

# Face Recognition Based Gate Pass System

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## ABSTRACT

A software web application based on facial recognition is used to create a gate pass system. During college hours, it coordinates the student's gate pass request and leave. This system is ready for use and is simple to operate and manage. A gate pass security system is what this system is called. Its main goal is to keep the campus safe from outside visitors and to keep track of permissions. The Face Recognition based Gate pass system assists both the organization and the guest in managing their Gate passes. We can quickly enter the entry and exit of a student, teacher, and unknown guests using the gate pass system. One of the many benefits of employing this system is that all of a person's entry and departure records are stored and accessible. This system is simple to use. The goal of the project 'Face Recognition based Gate-pass System' is to keep track of the user's information and actions. It streamlines the process and reduces paperwork. We are providing the electronic version of the paper gate pass.

**Keywords :** Face Recognition, Gate Pass Generation, Systematic Identification

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## I. INTRODUCTION

Based on facial recognition The use of a gate pass system is essential for keeping track of students' egress from college grounds. Gate pass management has shifted from paper-based logbooks to web-based systems that rely on the internet as a result of technological advancements. A web-based system is often accessed using a computer or mobile browser. Smart phones' technological advancements have enticed many users to utilize their phones to access the internet and web-based systems. Such a system provides portability, flexibility, and a pleasant user

experience. The application has the added benefit of streamlining the entire gate pass administration procedure. The portability and accessibility of mobile phones are used to ensure that users can manage their gate passes at any time and from anywhere. A camera is an additional feature that is used for photo registration and verification of authorized gate pass users utilizing facial recognition for increased security records. As a result, the improved gate pass management system provides a simple approach for users to manage the gate pass process via devices.

## II. LITERATURE SURVEY

Gate pass creation based on biometric traits is becoming increasingly prevalent in recent years. We develop a unique gate pass generating tool based on the face recognition approach in this study. We're working on a gate pass creation mechanism that will identify the student's face, to generate the out pass . The purpose of this tool is to give entry and exit access to students. Initially, when a person has to leave their university, the camera captures a digital picture of the individual, and face features are retrieved and compared to the picture in the database.

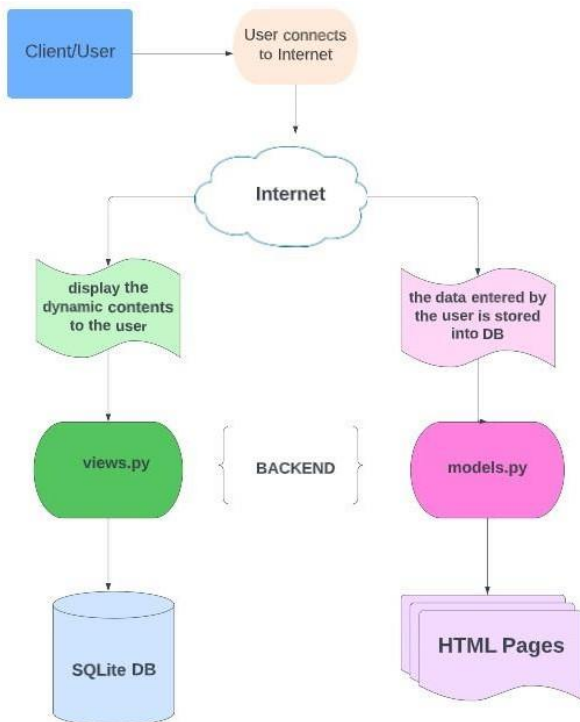
The results of an ongoing research study aiming at systematic identification, analysis, and testing of existing open-source and commercial face recognition systems—those that might considerably assist the primary stakeholders of highly technology smart institutions, including college students with disabilities—are presented in this article.[1] "It's unclear what happens to all of that data, and some of the agencies undertaking the real data collection aren't disclosing what they're doing with it or what they're searching for," said Sophie Richardson, Human Rights Watch's China director. "It's just another approach to take away people's anonymity and their ability to accomplish anything beyond the reach of the authorities," Richardson added.[5] Rida M. Hamza, David W. Meyers introduces the pre-verification system consisting of an RFID vehicle tag reader, an RFID personal tag reader, and a facial detection and recognition device that is situated before a building's entry. The RFID vehicle tag sensor examines and reads an ID from the vehicle's RFID tag when it attempts to pass through the gate. The RFID personal tag reader decodes an ID from an RFID personal tag worn by passengers in the vehicle [11] M. Vasanthi stated that as verification of identification is done using a physical and unique biometric trait, biometrics is the most secure method

of identifying individuals. Because passwords or PINs may be guessed or stolen, they are accountable for access fraud on corporate computer networks and the Internet.[9]

## III. PROPOSED SYSTEM

To cope with the outpass process at the college, the proposed system employs network ideas. By transmitting the gate pass through face matching, the system simplifies the procedure. As a result, the gate pass's data cannot be changed. The technology also makes it simple to keep track of and save the time log. Eigen face approach is one of the simplest and most efficient methods to overcome these obstacles in developing a system for Face Recognition, and it has been implemented in the gate pass generation in college . Face Recognition is a new field of research with many challenges, such as large sets of images with noisy data, improper illuminating conditions, and so on. To deal with bad illumination and face alignment issues, several face matching techniques are utilised to preprocess the image. We present a novel software tool for face matching and pass creation on a college campus in this study. This application is fully applied with the camera. If the student wants the out pass, he or she should sit in front of the camera and have their face matched for the next phase. Initially, the software takes the user's face via the camera and uses an enhanced canny edge detection algorithm. The proposed system's main goal is to offer the college with gate pass security. Face recognition is implemented by taking a person's picture and comparing it to a database. The system will allow an authorised individual to exit the campus, and if the person is deemed to be approved, the system will generate a gate pass using effective rule matching. The face detection system and the generation of the gate pass for the authorised individual are the two aspects of this system.

#### IV. PROPOSED ARCHITECTURE



As with a normal page, your browser sends an HTTP request to the web server. The web server recognizes the URL pattern and renders the view with the same pattern. This is done with the help of views.py file which matches the pattern requested and executes the function which in turn renders the requested page. The requested html is not pure html but it is rather a Jinja template- combination of python with html. The Jinja template is rendered in the browser with the help of WSGI server .When the user enters the data in the form and submits, the data is first loaded at the views and then stored in the database with the help of models.py which is the class level implementation of database(ORM) .Therefore, the page rendered is dynamic which appears to be static to the user.

#### V. METHODOLOGY

Start

1. Student Registration
  - 1.1 Photo for database saved with roll no
2. Student Login
  - 2.1 Send Requests

- 2.2 View Requests
- 2.3 Delete Requests
- 2.4 Logout
3. Department Login
  - 3.1 Login based on department
  - 3.2 View Requests- Approve/Reject requests
  - 3.3 Logout
4. Security Login
  - 4.1 View Requests
  - 4.2 Recognize User

Functionality: For Recognised User, if accepted request, then allow  
 Elseif request pending, then hold Else, don't allow  
 End.

#### STUDENT REGISTRATION

By providing their roll number, password, email, address, department, and batch, students can register and login to the system. He has the ability to send and receive requests. Students may track the status of their requests, making it simpler and more efficient for them. Students can organize their schedules based on the department's response when they ask for an out pass.

#### DEPARTMENT

The department can check for pending pass requests from students and grant or reject them based on the severity of the situation. By entering in with their credentials, faculty can see the pending requests for the current day. They can look up the student's name, branch, and year and accept or deny the request based on that information. They also have the authority to check the students' past data and requests for permits, which can sometimes prove to be useful in the future.

#### SECURITY

When the admin receives the updated list of students who have been granted permission to depart the college grounds, face recognition is used. When a student arrives at the admin to leave the premises, his

or her face is scanned, the face is checked against the database, and the roll number and status of the request appears. The administrator can double-check this with the approved student list before allowing the student to leave the university.

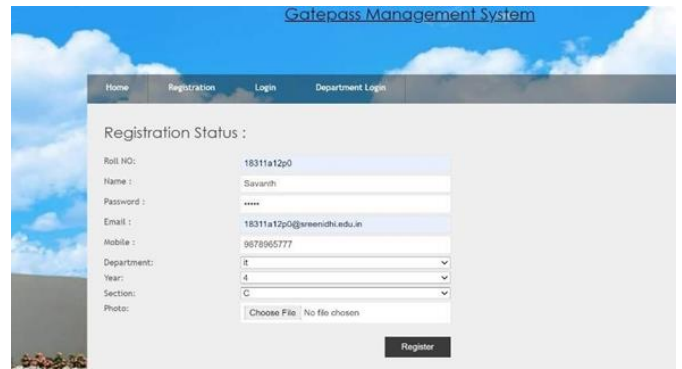
**VI. EXPERIMENTAL SETUP AND RESULT.**

**STUDENT REGISTRATION:** Initially the images are saved in the data base with roll-number. The student logs in the portal and sends the request to the department, the student can also view, delete the request.

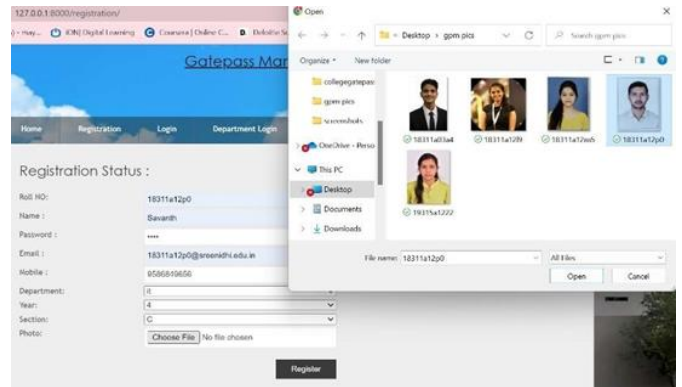
**DEPARTMENT LOGIN:** The department has the list of all the request of that particular day, and decide to accept or reject the request of respective student.

**SECURITY:** The approved list of the student requests by the department is displayed on the security portal. The security uses Face-recognition technology scanning the student’s face’s to get the status of their request and to check against the database.

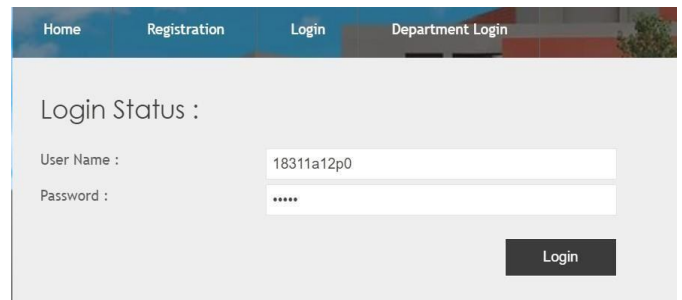
**RESULT:**



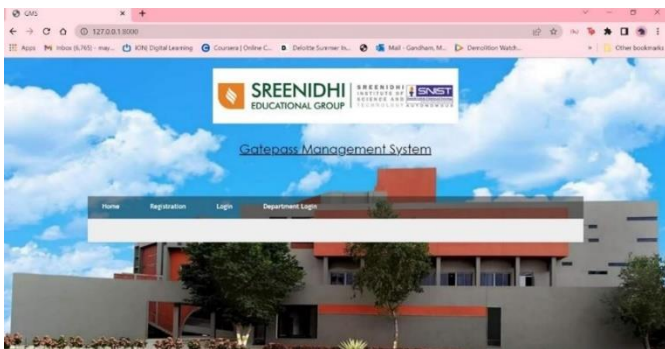
Student Registration



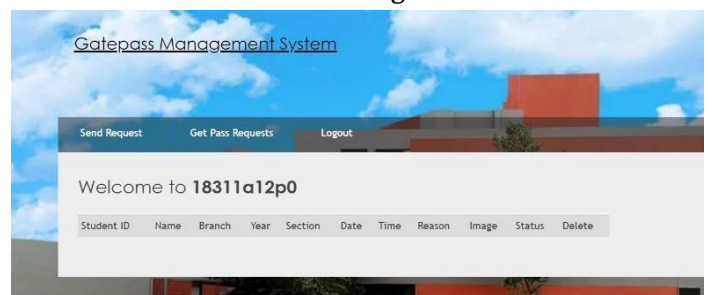
Student data



Student Login



Home Page

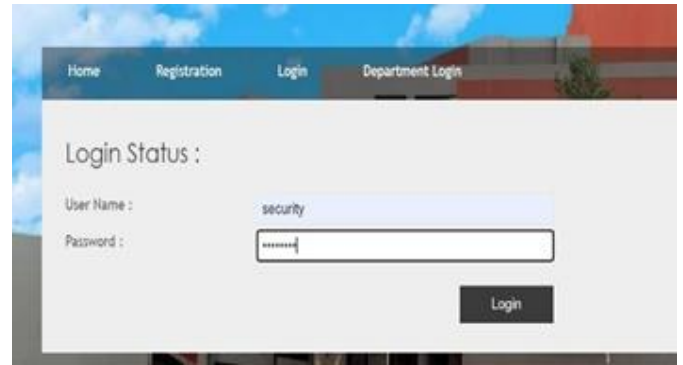


Student login page





Student Request



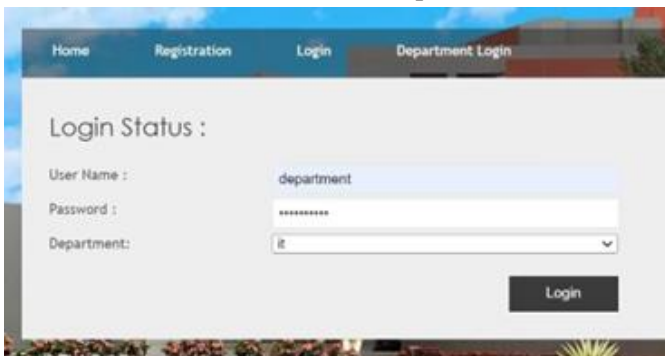
Security login.



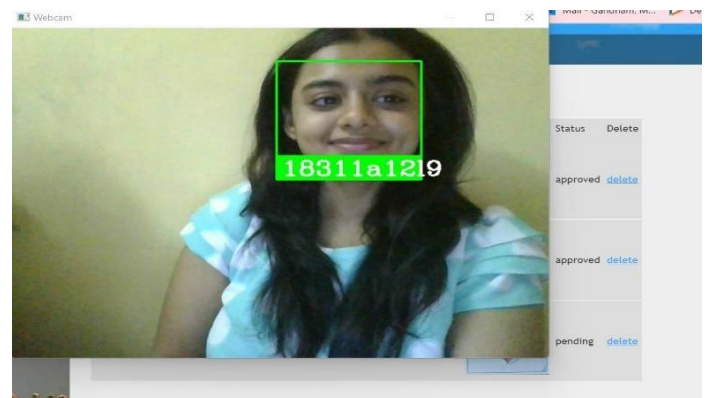
View Student Request



Security check



Department Login



Recognize user using face detection



Department can view requests and can either accept or reject

## VII. FUTURE ENHANCEMENT

It is unlikely to create a system that satisfies all of the user's criteria. User requirements keep changing as the system is being used. Face Recognition based Gate pass system can be used in future for security reasons. The system can introduce a wide array of interesting features like

- You can register gate guards to manage different gates

- Management of guests, including individual and group visitors.
- You can keep track of all visitors' and employees' entry and exit times.
- You can also register staff members in the system.
- Can be integrated into college system for taking attendance in classes and labs
- Entry and exit for hostel/dorms

### VIII. CONCLUSION

The Face Recognition based Gate Pass System is a software-based application with the primary goal of replacing the present paper-based gate pass solution with a computerised and time- saving system. It keeps track of students' and teachers' admission and exit data in a database, which administrators can view at any time. All records and major records are stored in the database. Finally, we designed an application for our institution to make the process of requesting and receiving gate passes easier than it was previously, as well as to protect the college from outside visitors. Face matching and pass restriction for illegal users, time based pass creation, out time reporting, are only few of the benefits of the application. The application has been tested with a variety of student profiles and ultimately advises on the proposed system's efficiency and correctness.

### IX. REFERENCES

- [1]. Jeffrey P. Bakken, Nivee Varidireddy & Vladimir L. Uskov "Face Recognition Systems for Smart Universities in proceedings of The Smart Innovation, Systems and Technologies book series (SIST, volume 188), Conference paper First Online: 08 June 2020
- [2]. Uskov, V.L, Bakken, J.P., Pandey, A., Singh, U., Yalamanchili, M., Penumatsu," A. Smart university taxonomy: features, components, systems" in Uskov, V.L., Howlett, R.J., Jain, L.C. (eds.) Smart Education and e-Learning 2016, pp. 3–14. Springer, June 2016, 643 p. (2016)

- [3]. Burt, C."Australian schools testing facial recognition for attendance". Biometric Update.com (2018, August 29).
- [4]. Connor Hoffman "Lockport school officials update security policies related to facial recognition software",connor.hoffman@lockportjournal.com, Feb 10, 2019
- [5]. Sharma, Y." Facial recognition security measures grow on campuses". University World News (26 July 2018).
- [6]. Rambo Hilary, D. Machuve, S. Mirau "Mobile Application for Gate Pass Management System Enhancement" Computer Science 2021 IEEE AFRICON Published 13 September 2021
- [7]. D. Saravanan, K. Dhivakar, T. Vignesh, V. Visvashwarr, K. P. Kumar, I. Arun " Outpass Generation with Raspberry Pi Using Arbian Operating System" Published in ICARCSET '15 6 March 2015
- [8]. Chaitanya Lengure, "A Review on E - Gatepass System" Computer Science, Education
- [9]. International Journal for Research in Applied Science and Engineering Technology Published 31 March 2018
- [10]. M. Vasanthi," GATE PASS MANAGEMENT SYSTEM FOR COLLEGE" Published 2017
- [11]. Ki-Hyeon Kwon, Hyung-Bong Lee "Gate Management System by Face Recognition using Smart Phone" Published 30 November 2011
- [12]. Rida M. Hamza, David W. Meyers "System for Gate Access Control" in proceedings of Honeywell International Inc., Morristown,NJ. Published 22 April,2008
- [13]. Heo Seok Yeol, Kang-Min Kim, Lee wan jik "Design and Implementation of Visitor Access Control System using Deep learning Face Recognition" Published 2021

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