

Smart Visitor Check-Ins

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Abstract— With the increase in number of visitors visiting an organization; today security has become a matter of extreme concern in every modern organization. A person who is a stranger to the institution needs to be monitored for the purpose of security and safety of the organisation’s assets. This paper presents the research on automated visitor authentication system. It provides efficient solution to various existing problems of present systems by increasing the overall efficiency of the system and decreasing the time required to perform the task, thus facilitates hassle free entry.

Keyword-- Visitors, Check-ins, Tesseract OCR, Django, Docker, Open CV

INTRODUCTION-

Traditionally organizations maintain visitors records by entering data in registers, which can be a time-consuming task and requires manual labor. Also, these records can be manipulated easily, and the security of the organization can be breached. Visitors can fake their identities which makes the organization prone to numerous threats.

When it comes to check the past information of the visitors it becomes time consuming & unreliable. Also, it becomes tedious to manually verify the identity of each and every visitor by security officials. The objective of this project is to produce a software which will efficiently automate the visitor’s verification in any private or public organization. The main idea is to simplify the functions involved in verification and data management of large numbers of visitors visiting the organization for different purposes. Smart Visitor Check-in is an automated system which provides solution to visitor

management process. It scans government ids to extract visitor’s data and gather information of the required fields. It helps in maintaining the database of an organization and generation of reports for admin use. It provides efficient solution to various existing problems of present systems by increasing the overall efficiency of the system and decreasing the time required to perform the task, thus facilitates hassle free entry. A Smart Visitor Check-in offers more adaptable, effective and feasible visitor verification system.

RELATED-WORK

After analyzing the practical scenario in different organizations and referring to various research paper and examining the workflow of various existing products it was evident that most of the systems that are designed for the purpose of visitor’s management are based on the method of printing badges for every new person and using it as an identity proof to enter the organization. Also many of organizations are still using record books for maintaining the records.

A system titled “VisiPass” is a web application which requires pre-registration by the visitor, is used for monitoring visitors and contractors inside the premises at any given period of time. VisiPass includes visitor registration, tracking of visitor, reporting and badge printing . It also supports web-based pre-registration by employees and access control integration. [2]

A system named “InstaPass” is another application used by Grant Thorton UK LLP, which is a leading financial and business advisor, to provide a professional and efficient environment for their visitors. The system is based on printing badges for the clients, which is attached with the car park pass

and is handed over to them. It includes colored ID photo for easier and faster identification. [1]

Another system named “Matrix COSEC” is designed to address concerns in a systematic manner without compromising security, hospitality or productivity of the organization. It provides options to create either an e-pass with access rights or a paper pass. Security person can create customized visitor pass with visitor name, photo ID, organization name, contact details and escort name. [3]

A paper titled “Real Time License Plate Detection Using OpenCV and Tesseract” has described the steps for extracting text from any image file and creating a separate text file consisting of information extracted from the image file by using open CV and tesseract OCR. It considers the limitations of different image processing applications available and works on removing them by employing variable level offiltration and image processing. [4]

TECHNIQUES-

The various techniques which are being used in Smart visitor Check-ins are:

OpenCV: OpenCV is an open source computer vision library which finds its application in real time computer vision. Intel developed OpenCV and was then backed by Willow Garage and Itseez. C and C++ is used to develop OpenCV. Since it is a cross platform library which can run on Linux, Windows and Max OS.

Django:Django is a server-side web framework, written in python which is very popular to design python-based web-app. It's an open source framework which follows the model-view-template architectural pattern. This framework is most commonly used to develop python-based web apps for fast pace development. Its development is taken care by an Independent organization named Django software foundation.

Tesseract OCR:Tesseract is an open-source optical character recognition engine for various operating systems which was originally developed as proprietary software at HP between 1984 and 1994. It is now one of the leading commercial engines in terms of its accuracy. Its major strength is probably

its unusual choice of features. It can be used directly or via API to extract text from images.

Docker:Docker Inc. was founded by Sebastien Pahl and Solomon Hykes in 2010 and was launched in 2011. It debuted in 2013 to the public in Santa Clara at PyCon. It is an engine which uses Linux Kernel features such as control groups and namespaces, which create containers on top of an operating system and helps in automating application deployment on the container. It provides a lightweight environment for running the application code.

IMPLEMENTATION-

When the visitor visits the organization the information is extracted from the government id (such as Aadhar card, driving license, pan cards, etc.) provided by the visitor. The extracted data is converted into text via the help of image recognition tool named tesseract OCR developed by google.

This text data is then converted into json format - key value pair which is further stored into temporary Django models. When the receptionist requests for registration form an auto filled registration form gets generated containing data of all the fields recently scanned. Further addition filling the empty fields including Mobile no, who to Visit, Purpose of Visit leads to successful registration process.

The process starts with capturing of image and crop the image to a box that consists of text and the rest

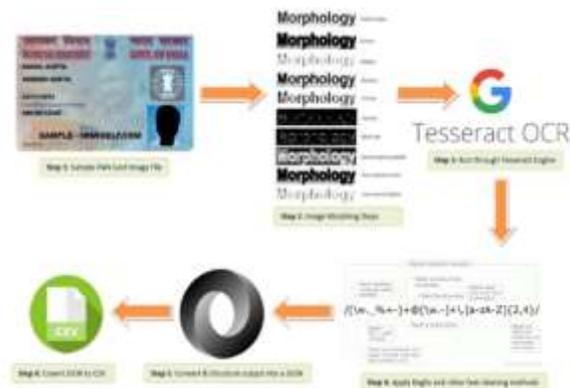


Fig. Steps to extract data from ID and converting it into text format.

part of the image is ignored. After the box capturing convert text into a gray scale and provide all the text to the tesseract. Tesseract extracts all the information from the image of government id in proper format and this meaningful information is stored into various fields included in Django models that are Name, Year of Birth, Gender, Uid .

These fields store all the values from which recent entry can be retrieved, after adding values in to the empty fields such as Mobile No, Purpose to Visit, Who to Visit, and after submitting the registration form data get stored into the database.

RESULT-

This system is solely designed for hassle free and effortless check-ins. It reduces the workload of security department, as well as reduces the time taken in registration process. Keeping the shortcomings of the existing systems in mind and covering all aspects of the practical world scenario we have designed a system that fulfills all the requirements and provides various benefits such as smooth operation during large turn over of visitors, improves security, better record management technology, etc. This system reduces time and effort, also the records of visitors visiting organizations becomes very feasible and transparent by the use of this intelligent visitor management system. This system is also very beneficial in retrieving the records of the visitor who visited any organization in the past, keeping all the necessary details that are authentic and reduces the chances of having faulty records.

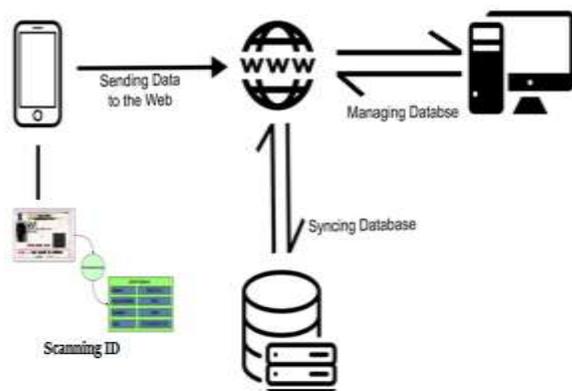


Fig. Architecture diagram of the system

CONCLUSION-

This app resolves the issue of long wait in registration process while signing in to the registration forms via extracting data by scanning Government IDs such as Aadhar card, PAN card, driving license. It helps in solving the problem of authentication, to reduce the risk of intruders into the organization. This system can be updated by organization, this is ensured by automatic filling of introducing the feature of facial recognition to ensure strict security. It can also be extended by adding Biometrics. Being cost effective and light weight it can be used by any organization with minimal requirements.

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