Project Team #: 20CSM_B15

20BQ1A4214 – D. Santhi

20BQ1A4210 – Ch. Harshavardhan

20BQ1A4219 – G. Kishore

20BQ1A4224 – J. Sai Krishna

Project Name:

Automatic sign and photo detection from the uplaoded documents by trainees during admissions using Artificial Intelligence and Optical Charater Recognition.

Abstract:

In the ever-evolving landscape of admissions processes, the manual verification of documents can be time-consuming and error-prone. To address this challenge, we propose an innovative solution for automatic sign and photo detection from uploaded documents using Artificial Intelligence (AI) and Optical Character Recognition (OCR) technologies.Our system leverages state-of-the-art deep learning algorithms to automatically recognize and extract signatures and photographs from scanned documents. By harnessing the power of AI, our solution significantly reduces the burden on admissions staff, streamlining the verification process and improving overall efficiency.

The core of our system lies in the integration of advanced deep learning models, trained on extensive datasets containing diverse signature and photo samples. These models have been fine-tuned to achieve remarkable accuracy in detecting and extracting signatures and photographs from various document types.

The proposed solution not only expedites the document verification process but also ensures enhanced data security and privacy. We employ robust security measures to protect sensitive information from unauthorized access, adhering to the highest standards of data protection and regulatory compliance.

Through a user-friendly web-based interface, trainees can effortlessly upload their documents, and within seconds, the system automatically identifies and validates the authenticity of their signatures and photographs. This seamless integration enhances the overall user experience and instills confidence in the admissions process.

In summary, our automatic sign and photo detection system using AI and OCR technology offers a cutting-edge solution to expedite the document verification process during admissions. By harnessing the power of deep learning, we eliminate manual intervention, reduce errors, and enhance the security and efficiency of the admissions workflow. Our innovative approach sets the stage for a seamless and reliable admissions process, benefiting both trainees and educational institutions alike.

Title	Automatic recognition of Photo, signature
Clients	Universities/Colleges, Schools
Objective	The project "Automatic Sign and Photo Detection using Artificial Intelligen and Optical Character Recognition (OCR)" aims to automate the process of identifying and extracting signatures and photos from uploaded documents during admissions. By leveraging AI and OCR technologies, the system see to eliminate manual verification, reducing the workload on admissions staff and expediting the verification process. The primary focus of the project is on accuracy. Advanced deep learning models will be trained to achieve high precision in recognizing and extracti signatures and photos from various document types, including scanned images. This ensures reliable results and faster decision-making for trainee applications, enhancing the credibility of the verification process. Efficiency is a crucial objective, intending to save time and resources. The system's user-friendly web-based interface enables trainees to effortlessly upload their documents and receive real-time feedback on verification resul Robust security measures will protect the privacy of trainees' documents, an the system will comply with data protection regulations. Scalability and seamless integration with the existing admissions platform ensure a smooth and reliable admissions process, benefiting both the admissions staff and trainees.
Users	1. Trainees/Applicants 2. Admissions Staff 3. Administrators and Management 4. App Developers and Technical Team 5. Data Protection Authorities 6. Maintenance Team
Functional Requirements	**F1: Document Upload:** Allow trainees to upload scanned documents or images containing signatures and photographs through a user-friendly web-based interface. Support common document formats, such as JPEG, PNG, and PDF, to accommodate different types of submissions. **F2: Automatic Sign Detection:** Automatically detect and locate signatures present in the uploaded documents, regardless of their position or orientation. Distinguish signatures from other text and image elements in the document accurately. **F3: Automatic Photo Detection:** Automatically identify and extract photographs present in the uploaded documents, such as passport-sized photos or identification card pictures. Detect photos in various formats and sizes. **F4: Verification and Authentication:** Verify the authenticity of signatures and photos extracted from the documents to ensure their validity. Compare detected signatures with reference signatures (if available) using AI techniques to detect anomalies or discrepancies.

	F5: Real-time Feedback: Provide trainees with real-time feedback on the verification results for their uploaded documents, indicating whether the signatures and photos are valid or not. Display appropriate instructions or error messages in cases where the system cannot automatically verify the signatures or photos. **F6: Backend Administration:** Provide backend administration capabilities for admissions staff to review verification results, manually override decisions if needed, and manage exceptional cases. Offer an admin dashboard for monitoring system performance and managing user access and permissions. **F7: Interface and Integration** Design the system for seamless integration with the existing admissions platform or workflow, enabling smooth interactions between the automatic sign and photo detection module and other components of the admissions process. **F8: Reporting and Analytics:** Implement reporting and analytics functionalities to track key performance metrics of the system. Provide insights such as the number of successfully verified documents, the percentage of accuracy in signature and photo detection, and processing times for different types of documents.
Non-Functional Requiremen	**NF1: Performance:** The system should provide quick and real-time feedback on the verification results to trainees, typically within a few seconds. The system should be abl to handle a high volume of document uploads and process multiple requests simultaneously, ensuring smooth performance during peak admissions periods**.** **NF2: Accuracy:** Signature and Photo Recognition: The system should achieve a high level o accuracy in detecting and extracting signatures and photographs from variou document types, with minimal false positives or negatives. Verification Accuracy: The system should accurately verify the authenticity signatures and photos, reducing the likelihood of errors in the verification process. **NF3: Usability:** User Interface: The web-based interface should be intuitive, user-friendly, a accessible on different devices, ensuring a seamless experience for trainees. Error Messages: The system should provide clear and informative error messages, guiding users on how to correct any issues that arise during the document upload and verification process. **NF4: Security:** The system should adhere to stringent data privacy measures, protecting trainees' personal information and documents from unauthorized access or disclosure.

	NF5: Compliance: The system should comply with relevant data protection and privacy regulations, ensuring the lawful and ethical handling of personal informatio **NF6: Scalability:** The system should be scalable to accommodate future growth and increased user demand without compromising performance or accuracy. Optimize resource usage, such as memory and processing power, to ensure efficient operation of the system**.** **NF7: Error Handling:** The system should handle errors gracefully, providing meaningful error messages and fallback mechanisms to maintain smooth operation in case of failures. **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: Maintenance and Support:** Develop the system with clean and well-documented code to facilitate ease maintenance and future updates. Provide comprehensive support to address any technical issues or inquiries from users or administrators.
Software and Hardware Requirements	**Software Requirements**: 1. Deep Learning Framework: TensorFlow and PyTorch 2. Programming Language: Python 3. Optical Character Recognition (OCR) Library: Tesseract OCR 4. Database Management System: MySQL or PostgreSQL 5. Version Control System: Git 6. Integrated Development Environment (IDE): Jupyter Notebook and Pycharm 7. Front-End Technologies: HTML, CSS, and JavaScript 8. Backend Framework: Django or Flask 9. Web Server: Apache 10. Error Logging and Monitoring: Logging Framework 11. User Interface Design Tools: Figma **Hardware Requirements:** 1. Processor (CPU): multi-core processor 2. Memory (RAM): 8 GB or higher 3. Storage (Internal Memory): 256GB SSD 4. Internet Connectivity: Wi-Fi or mobile data

PROJECT GUIDE HOD- CSM