encryption, secure authentication, and data access controls to protect user data. Regular securit audits and compliance with data protection regulations (e.g., GDPR) will ensure data privacy and mitigate security risks. **NF4: Usability and Accessibility:** Usability can be achieved through intuitive user interface design and user testing to ensure that the app is easy to navigate. For accessibility, adhere to guidelines like WCAG (Web Content Accessibility Guidelines) to make the app accessible to users with disabilities.

	NF5: Reliability and Availability: To achieve reliability, implement error handling, and ensure graceful degradation in case of failures. Utilize redundant systems and failover mechanisms to maintain availability, minimizing downtime and service interruptions. **NF6: Interoperability:** Ensure that the app can interact and integrate smoothly with other systems, such as third-party APIs or databases. Adopting widely used data exchange formats and standard protocols facilitates interoperability. **NF7: Network Resilience:** Network resilience involves designing the app to handle network disruption or intermittent connectivity. Implement offline capabilities, data synchronization, and efficient error handling to maintain functionality in challenging network conditions. **NF8: Maintainability:** To achieve maintainability, follow clean coding practices, document the codebase thoroughly, and organize code into reusable components. Conduct regular code reviews and establish version control to facilitate ongoing development and updates. **NF9: Data Backup and Disaster Recovery:** Regularly back up user data to secure storage locations like cloud storage platforms. Implement disaster recovery strategies, such as database replication and backup redundancy, to safeguard against data loss in case of disasters.
Software and Hardware Requirements	**Software Requirements**: 1. Mobile App Development Platform: Android Studio 2. Programming Language: Java or Kotlin 3. Front-End Technologies: XML and Android XML Layouts 4. Database Management System: Firebase Realtime Database or Firestore 5. Version Control System: Git 6. Integrated Development Environment (IDE): Android Studio 7. Graphics and Image Editing Software: Adobe Photoshop or Adobe Illustrator 8. API Development Tools: Postman(if required for backend APIs) 9. Google Maps Plugin API: Google Maps SDK 10. User Interface Design Tools: Figma or Sketch 11. Testing Framework: Espresso 12. Mobile Device Emulators: Android Emulator **Hardware Requirements:** 1. Operating System: Android or iOS 2. Processor (CPU): Quad-core or higher 3. Memory (RAM): 4 GB or higher 4. Storage (Internal Memory): 100 MB or higher 5. Display: 720x1280 pixels or higher 6. Camera: Functional rear or front camera with at least 8 MP resolution 7. Internet Connectivity: Wi-Fi or mobile data 8. GPS and Location Services

PROJECT GUIDE HOD- CSM