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VeriScan Secure and Automated Admission Document Verifier

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Abstract: The Centralized Admission Process (CAP) used in higher education institutions depends largely on verifying student documents, a task that is traditionally manual, time-consuming, and prone to human error. Although national digital document repositories ensure the authenticity of academic records, they lack automated mechanisms for validating critical contextual parameters such as document expiry dates, name consistency across certificates, and issuing authority legitimacy. To address this limitation, this paper proposes VeriScan, an intelligent and automated document verification framework. The proposed system securely integrates with a digital document repository to retrieve authentic records and applies an intelligent verification layer using optical character recognition and a rules-based validation engine. This layer automatically extracts and verifies key metadata, detecting discrepancies without human intervention. Upon successful verification, a unique and secure digital credential in the form of a QR code is generated for each applicant, enabling administrators to instantly confirm verification status. The proposed approach significantly reduces processing time, minimizes manual errors, and enhances the transparency and integrity of the admission process. Furthermore, the framework demonstrates potential for future extension into government services, financial verification, and corporate onboarding systems.

Keywords: *Document Verification, DigiLocker, Optical Character Recognition, Automated Admissions, QR Code Authentication, Artificial Intelligence.*

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I. INTRODUCTION

Ensuring that applicants meet eligibility requirements and submit authentic records is a critical component of higher education admission processes. Conventional document verification relies on manual inspection of academic certificates, mark sheets, and other documents by administrative personnel. This method requires substantial manual effort, is prone to human errors, and often results in delays, inconsistent verification outcomes, and increased operational workload. In recent years, digital initiatives such as DigiLocker, introduced by the Government of India, have significantly improved access to authentic and tamper-proof academic documents. By enabling students to store and share verified digital records, DigiLocker has reduced the risk of document forgery and physical document handling. However, despite ensuring authenticity, DigiLocker does not provide automated validation of essential parameters such as name consistency across documents, roll number accuracy, marks verification, or document expiry dates. Consequently, admission authorities must still perform extensive manual checks, limiting the overall efficiency of the admission process.

To address these limitations, this paper presents VeriScan, a secure web-based system that automates document verification for centralized admissions. The proposed platform integrates with the DigiLocker sandbox environment to retrieve official documents with user authorization. Computer vision techniques such as YOLOv8 are employed to detect relevant regions of interest, followed by Optical Character Recognition (OCR) to extract textual data. Extracted metadata is validated against predefined admission rules, and verification outcomes are securely stored in a centralized database. Upon successful validation, the system generates a unique QR-based verification code for each applicant, enabling instant verification through an administrative dashboard.

This study evaluates the effectiveness of VeriScan in reducing processing delays, minimizing human intervention, and enhancing the transparency and security of admission procedures. The paper discusses existing verification

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practices, details the adopted verification methodology, explains the system architecture, analyzes experimental results, and concludes with potential enhancements and future applications of automated verification in higher education admissions.

II. METHODS AND MATERIAL

Document verification is a critical component of admission systems, governance platforms, and identity management applications. In large-scale academic admission processes, document verification is still predominantly manual, making it time-consuming, difficult to scale, and prone to human error when handling a high volume of applications [3]. These limitations highlight the need for automated and intelligent verification mechanisms. Several studies have investigated the application of Optical Character Recognition (OCR) for automating document verification processes. Salge et al. demonstrated that OCR-based systems can effectively extract textual information such as names, identification numbers, and academic details from scanned documents, significantly reducing manual data entry and verification effort [2]. However, their findings also revealed that OCR accuracy is highly dependent on document quality, layout consistency, and predefined templates, limiting adaptability in real-world admission environments where document formats vary widely. Recent research has expanded OCR-based systems by integrating artificial intelligence techniques. Reddy and Rajeswari proposed an intelligent document processing framework that integrates OCR technology with generative AI techniques to improve text extraction and summarization efficiency [1]. Their work highlights the potential of AI-assisted document understanding; however, it primarily focuses on information extraction and summarization rather than verification logic, cross-document validation, or rule-based eligibility assessment required in centralized admission systems. The availability of secure digital document repositories has further transformed verification workflows. DigiLocker, a government-authorized digital platform under the Digital India initiative, enables access to authenticated academic and identity documents. The Digital Locker Authorized Partner API specification outlines secure mechanisms for document retrieval using Aadhaar-based authentication and OAuth 2.0 authorization, ensuring document authenticity and integrity [6]. While DigiLocker guarantees trusted document sources, it does not inherently support automated validation of extracted content, such as name consistency across documents, expiry verification, or admission rule compliance.

In parallel, research in digital forensics has examined metadata analysis and timestamp verification to detect document tampering. Studies reported in the Journal of Digital Investigation indicate that metadata inconsistencies can expose subtle forgery attempts that are often overlooked during manual verification [5]. Although effective for forensic investigations, such techniques are computationally intensive and unsuitable for real-time admission processes that require fast and scalable verification. More recently, deep learning and computer vision approaches have been widely utilized for automated document understanding. Carta et al. proposed an end-to-end OCR-free framework for identity document information extraction using deep learning-based layout analysis [4]. Their approach demonstrates improved robustness to complex document layouts but does not integrate with secure digital repositories or centralized admission workflows. Furthermore, OCR-free systems may face limitations when extracting fine-grained academic metadata from heterogeneous educational documents. Based on the limitations identified in existing literature, there remains a research gap in developing an integrated admission verification framework that combines secure document retrieval from DigiLocker, deep learning-based region detection, and OCR-driven metadata extraction with automated validation logic. This study aims to address this gap by proposing a unified, intelligent document verification system tailored for centralized admission processes.

III. BASIC METHODOLOGY OF VERISCAN

This section describes the methodology used for designing and implementing the VeriScan system. The methodology focuses on secure document acquisition, intelligent region detection, automated text extraction, rule-based validation, and instant verification generation. The overall framework is designed to reduce manual intervention while ensuring accuracy, scalability, and security in centralized admission processes.

- *Overview of the Proposed Methodology:*

The proposed system follows a layered and modular workflow comprising document retrieval, preprocessing, region localization, metadata extraction, validation, and verification credential generation. Initially, authentic student documents are fetched from a government-authorized digital repository. These documents are then analyzed using computer vision and text recognition techniques to extract and verify critical admission-related metadata. Finally, a unique QR-based verification credential is generated for efficient administrative validation.

- *Secure Document Acquisition Via Digilocker Integration:*

The first stage of the methodology involves secure integration with the DigiLocker sandbox environment. Students authenticate using a consent-based OAuth mechanism and authorize access to their official academic and identity documents. This ensures that all documents retrieved by the system are authentic, tamper-proof, and issued by trusted authorities. The reliance on DigiLocker eliminates the risks associated with manual uploads and forged documents.

- *Document Preprocessing:*

Retrieved documents undergo preprocessing to enhance image quality and improve downstream analysis. Preprocessing techniques include grayscale conversion, noise reduction, contrast normalization, and resolution enhancement. These steps ensure consistent input quality for region detection and text extraction models, especially when dealing with documents of varying layouts and formats.

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➢ *Region of Interest Detection Using YOLOv8:*

To accurately identify critical information zones within documents, the proposed system employs the YOLOv8 object detection model for region of interest (ROI) detection. YOLOv8 represents a modern object detection architecture optimized for real-time performance and accurate region localization. Unlike traditional fixed template approaches, YOLOv8 is capable of detecting relevant regions such as personal details, academic information, and document identifiers across diverse document layouts.

The model adopts an anchor-free detection mechanism and an optimized feature pyramid network, enabling effective multi-scale feature extraction. This makes YOLOv8 particularly suitable for handling heterogeneous document formats commonly encountered in admission workflows. In the VeriScan system, YOLOv8 is trained to localize predefined metadata regions, which are subsequently forwarded to the text extraction module.

➢ *Text Extraction Using Optical Character Recognition:*

Once the regions of interest are identified, Optical Character Recognition (OCR) techniques are employed to transform the detected textual regions into structured machine-readable information. The OCR component processes text from images and converts it into a digital format that the system can analyze, enabling automated processing of critical fields such as candidate name, date of birth, roll number, marks, and issuing authority. This step significantly reduces manual data entry and facilitates structured metadata analysis.

➢ *Rule-Based Metadata Validation Engine:*

The extracted textual data is evaluated using a rule-based validation engine designed according to institutional admission requirements. The validation process includes checking whether the applicant's name remains consistent across all submitted documents, verification of marks eligibility, validation of document expiry dates, and confirmation of issuing authority legitimacy. If any mismatch or inconsistency is detected during this stage, the system automatically flags it for administrative inspection.

➢ *QR-Based Verification Credential Generation:*

Once the validation process is completed, the system creates a unique QR code linked to the applicant's verified record. The generated QR code stores a secure reference ID that connects to the system's backend database. Administrators can scan this QR code through a dedicated dashboard to instantly retrieve verification results, eliminating the need for repeated document inspection and improving operational efficiency.

➢ *Access Control and System Workflow:*

The VeriScan platform follows a role-based access control mechanism with two primary user roles: students and administrators. Students interact with the system to provide consent and track verification status, while administrators access verification results, review flagged cases, and perform QR-based validation. All actions and verification outcomes are logged to ensure auditability and transparency.

IV. SYSTEM ARCHITECTURE AND IMPLEMENTATION

➢ *System Architecture Overview:*

The VeriScan framework is designed using a client–server architecture that consists of four main layers: the user interface layer, application logic layer, intelligent processing layer, and the data storage layer. These layers operate in coordination to enable secure document verification and reliable metadata validation. The user interface layer consists of separate dashboards for students and administrators. The application logic layer manages authentication, workflow control, and communication between system components. The intelligent processing layer includes the YOLOv8 based region detection module, OCR engine, and rule-based validation engine. Finally, the data storage layer securely stores verification results, metadata, and access logs.

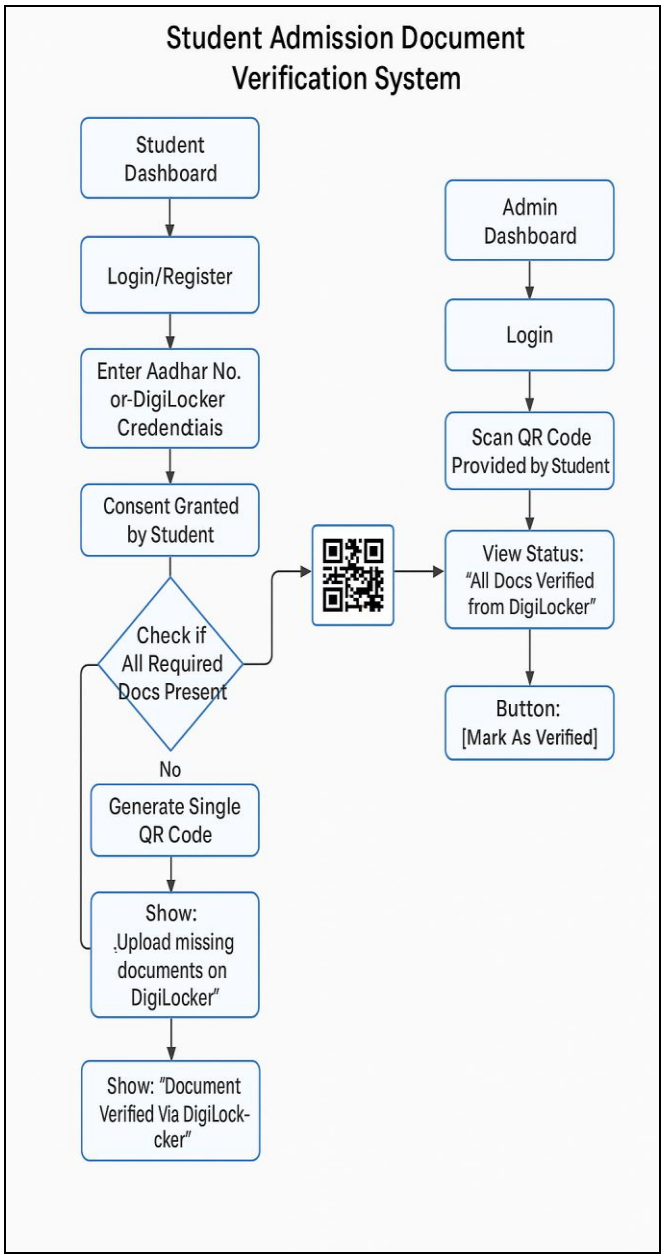

Fig 1 Workflow of Student Admission Verification System

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➢ *Student Dashboard Module:*

The student dashboard serves as the entry point for applicants participating in the centralized admission process. Through this interface, students authenticate themselves and provide consent for accessing their official documents via DigiLocker. Once authenticated, students can view the status of document verification and track the progress of their application. The dashboard ensures that no manual document uploads are permitted, thereby maintaining document authenticity. All document retrieval requests are securely forwarded to the backend for further processing.

➢ *Admin Dashboard Module:*

The administrator dashboard is designed to provide admission authorities with a centralized interface for monitoring and verifying applicant documents. Administrators can access verification results, review automatically flagged discrepancies, and perform instant verification by scanning the QR codes generated for verified applicants.

The dashboard reduces administrative effort by minimizing repetitive manual verification of documents and enabling real-time verification decisions. Role-based access control ensures that only authorized personnel can access sensitive verification data.

➢ *Intelligent Verification Engine:*

The intelligent verification engine forms the core of the VeriScan system. It integrates three key components: region of interest detection, text extraction, and rule-based validation. YOLOv8 is employed to dynamically detect relevant document regions across varying formats. The OCR module then extracts textual data from these regions, converting it into structured metadata.

The extracted data is analyzed by the validation engine, which applies predefined institutional rules to verify document consistency, eligibility criteria, and validity. This automated analysis minimizes human error while improving verification speed and accuracy.

➢ *Generation of QR and Verification Module:*

Once the verification process is completed, the system produces a unique QR code that is linked to the applicant's verified record. This QR code contains a secure reference ID that connects directly to the system's backend database rather than storing sensitive information directly. By scanning this QR code, administrators can quickly access the verification status along with the associated document metadata. This module enables quick, contactless verification during admission rounds and helps prevent document tampering or impersonation.

➢ *Backend and Database Implementation:*

The backend of the VeriScan system is implemented using a RESTful architecture to manage communication between the frontend, DigiLocker services, and intelligent processing modules. It handles authentication, document retrieval requests, metadata processing, and verification result storage.

A centralized database is used to store extracted metadata, verification outcomes, QR code references, and system logs. Encryption methods and controlled access mechanisms are implemented to safeguard sensitive information and ensure compliance with privacy regulations.

➢ *Security and Access Control Mechanisms:*

Ensuring strong security is an essential component of the overall system architecture. The platform utilizes secure authentication mechanisms and role-based authorization to prevent unauthorized document access. Every transaction within the system is recorded to maintain traceability and support auditing of verification activities. Additionally, the system avoids storing raw document images whenever possible, reducing exposure to sensitive personal information.

The proposed system architecture effectively integrates secure document access, intelligent verification, and instant validation within a unified framework. By combining modular design principles with AI-assisted processing and QR-based verification, the VeriScan platform provides a scalable and reliable solution for automated admission document verification.

V. RESULTS

The results presented in this section are based on controlled prototype-level testing of the implemented VeriScan modules. The proposed VeriScan system was evaluated through prototype-based testing to assess verification efficiency, extraction accuracy, and administrative usability. The automated verification pipeline significantly reduced document processing time compared to manual verification methods. Once documents were retrieved from DigiLocker, metadata extraction and validation were completed within a few seconds per applicant.

This section presents the experimental outcomes observed during the implementation and testing of the VERISCAN system. The results demonstrate the system's ability to automate document verification, reduce manual effort, and enable secure QR-based validation.

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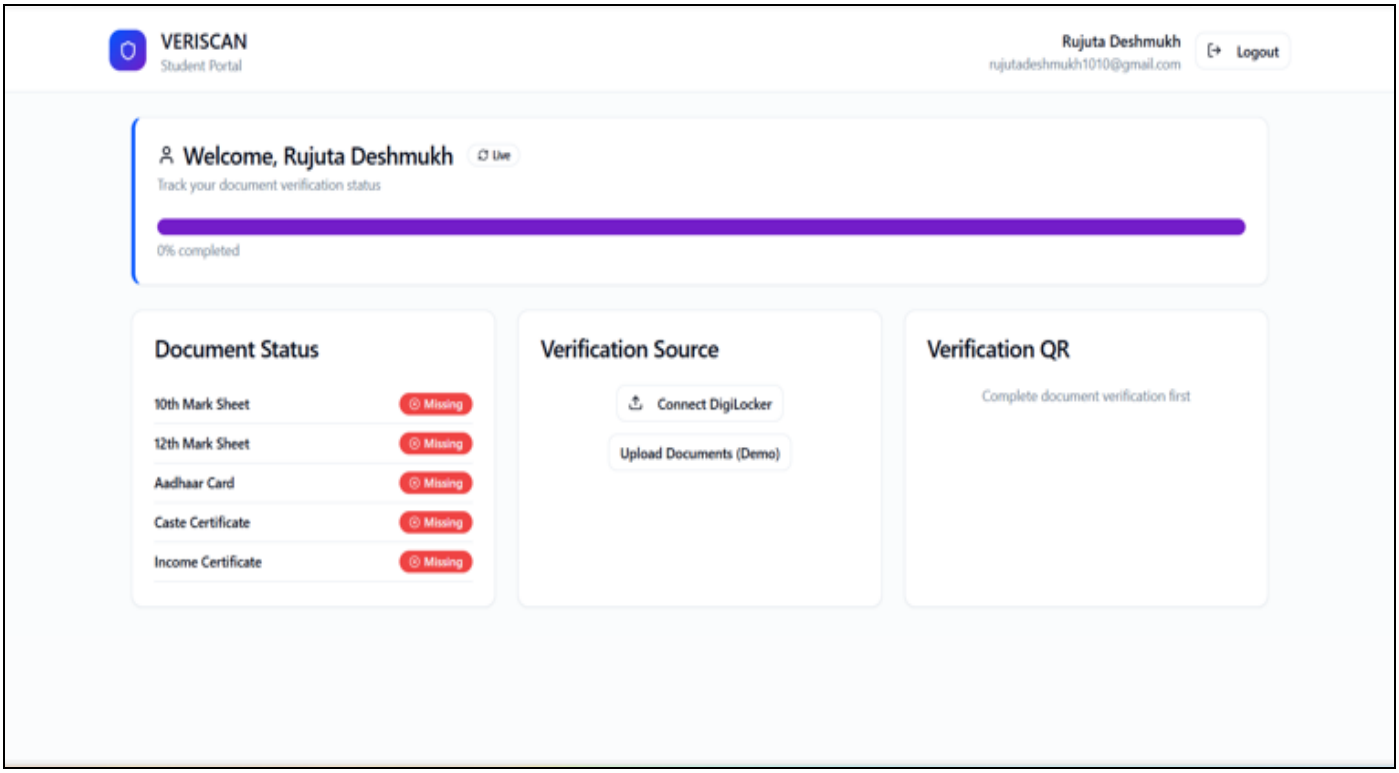

Fig 2 Student Dashboard Displaying Initial Document Verification Status

Fig. 2 shows the student dashboard immediately after login, where all required documents are marked according to the status and the verification progress is displayed as 0%. This confirms that the system correctly initializes document status and provides clear, real-time feedback to students.

After uploading the required documents, the system automatically verifies them using OCR and rule-based validation. All documents are marked as Verified, and the progress indicator updates to 100%, demonstrating successful real-time status updates.

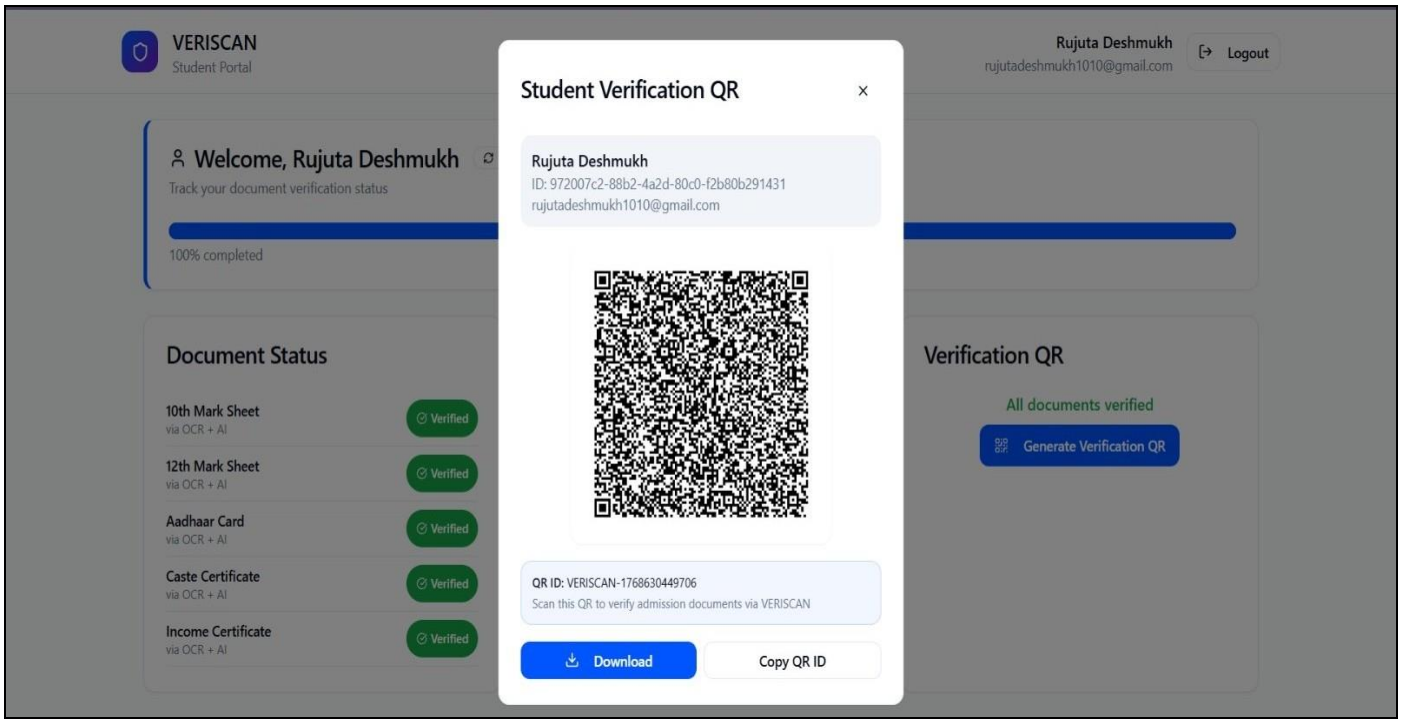

Fig 3 QR code Generated Upon Successful Document Verification

Once verification is completed, the system generates a unique QR code for the student. Fig 3 illustrates the generated QR code along with student details and a unique QR ID, which serves as secure digital proof of admission verification.

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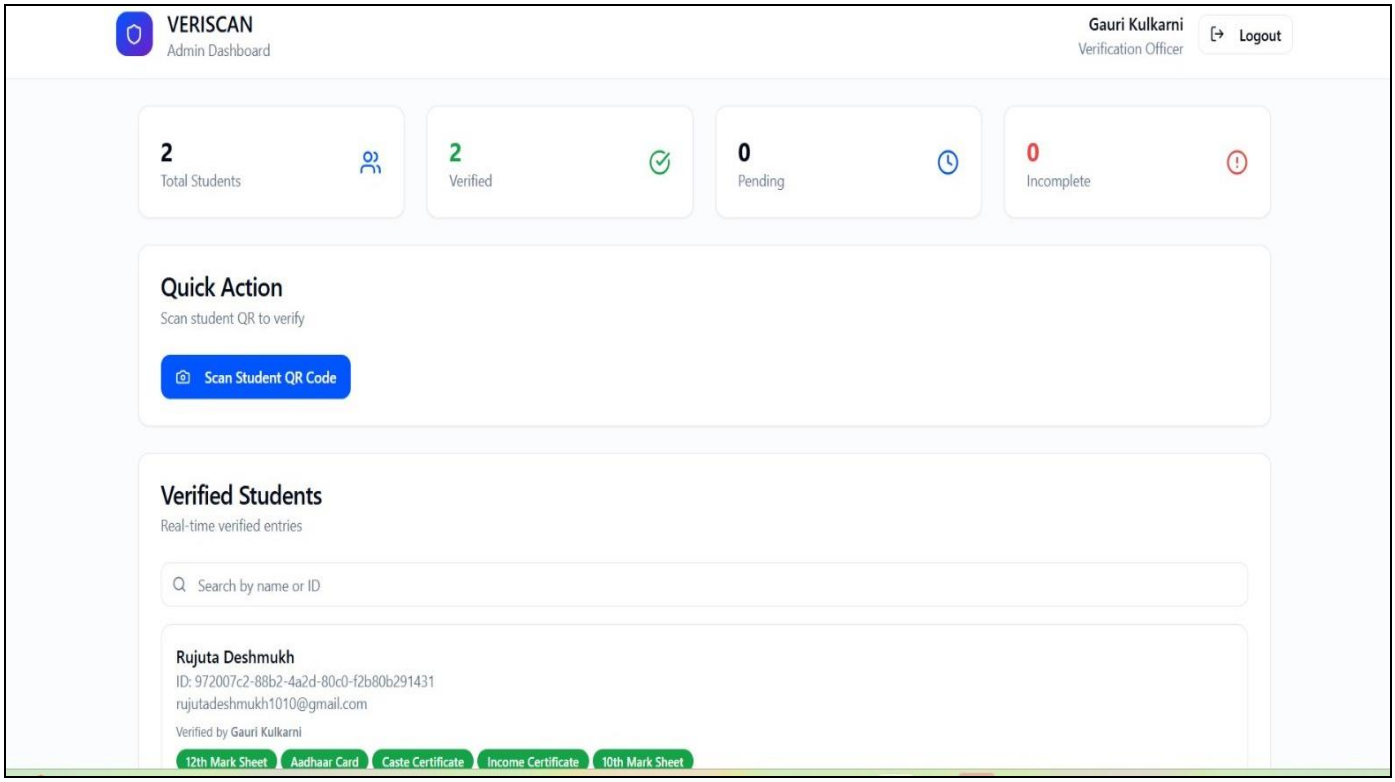

Fig 4 Administrative Dashboard with Real-Time Verification Statistics

The administrative dashboard, shown in Fig 4, provides real-time statistics including total students, verified cases, pending, and incomplete applications. This enables efficient monitoring and management of the admission verification process.

Finally, QR-based instant verification was observed, where scanning the QR code retrieves verified student details within seconds, eliminating the need for repeated manual document checks.

Overall, the results indicate that VERISCAN significantly reduces verification time, minimizes human effort, and improves accuracy and transparency in student admission verification.

VI. CONCLUSION

This paper presented VeriScan, an intelligent document verification framework designed for centralized admission processes. By combining secure DigiLocker-based document retrieval with AI-assisted metadata extraction and rule-based validation, the system improves verification speed, accuracy, and transparency. The QR-based verification mechanism further enhances administrative efficiency by enabling instant validation.

REFERENCES

[1]. R. V. V. Reddy and G. Rajeswari, “Automated document processing: Combining OCR and generative AI for efficient text extraction and summarization,” Int. J. Res. Trends Innov., vol. 10, no. 3, Mar. 2025, ISSN: 2456-3315.

[2]. A. Salge, S. Shindkar, S. Malve, S. Dabhikar, and S. Desai, “Document Verification Using OCR,” vol. 23, no. 5, May 2024, ISSN: 0044-0477.

[3]. A. Shende, M. Mullapudi, and N. Challa, “Enhancing document verification systems: A review of techniques, challenges, and practical implementations,” Int. J. Comput. Eng. Technol., vol. 15, no. 1, pp. 1-10, Jan-Feb. 2024

[4]. S. Carta, A. Giuliani, L. Piano, and S. G. Tiddia, “An end-to-end OCR-free solution for identity document information extraction,” Elsevier, 2024.

[5]. “Aadhaar-based digital document verification,” J. Digit. Investig., vol. 42, 2022.

[6]. National e-Governance Division, Ministry of Electronics and Information Technology, Government of India, “Digital Locker Authorized Partner API Specification,” ver. 1.11, Feb. 2021.