

Department of Information Technology

A.P. Shah Institute of Technology

— G.B.Road,Kasarvadavli, Thane(W), Mumbai-400615

UNIVERSITY OF MUMBAI

Academic Year 2019-2020

A Project Report on
IdClick: Identify Students Digitally

Submitted in partial fulfillment of the degree of
Bachelor of Engineering(Sem-7)

in

INFORMATION TECHNOLOGY

By

Karan Thakkar(17104039)

Gunasekar Naikar(17104055)

Arun Pandey(17104020)

Under the Guidance of
Ms. Rujata Chaudhari

1. Project Conception and Initiation

1.1 Abstract

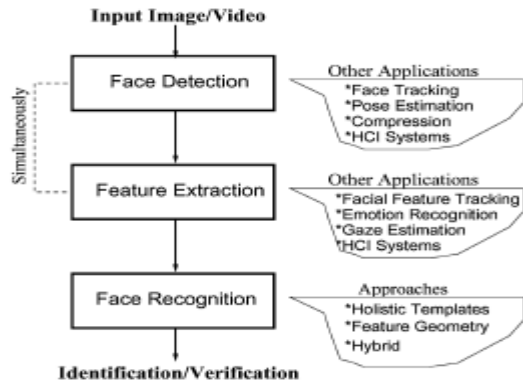
- Face recognition has been one of the most interesting and important research fields in the past two decades.
- It is known to be reliable, effective, secure then why not use it for college as well.
- In this project we will be developing a face recognition application which will give details about the students by capturing their face.
- For our project, we will be implementing face recognition using reactjs and nodejs which are two most popular frameworks and also the faceapi.js which helps us in detection and recognition of face without actually training our own model with thousands of image.

1.2 Objectives

- Platform for Teachers & College Staff:
 - Using IdClick Application for identifying student effortlessly can be very beneficial to indented user. A student will be free of registering themselves on gate when they forget their Id card.
- Visitors from outside:
 - Consider a situation where an unknown person wants an entry into the institution he or she should be verifiable including their purpose of visit.
- Authenticate student:
 - If we are able to provide the information to the concerned teacher and verify student identity it leads to informed decision making.

1.3 Literature Review

- Authors W. ZHAO, R. CHELLAPPA, P. J. PHILLIPS, A. ROSENFELD have published a paper in 2003 ACM Computing Surveys, Vol. 35 entitled “Face Recognition: A Literature Survey”.
- The authors in this have explained steps as shown in below image to detect and recognition faces from still image as well as from video.



1.4 Problem Definition

- In college campus sometimes students enter without identifying themselves due to which security personnel faces the consequences.
- Sometimes teachers or staff need to take action against other department students but they don't know their proper details.
- For this there must be proper and secured method to identify students and take actions accordingly.

1.5 Scope

- Can be applied to identify students & register visitors in colleges.
- Can be effectively used in ATM's ,identifying duplicate voters, passport and visa verification, driving license verification, in defense, competitive and other exams, in governments and private sectors.

1.6 Technology stack

- **Reactjs:**
 - React is an open-source, front end, JavaScript library for building user interfaces or UI components. React can be used as a base in the development of single-page or mobile applications.
- **Nodejs:**
 - Node.js is an open-source, cross-platform, back-end JavaScript runtime environment that runs on the V8 engine and executes JavaScript code outside a web browser.
- **Face-api.js:**
 - JavaScript API for face detection and face recognition in the browser implemented on top of the tensorflow.js core API.
- **Twilio:**
 - Twilio allows software developers to programmatically make and receive phone calls, send and receive text messages, and perform other communication functions using its web service APIs.

1.7 Benefits for environment & Society

- Strengthens security measures:
 - Facial recognition also helps improve safety and security too.
- Reduces the number of touchpoints:
 - Facial recognition requires fewer human resources than other types of security measures, such as fingerprinting.
- Helps find missing people:
 - Law enforcement agencies use facial recognition to find missing people, and they've also used it to find missing children.
- Reduction in cost:
 - With modern technology it has become easy to implement face recognition effectively & efficiently resulting in cost reduction rather than using big hardwares and sensors altogether.

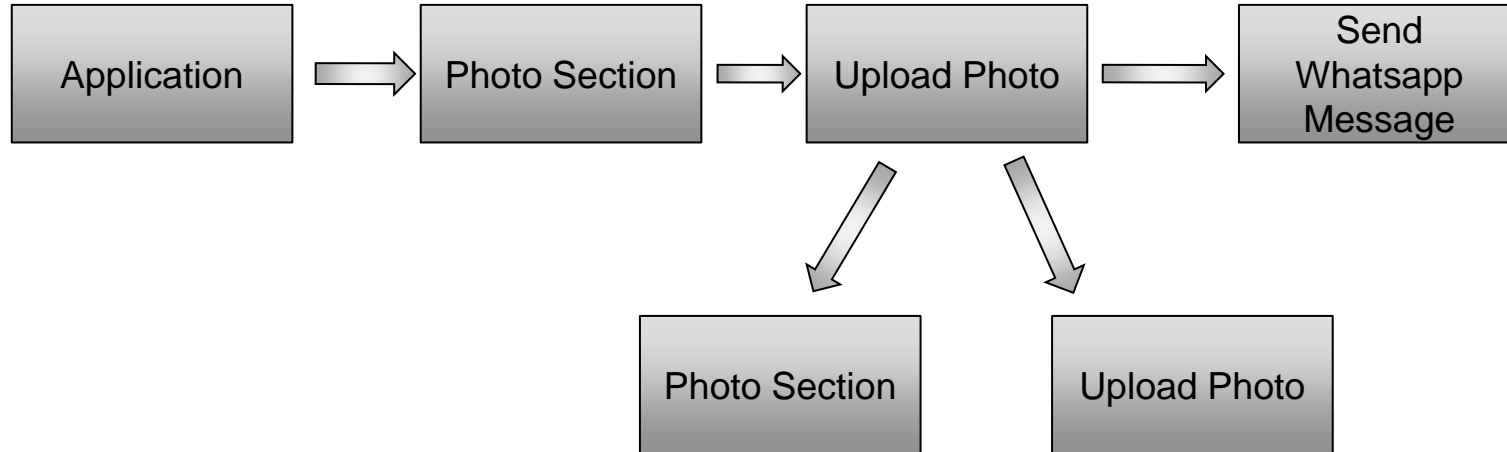
2. Project Design

—

2.1 Proposed System

- For this project we have used the following models provided by face-api.js:-
 - Tiny Face Detector
 - Face Landmark Network
 - Face Descriptor
 - Face Recognition Network
- Back to our system. Once a face (or faces) detected, face detector model will return with bounding boxes of each face, telling us where the face is in the image.
- The Face Recognition Network is another neural network (ResNet-34 like neural network, to be precise) return a Face Descriptor (feature vector contain 128 values) that we can use to compare and identify person in the image.

2.2 Design(Flow Of Modules)

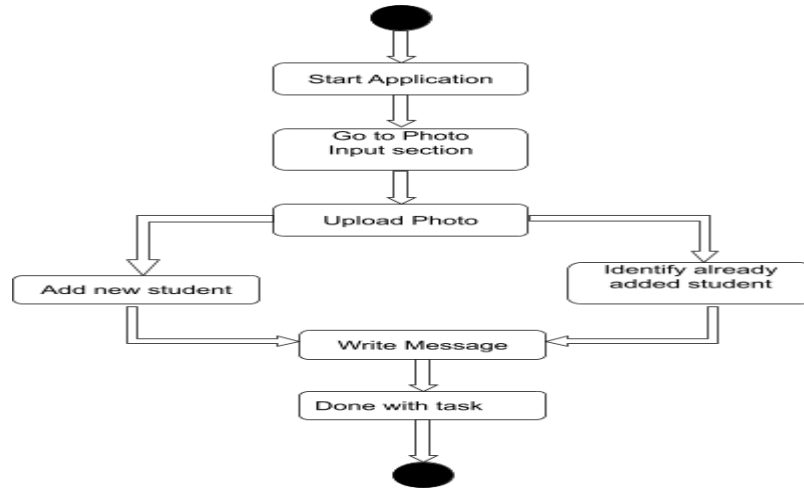


2.3 Description Of Use Case

Use Case Name:	Photo Upload
Description:	Photo upload functionality to add/recognise person.
Actors:	Teachers, college staff
Pre-condition:	React & nodejs must be running in background.
Post-condition:	<ol style="list-style-type: none">1. If new person after entering name and clicking upload button 'saved data' pop-up should appear.2. If person is already added after uploading photo person name should appear.

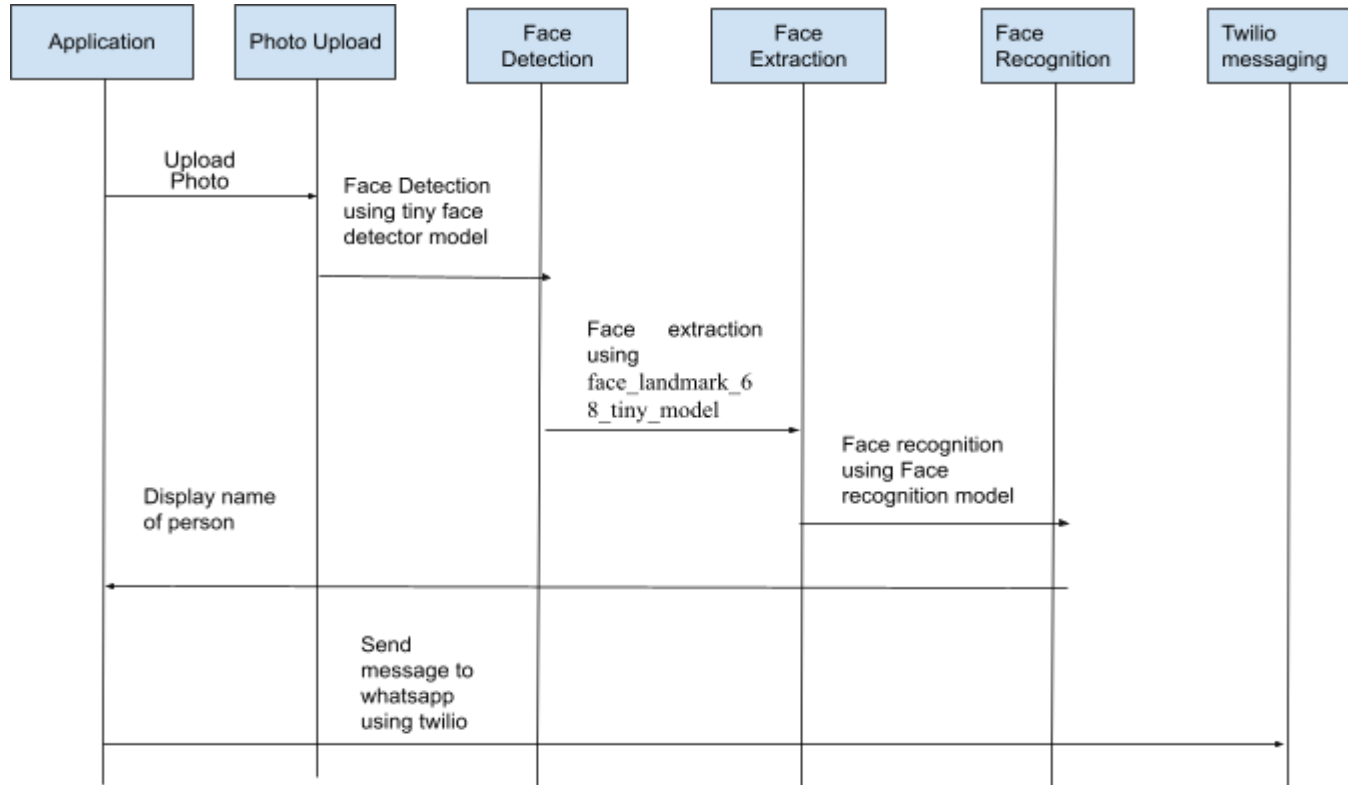
Use Case Name:	Sending message to whatsapp through twilio
Description:	With help of twilio we will be sending message to whatsapp.
Actors:	Teachers, college staff
Pre-condition:	Message receiver contact number should be already added.
Post-condition:	User should receive message on whatsapp successfully.

2.4 Activity diagram



As the above activity diagram depicts, firstly the user will launch the application, then he will go to input photo section on top left where user will be able to perform all operations, then user will upload a photo and if user wants to register new student they will enter name of student and click upload or if student is already registered name will be shown on the screen. Lastly if user wants to type and send any message so they can also do that message will be send through whatsapp.

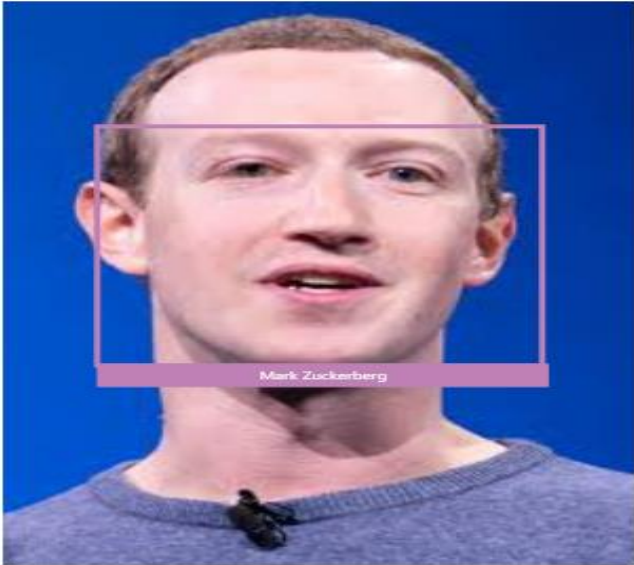
2.5 Sequence Diagram



2.6 Module-1

Photo Input

Status: 1 Face Detect



Mark Zuckerberg

Input Image file:
 No file chosen

Enter name:

☐ Show Descriptors

Module-2

Identify Newly Added User

Status: 1 Face Detect



Input Image file

Karan2.jpg

Module-3

Send Message To Whatsapp

Input Image file

Choose file

Karan2.jpg

Enter name:

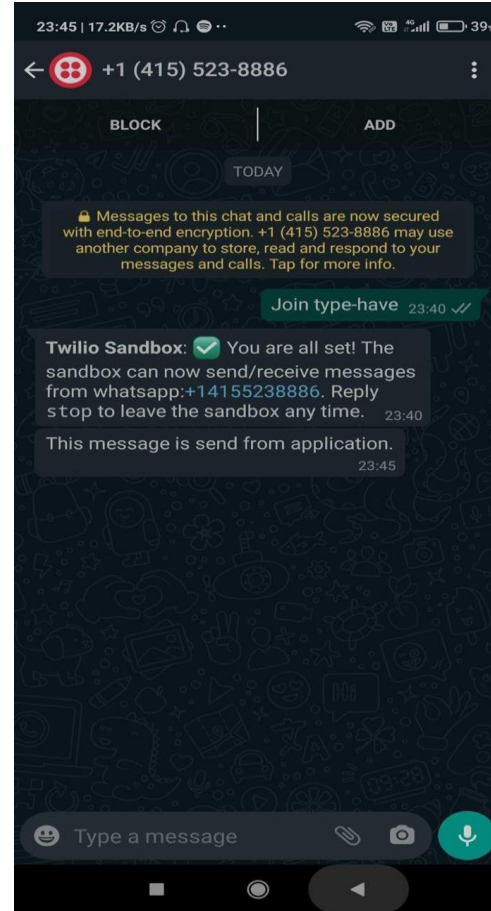
Enter Name

Upload

This message is send from a

Send Message

☐ Show Descriptors



2.7 References

- Youtube channel: WebStylePress, Codevolution
- Reactjs Official Documentation
- Nodejs Official Documentation
- towardsdatascience.com/facial-recognition

3. Conclusion and Future Scope

—

- The App could detect and recognize Idol face quite accurately, but still have some error happen sometimes. This is due to the subject might not face directly to camera, their faces might tilt, or the photo was edited by some other apps.
- As we all know that face recognition helps to identify person seamlessly so this technology can be implemented anywhere where we want to identify person on a regular basis and make the process easy for authenticating the person. This places could be gyms, colleges, offices, Buildings, etc.

Thank You

—