BLOCKCHAIN BASED FACE DETECTION AND RECOGNITION FOR CRIMINAL IDENTIFICATION SYSTEM

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ABSTRACT

The process of identifying and spotting a criminal is slow and difficult. Criminals, these days are getting smarter by not leaving any form of biological evidence or fingerprint impressions on the crime scene. A quick and easy solution is using state-of- the-art face identification systems. With the advancement in security technology, CCTV cameras are being installed at most of the buildings and traffic lights for surveillance purposes. The video footage from the camera can be used to identify suspects, criminals, runaways, missing persons etc. This paper explores a way to develop a criminal identification system using ML and deep neural networks. The following method can be used as an elegant way to make law enforcement hassle-free.

Keywords: Face Recognition, Machine Learning, Blockchain Security.

INTRODUCTION

In an era where technological advancements continuously shape the landscape of security and surveillance, the integration of innovative technologies is crucial for enhancing public safety and criminal justice. This project explores the development of a "Blockchain Based Face Detection and Recognition System" tailored for criminal identification, merging the reliability of blockchain technology with the precision of modern facial recognition techniques.

Facial recognition systems have become a critical tool in identifying and apprehending criminals, offering unparalleled accuracy and speed. However, traditional systems are often plagued by concerns over data integrity, privacy, and the risk of tampering or unauthorized access. This project seeks to address these challenges by leveraging blockchain technology, renowned for its decentralized, transparent, and immutable nature.

By embedding facial recognition data within a blockchain framework, this system aims to create a robust and secure environment for storing and managing sensitive information related to criminal identification. The use of blockchain ensures that the data is not only secure but also verifiable and resistant to tampering, thereby enhancing the credibility and reliability of the identification process.

The integration of these technologies represents a significant leap forward in law enforcement and security systems, offering a powerful tool for crime prevention and investigation. This project aims to develop a prototype that demonstrates the feasibility and advantages of such a system, ultimately contributing to more efficient and secure criminal identification processes.

LITERATURE SURVEY

TITLE: Face Detection and Recognition for Criminal Identification System

AUTHORS: Sanika Tanmay Ratnaparkhi; Aamani Tandasi

ABSTRACT: Criminals, these days are getting smarter by not leaving any form of biological evidence or fingerprint impressions on the crime scene. A quick and easy solution is using state-of-the-art face identification systems. With the advancement in security technology, CCTV cameras are being installed at most of the buildings and traffic lights for surveillance purposes.

TITLE: Criminal face identification system using deep learning algorithm multi-task cascade neural network (MTCNN)

AUTHORS: K.Kranthi Kumar, Ch V Bhargavi

ABSTRACT: Nowadays criminal activities are growing at an exponential rate. Crime prevention by effective identification of criminals is the main issue before the police and on the other hand, the availability of police officers is inadequate. There are various technological solutions for detecting criminals but they are not up to the mark. In this project, a face detection and recognition system for criminal identification is developed using the multi-task cascade neural network. This system will be able to detect faces and recognize faces of criminals automatically in real-time. This system would also just require a single image of the criminal to recognize him, also known as one-shot learning. The purpose is to identify the criminal face, retrieve the information stored in the database for the identified criminal and a notification is sent to the police personnel with all the details and the location at which he was under the surveillance of the camera.

TITLE: Securing Criminal Identification: Leveraging Blockchain for Face Detection and Recognition

AUTHORS: K.Chandra Sekhar , Palika Hemasri, Metta Durga Priya Mounika, Puthukula Sasank, Akshay Bangaru, Girijala Bhoga Avinash

ABSTRACT: Finding and apprehending a criminal is a complex and time- consuming process. Criminals' tactics for leaving no fingerprints or biological evidence at crime scenes are becoming increasingly complicated. A simple and straightforward approach is to implement cutting-edge facial recognition technology. As security technology has progressed, most buildings and traffic lights now have CCTV cameras to provide monitoring. The camera's video footage can help identify criminals, runaways, missing people, and suspicions. This project

investigates the use of deep neural networks and machine learning to create a criminal detection system. The concept detailed below is a clever approach to streamlining law enforcement.

SYSTEM ANALYSIS

EXISTING SYSTEM

In traditional criminal identification systems, facial recognition technology is commonly employed to match faces captured in surveillance footage against a database of known criminals. These systems typically rely on centralized databases to store facial data and metadata, where images are processed using machine learning algorithms to identify and verify individuals. While these systems have proven effective in many cases, they are often implemented within closed networks, making them susceptible to issues such as data breaches, unauthorized access, and manipulation of records. Moreover, the centralized nature of these systems raises significant concerns regarding privacy and data integrity, as they rely on a single point of control, which can be compromised.

DISADVANTAGES

- Security Risks
- Privacy Concerns

PROPOSED SYSTEM

The proposed system for the "Blockchain Based Face Detection and Recognition for Criminal Identification" project aims to create a secure and efficient framework for criminal identification through the integration of advanced facial recognition technology and blockchain. The system will utilize Python for developing the facial detection and recognition components, leveraging libraries such as OpenCV and deep learning models for high accuracy. Captured facial data will then be hashed and stored on a blockchain, ensuring that once recorded, the data cannot be altered or tampered with. Each entry will be timestamped and linked to previous records, creating a chronological, immutable trail of data. Decentralized nature of blockchain also ensures that this data is not controlled by any single entity, thereby enhancing security and trust in the system. The system will include an interface for law enforcement agencies to upload, verify, and match facial data against the blockchain, enabling rapid and reliable identification of suspects.

ADVANTAGES

•Enhanced Data Security

•Efficient Data Management

IMPLEMENTATION AND RESULTS

ADMIN:

Login

Police Station Management

Add Police Station

Manage Police Station

Police Officer Management

Add Police officer

Officer Details

List Of Officer

Criminal Management

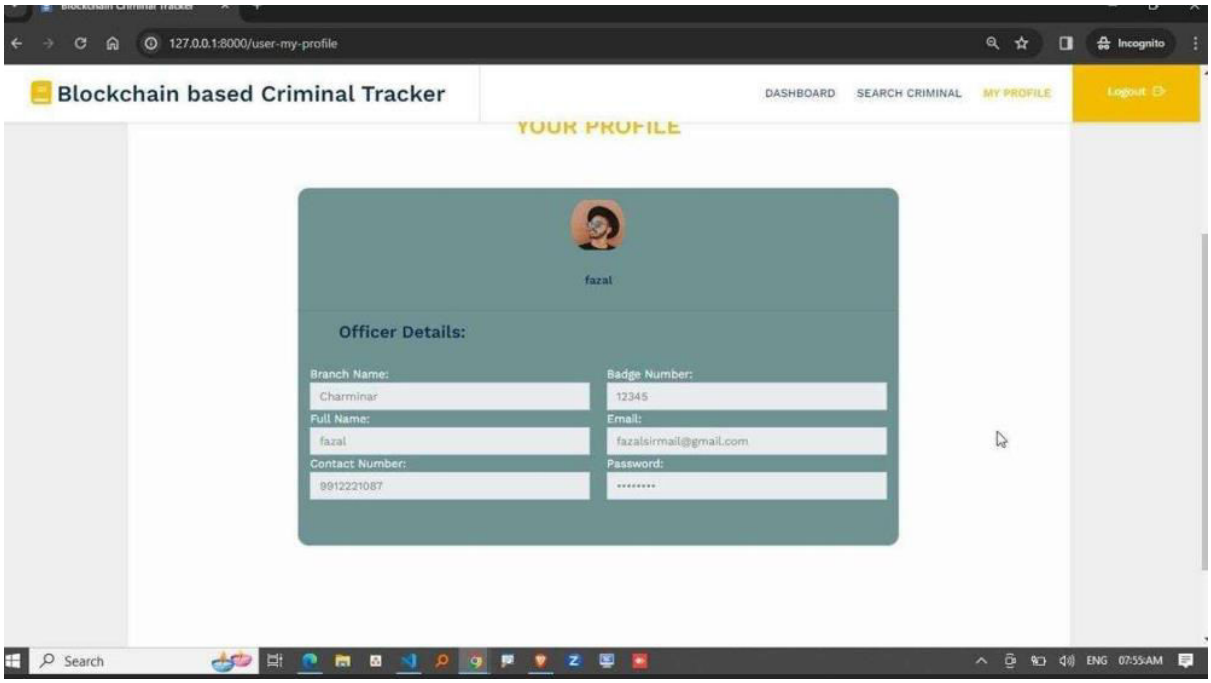
Add Criminal

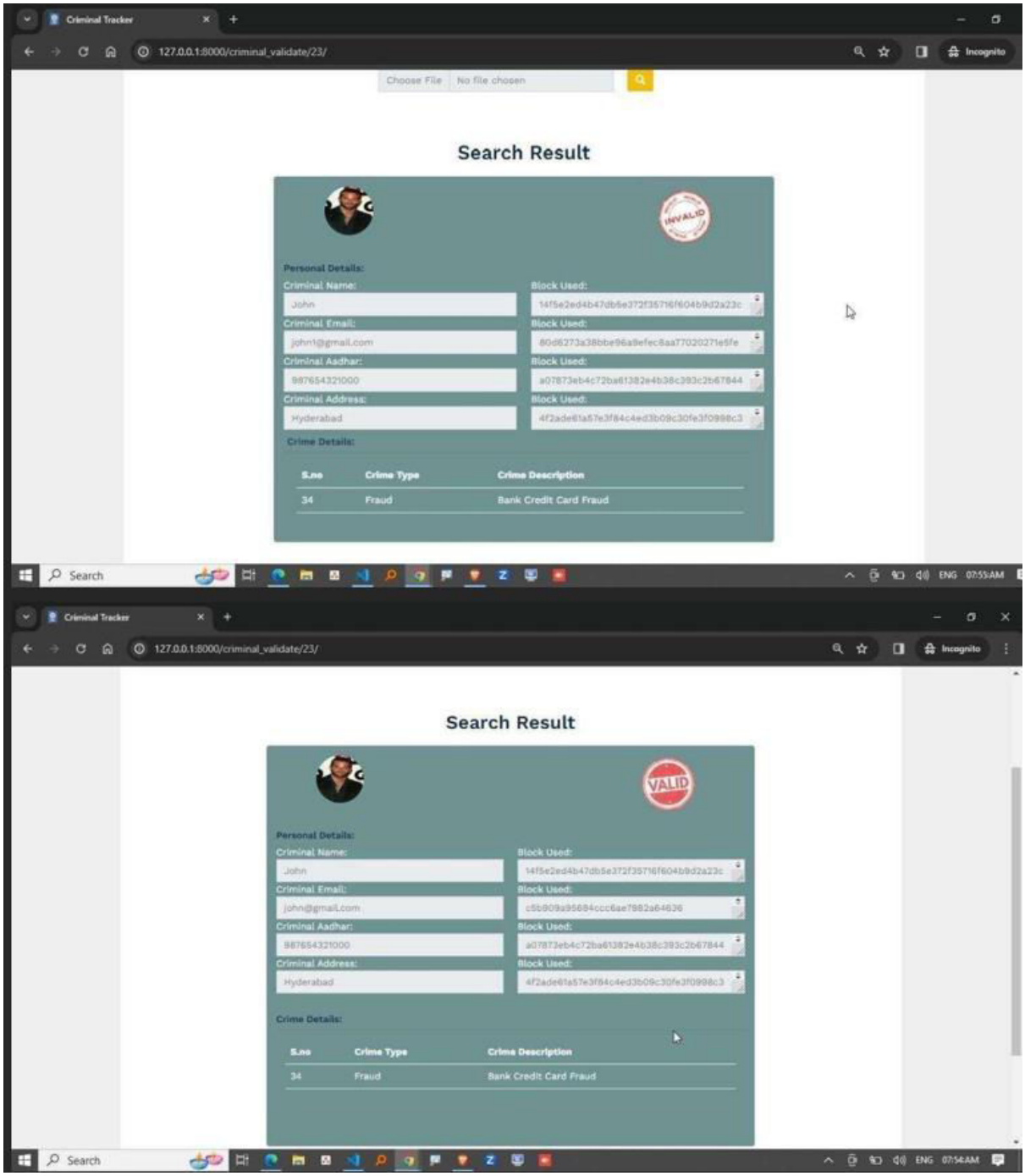
Manage Criminal

Criminal List

Add Crime

Logout

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Criminal Aadhar:
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Criminal Address:
Hyderabad
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Fraud
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Hyderabad
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Crime Type
Crime Description
34
Fraud
Bank Credit Card Fraud
Search
ENG
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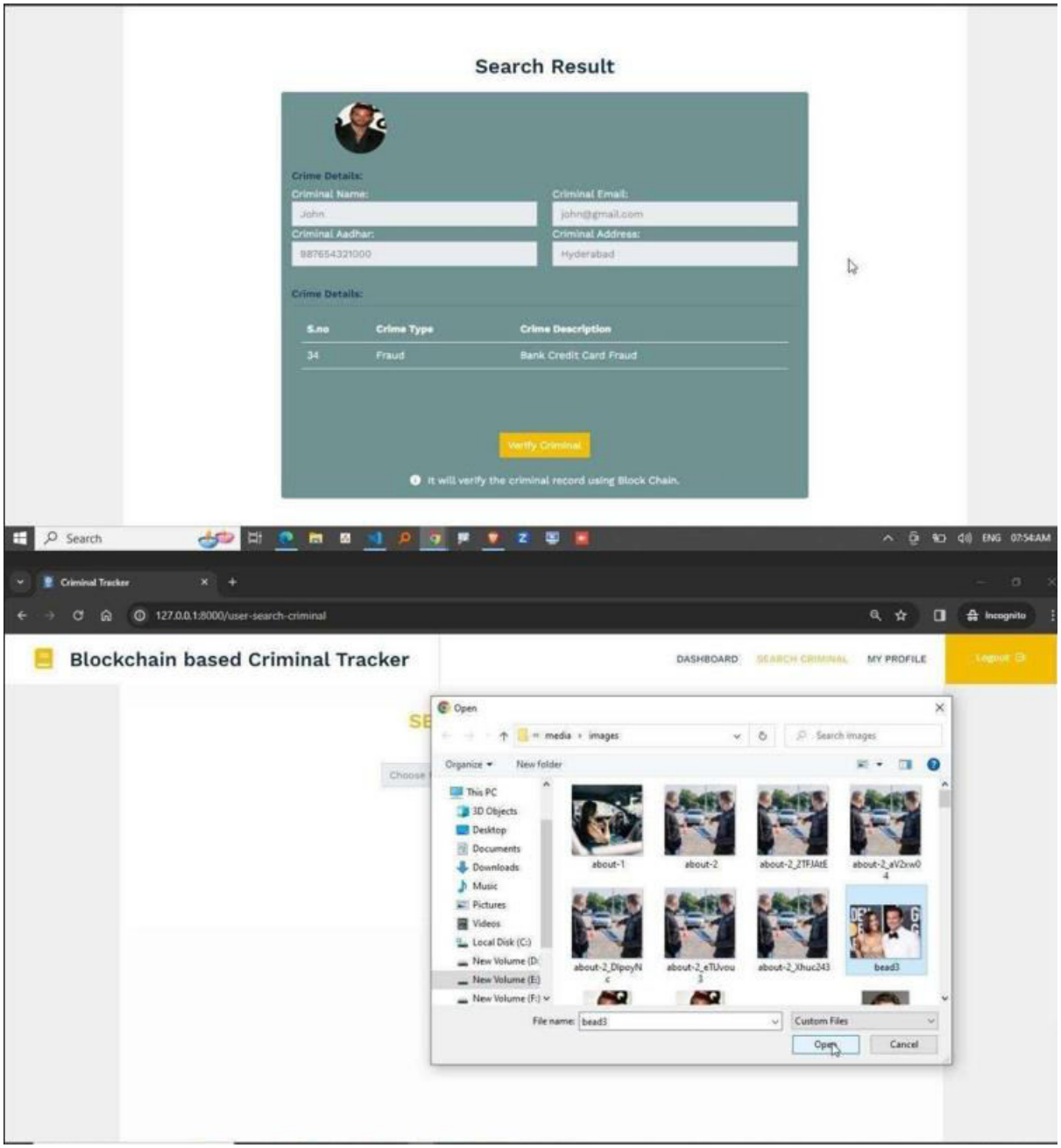
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Criminal Aadhar:
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Criminal Address:
Hyderabad
Crime Details:
S.no
Crime Type
Crime Description
34
Fraud
Bank Credit Card Fraud
Verify Criminal
It will verify the criminal record using Block Chain.
Search
Criminal Tracker
127.0.0.1:8000/user-search-criminal
Incognito
Blockchain based Criminal Tracker
DASHBOARD
SEARCH CRIMINAL
MY PROFILE
Logout
Open
media › images
Search images
Organize
New folder
This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
Local Disk (C:)
New Volume (D:)
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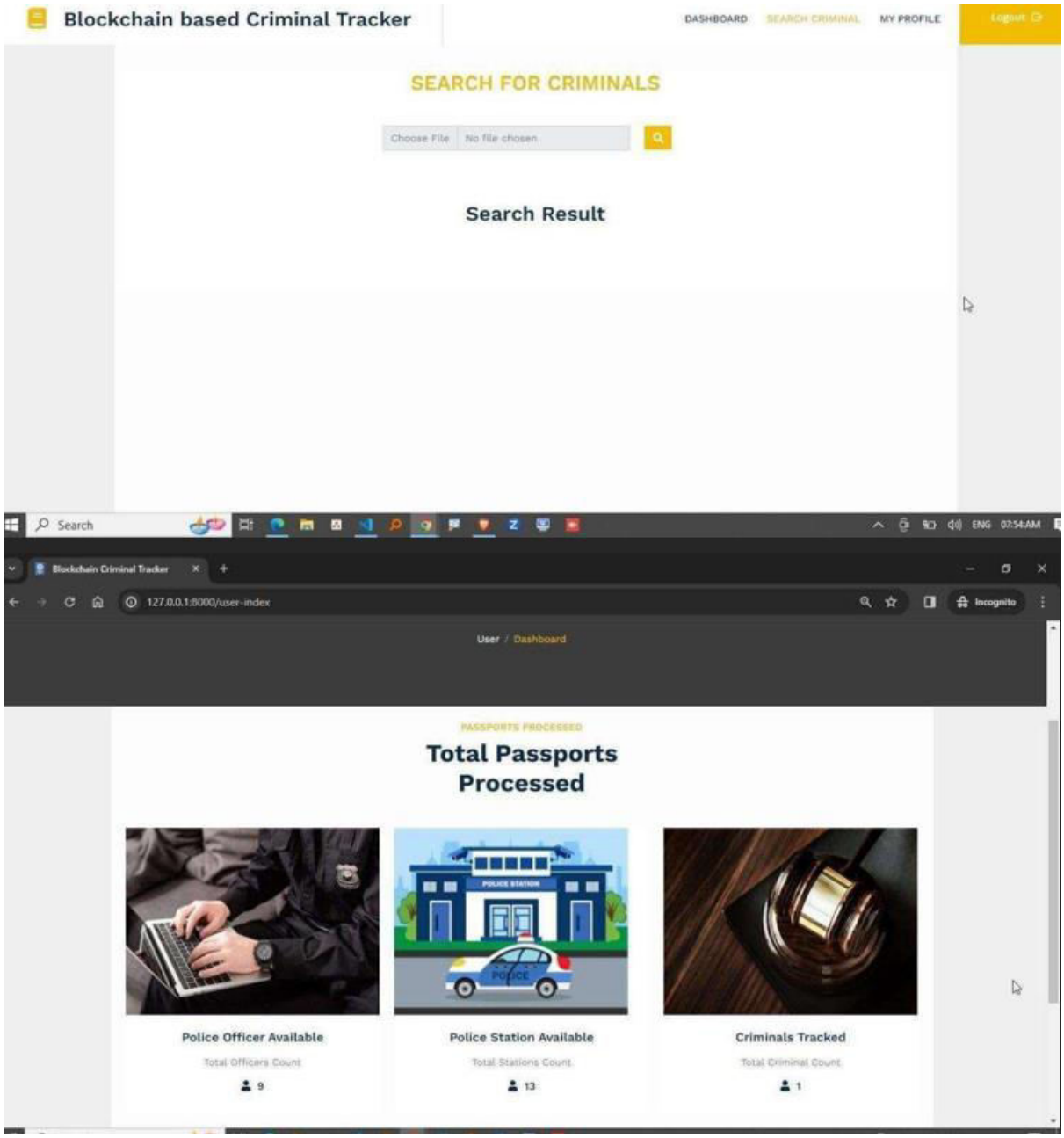
Blockchain based Criminal Tracker
DASHBOARD
SEARCH CRIMINAL
MY PROFILE
Logout
SEARCH FOR CRIMINALS
Choose File
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Search
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Incognito
User / Dashboard
PASSPORTS PROCESSED
Total Passports Processed
POLICE STATION
POLICE
Police Officer Available
Total Officers Count
9
Police Station Available
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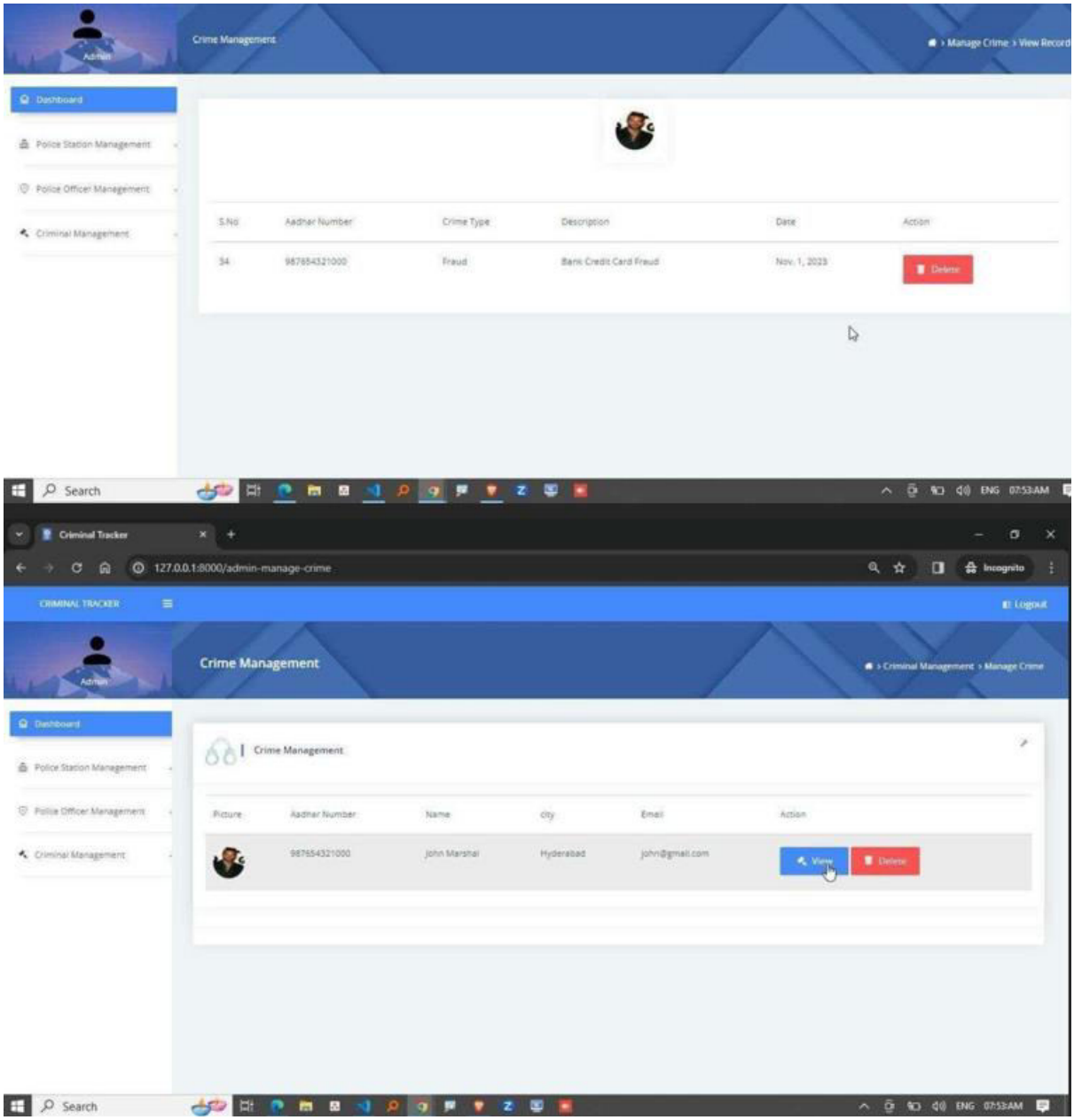
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Crime Management
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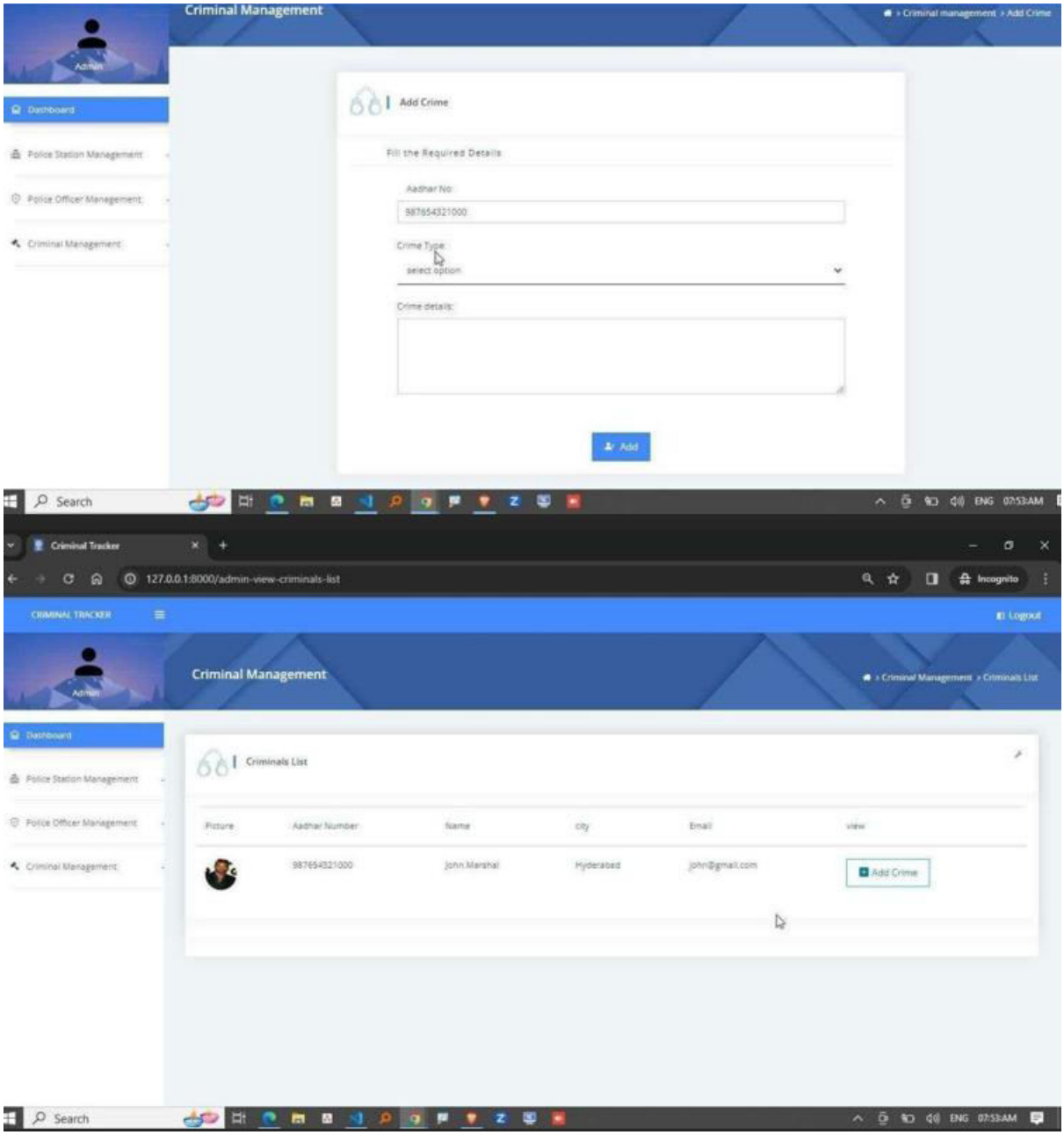
View
Delete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Crime Type:
select option
Crime details:
Add
Search
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Incognito
CRIMINAL TRACKER
Logout
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Email
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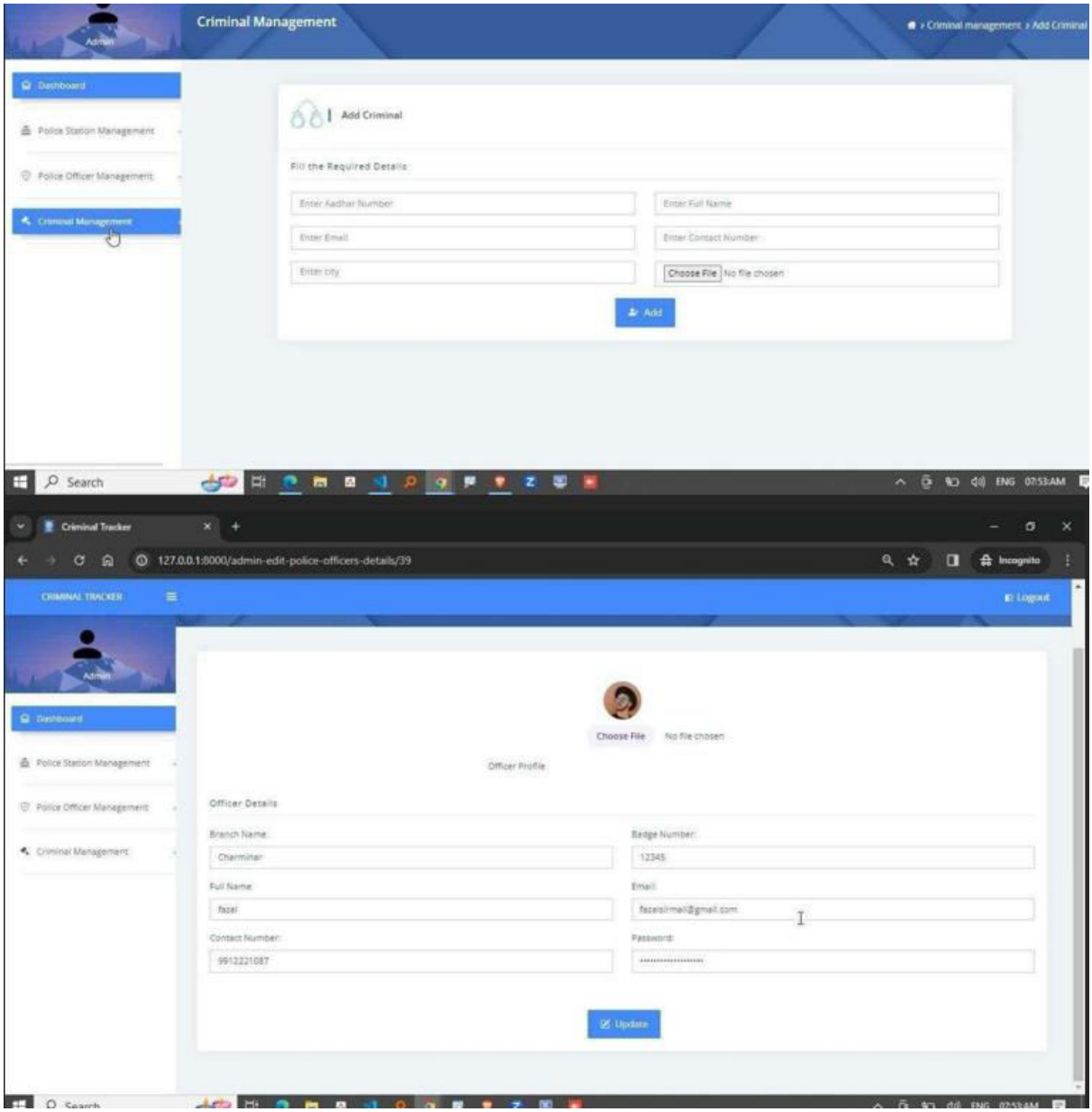
Criminal Management
Dashboard
Police Station Management
Police Officer Management
Criminal Management
Add Criminal
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Enter Email
Enter Contact Number
Enter city
Choose File
No file chosen
Add
Search
Criminal Tracker
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Incognito
CRIMINAL TRACKER
Logout
Admin
Dashboard
Police Station Management
Police Officer Management
Criminal Management
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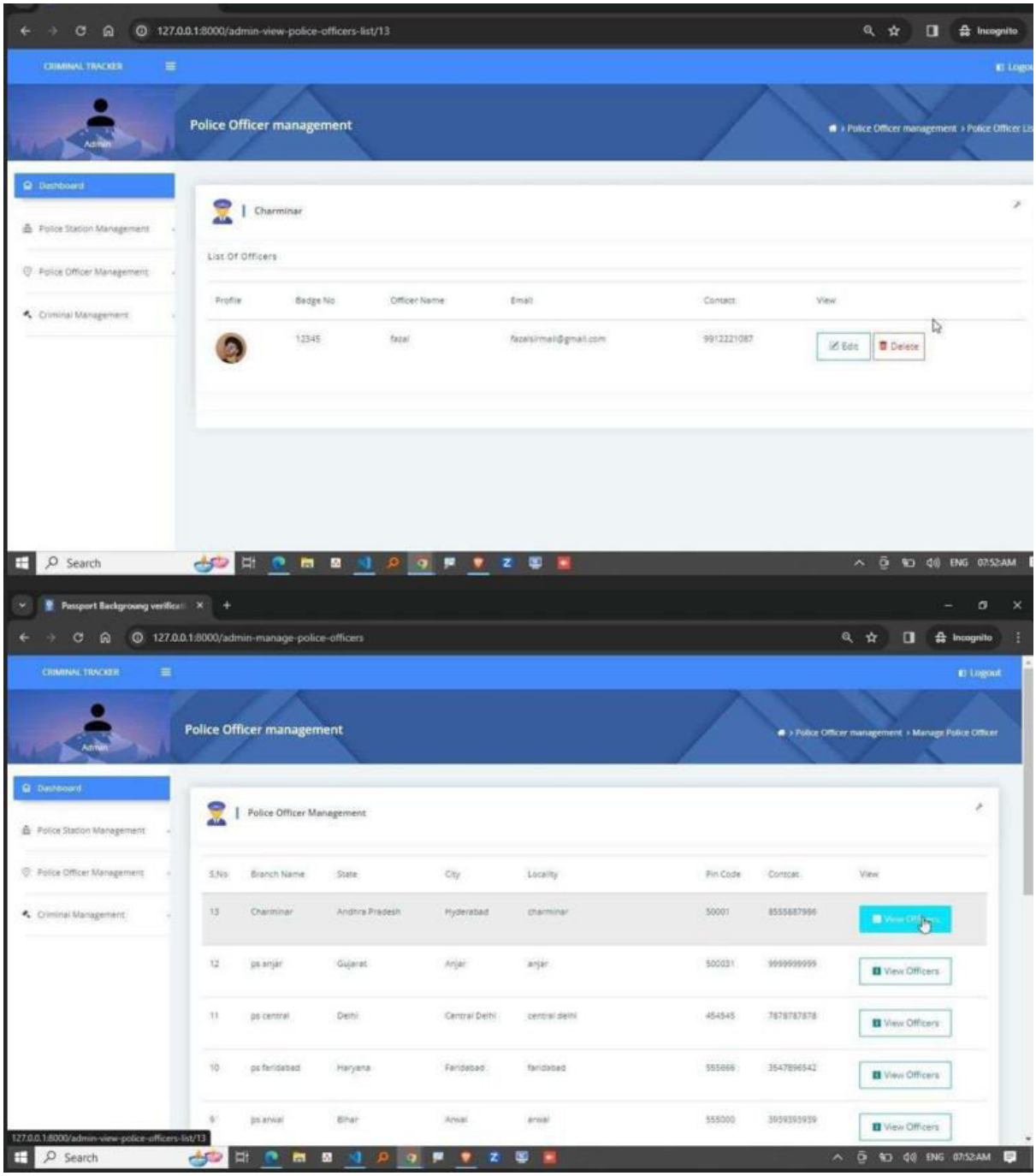

CONCLUSION

The implementation of a Blockchain Based Face Detection and Recognition System for criminal identification marks a significant advancement in the intersection of technology and public safety. By integrating blockchain technology with facial recognition, this project addresses critical issues of data security, privacy, and integrity that have traditionally plagued surveillance systems. The decentralized and immutable nature of blockchain ensures that facial recognition data is securely stored and resistant to tampering, thereby enhancing the reliability and trustworthiness of the criminal identification process. Through the development and testing of this system, we have demonstrated its potential to revolutionize law enforcement practices by providing a more secure, transparent, and efficient means of identifying and apprehending

criminals. This project not only highlights the power of combining emerging technologies but also paves the way for future innovations in the field of criminal justice and security.

FUTURE SCOPE

The future scope of the Python project "Blockchain Based Face Detection and Recognition for Criminal Identification System" is promising, given the increasing demand for secure, reliable, and efficient methods of criminal identification. As facial recognition technology continues to evolve, its integration with blockchain can pave the way for more robust and tamper-proof systems. Moreover, with growing concerns around data privacy and security, the decentralized nature of blockchain offers a solution to safeguard sensitive biometric data, ensuring it remains secure and immutable. Future iterations of this system could also explore interoperability with other identification systems and databases, creating a comprehensive, integrated platform for global criminal tracking.

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