

Research Paper

SAFECITY PLATFORM: ONLINE CRIME AND MISSING PERSONS REPORTING SYSTEM POWERED BY ML

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ABSTRACT

The increasing number of crime incidents and missing person cases has created a significant challenge for law enforcement agencies and society. Traditional reporting systems rely heavily on manual processes such as visiting police stations and maintaining paper-based records, which leads to delays, inefficiencies, and reduced chances of timely intervention. To address these issues, this project proposes the SafeCity Platform, an online crime and missing person reporting system powered by machine learning techniques. The platform provides a user-friendly interface where citizens can register, log in, and submit reports by uploading images and relevant details. The system ensures secure data storage using centralized databases such as MySQL or SQLite, improving accessibility and reliability. A key feature of the system is its machine learning-based face recognition module, which uses real-time camera input to identify missing persons by comparing captured facial data with stored records. When a match is detected, the system automatically records the event details and sends instant email notifications to authorities, enabling faster response. The platform also incorporates role-based

access control, allowing administrators to verify and manage reports effectively. By integrating modern technologies such as Python, Django, OpenCV, and web-based interfaces, the SafeCity Platform enhances transparency, reduces response time, and improves public participation in safety systems. Overall, the proposed system offers a scalable, efficient, and intelligent solution for crime reporting and missing person identification.

Keywords: SafeCity, Crime Reporting, Missing Person Detection, Machine Learning, Face Recognition, Django, Public Safety, Surveillance System

I. INTRODUCTION

The rapid advancement of digital technologies has significantly transformed public safety systems, enabling more efficient crime management and monitoring solutions [1]. With increasing urbanization and population density, crime rates and missing person cases have risen considerably, creating a need for faster and more reliable reporting mechanisms [2]. Traditional systems depend on manual procedures such as physical visits to police stations, paperwork, and fragmented record-keeping, which often lead to delays and inefficiencies [3]. These outdated approaches

reduce the chances of timely intervention and increase the burden on law enforcement agencies [4]. The emergence of web-based platforms has introduced new opportunities for digitizing crime reporting and improving accessibility for citizens [5]. Online systems allow users to submit reports remotely, eliminating geographical barriers and saving valuable time [6]. However, many early systems lacked intelligent features such as automated detection and real-time monitoring [7]. Recent developments in machine learning and artificial intelligence have made it possible to enhance these systems with advanced capabilities such as facial recognition and predictive analytics [8]. These technologies enable automated identification of individuals using image processing techniques [9]. Studies have shown that integrating AI into surveillance systems improves detection accuracy and response efficiency [10]. Furthermore, centralized databases improve data consistency and allow quick retrieval of information [11]. Role-based access control ensures system security and prevents unauthorized access [12]. Transparency in reporting systems also increases public trust and participation [13]. Real-time tracking of cases allows users to stay informed about the status of their reports [14]. The integration of email notifications enhances communication between citizens and authorities [15].

The SafeCity Platform is developed to address the limitations of traditional systems by providing a unified and intelligent solution for crime reporting and missing person management [16]. The system enables users to register and submit reports through a secure web interface, ensuring convenience and accessibility [17]. Administrators, typically law enforcement personnel, are responsible for verifying and managing reports to maintain data integrity [18]. The platform incorporates machine

learning-based face recognition to detect missing persons using live camera feeds [19]. This feature significantly improves the speed and accuracy of identification processes [20]. When a match is detected, the system automatically records details such as date and time and sends notifications to authorities [21]. The use of technologies such as Python and Django ensures a robust backend framework [22]. Frontend technologies like HTML, CSS, and JavaScript provide a responsive and user-friendly interface [23]. The system uses MySQL or SQLite databases to store user and case information securely [24]. The modular design of the platform enhances scalability and allows future upgrades [25]. Integration of surveillance systems with reporting mechanisms improves overall efficiency [26]. The system also reduces manual workload for police departments [27]. Improved coordination between citizens and authorities leads to faster response times [28]. The platform supports smart city initiatives by leveraging technology for public safety [29]. Overall, the SafeCity Platform represents a modern approach to crime management, combining digital reporting with intelligent detection systems [30].

II. LITERATURE SURVEY

The development of online crime reporting systems has been widely explored in recent years, with researchers focusing on improving accessibility, efficiency, and accuracy in handling crime-related data [1]. Early systems primarily relied on manual record-keeping or basic digital databases, which lacked real-time capabilities and integration with surveillance systems [2]. These systems required citizens to physically visit police stations, resulting in delays and reduced reporting rates [3]. Studies have shown that online platforms significantly improve reporting efficiency and reduce administrative workload [4]. However, many early

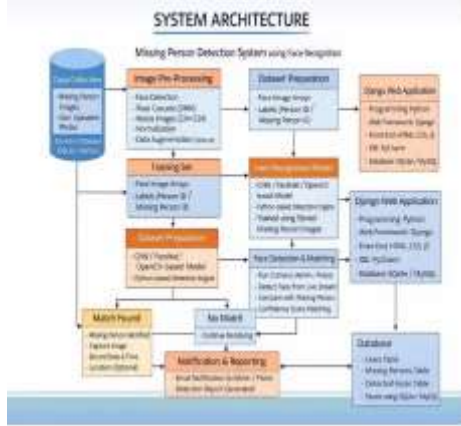
web-based systems lacked proper verification mechanisms, leading to concerns about data authenticity [5]. Research has emphasized the importance of incorporating role-based access control to ensure secure and reliable operations [6]. The use of centralized databases has been identified as a key factor in improving data consistency and retrieval speed [7]. Recent advancements in machine learning have introduced new possibilities for enhancing crime detection systems [8]. Facial recognition technology has gained significant attention due to its ability to identify individuals using image datasets [9]. Convolutional Neural Networks (CNNs) have been widely used for image classification and face recognition tasks [10]. Studies demonstrate that CNN-based models achieve high accuracy in identifying missing persons [11]. Integration of OpenCV with machine learning algorithms has further improved real-time detection capabilities [12]. Researchers have also explored the use of surveillance video analysis for tracking individuals across multiple locations [13]. These approaches enable automated monitoring and reduce dependency on manual observation [14]. The combination of reporting systems with detection technologies provides a comprehensive solution for crime management [15].

Despite these advancements, several challenges remain in implementing fully integrated systems [16]. Privacy concerns and ethical issues related to facial recognition have been widely discussed in literature [17]. Bias in machine learning models can affect detection accuracy and fairness [18]. Researchers have highlighted the need for transparent and accountable AI systems in law enforcement applications [19]. Data security is another critical concern, as sensitive information must be protected from unauthorized access [20]. Encryption techniques such as AES and RSA are commonly used to ensure data protection [21].

Studies also emphasize the importance of user-friendly interfaces to encourage public participation [22]. Systems with complex interfaces often discourage users from reporting incidents [23]. Real-time notification systems have been shown to improve response times and coordination between authorities [24]. Integration of email and messaging services enhances communication efficiency [25]. Performance and scalability are also important factors, especially in systems handling large volumes of data [26]. Cloud-based solutions have been proposed to address scalability challenges [27]. The SafeCity Platform builds upon these research findings by integrating reporting, verification, and detection into a single system [28]. It combines machine learning techniques with web-based technologies to provide an efficient solution [29]. Overall, the literature highlights the need for intelligent, secure, and user-friendly systems for effective crime management [30].

III. PROPOSED SYSTEM

The proposed SafeCity Platform is a web-based system designed to provide an efficient solution for reporting crimes and managing missing person cases. The platform enables users to register, log in, and submit detailed reports, including personal information and images of missing individuals. This eliminates the need for physical visits to police stations and significantly reduces reporting time. The system ensures secure storage of data using centralized databases such as MySQL or SQLite, allowing easy retrieval and management of information. Administrators, typically law enforcement authorities, are responsible for reviewing and verifying reports before approving them for further processing. This verification mechanism helps prevent false or duplicate reports and maintains data accuracy.

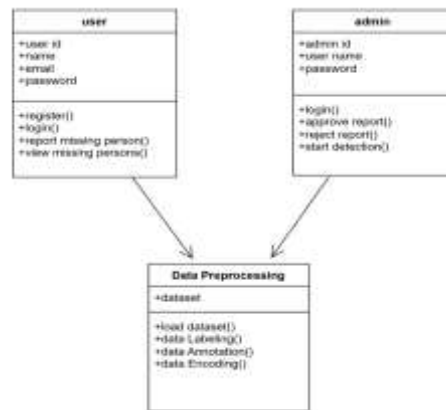
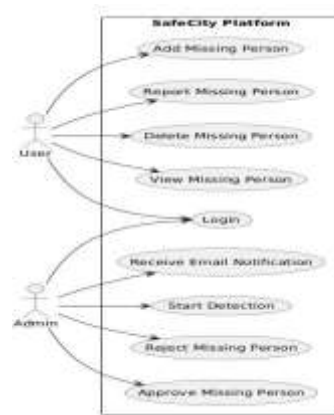


A key feature of the proposed system is the integration of machine learning-based face recognition technology. Once a report is approved, administrators can initiate the detection process using live camera feeds. The system captures facial data and compares it with stored records to identify potential matches. If a match is found, the system automatically records the detection details and sends email notifications to authorities for immediate action. This real-time detection capability significantly improves response time and increases the chances of locating missing persons. The platform also provides transparency by allowing users to track the status of their reports. Overall, the proposed system combines digital reporting, centralized data management, and intelligent detection to create a comprehensive public safety solution.

IV. SYSTEM DESIGN

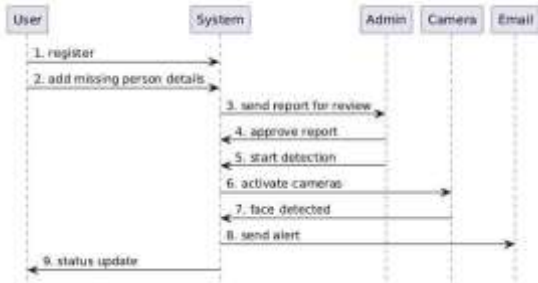
The SafeCity Platform follows a client-server architecture, where users interact with the system through a web interface, and the backend processes requests and manages data. The frontend is developed using HTML, CSS, and JavaScript, providing a responsive and user-friendly interface. The backend is implemented using Python and Django, which handles user authentication, report management, and communication with the database. The system uses SQLite or MySQL

databases to store user details, missing person records, and detection logs securely. According to the system architecture diagram on page 20, the platform integrates multiple components such as data collection, preprocessing, face recognition, and notification modules to ensure smooth operation .

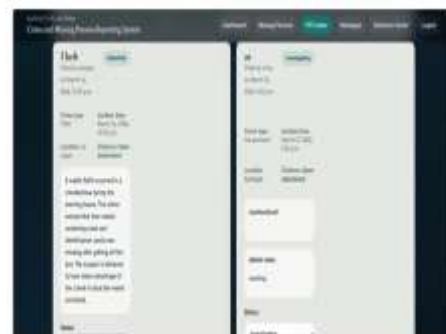
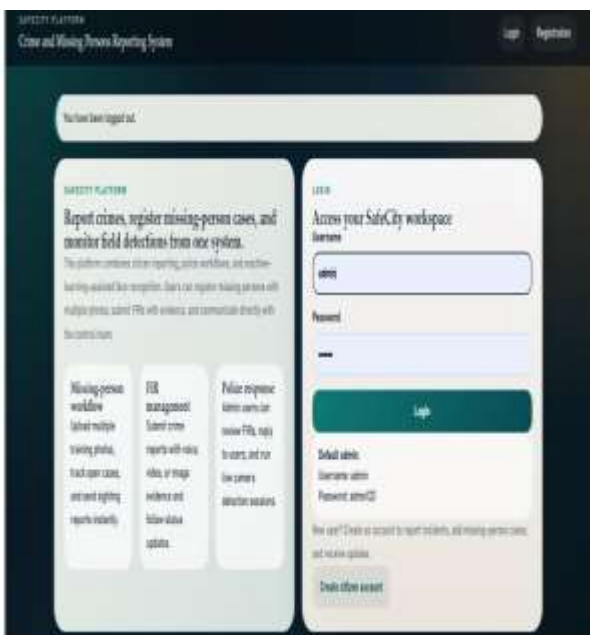
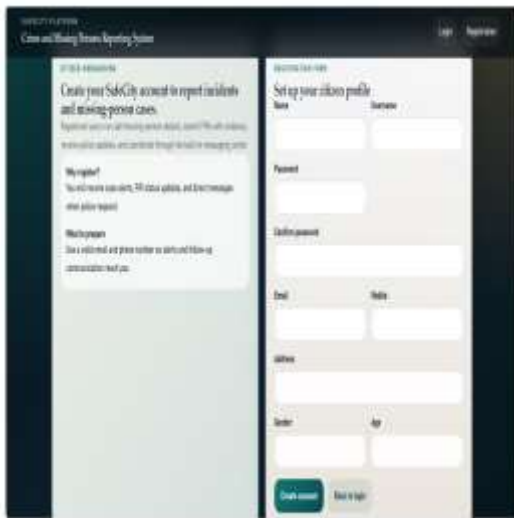


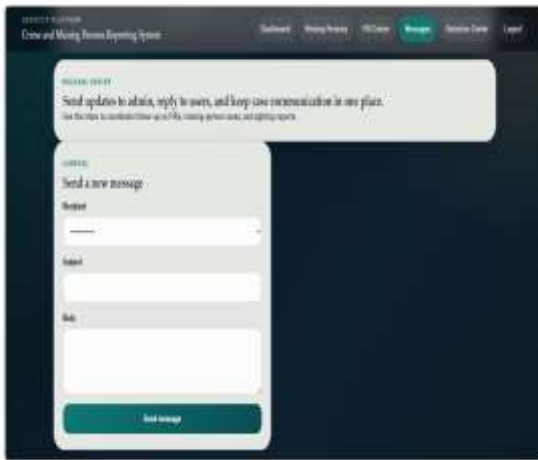
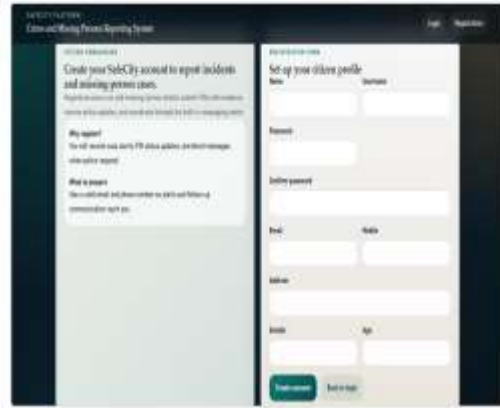
The system design also includes role-based access control, ensuring that only authorized users can access specific functionalities. Users can submit and manage reports, while administrators have additional privileges such as approving reports and initiating detection processes. The detection module uses camera input to capture real-time data and compare it with stored images. The sequence diagram on page 24 illustrates the interaction between system components, including user requests, admin actions, and detection processes . The system also incorporates an email notification module to alert authorities when a match is

detected. This modular design ensures scalability, allowing future enhancements such as mobile applications and advanced analytics.



V. RESULTS







VI. CONCLUSION

The SafeCity Platform presents an innovative and effective solution for addressing the challenges associated with traditional crime reporting and missing person management systems. By leveraging modern technologies such as machine learning, web development frameworks, and centralized databases, the system provides a faster, more efficient, and user-friendly approach to handling public safety issues. The integration of online reporting eliminates the need for physical visits to police stations, reducing delays and improving accessibility for citizens. The use of machine learning-based face recognition enhances the accuracy and speed of identifying missing persons, enabling real-time detection through camera inputs. Additionally, the implementation of role-based access control ensures data security and prevents unauthorized access, while the centralized database improves data management and retrieval efficiency. The system also promotes transparency by allowing users to track the status of their reports and receive timely updates. Automated email notifications further enhance communication between citizens and authorities, leading to quicker

response times. Overall, the SafeCity Platform demonstrates the potential of combining digital technologies with intelligent systems to improve public safety and crime management. It not only reduces manual workload for law enforcement agencies but also encourages community participation in reporting incidents. The system serves as a foundation for future advancements in smart city solutions, where technology plays a crucial role in ensuring safety and security.

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