

GTU Innovation Council

Patent Drafting Exercise (PDE)

GIC Patent Drafting Exercise

Project Team: 3001

FORM 1 THE PATENTS ACT 1970 (39 OF 1970) & THE PATENTS RULES, 2003 APPLICATION FOR GRANT OF PATENT	(FOR OFFICE USE ONLY) Application No: 4478 Filing Date: Amount of Fee paid: CBR No: _____
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1. APPLICANT(S)

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2	Trivedi Yatharth Trusharbabu	Indian	2/Shivam Duplex.B/H Asopalav Complex.Alvanaka.Manjalpur.Vadodara 390011.Gujarat	8401734940	yathartht@yahoo.com

2. INVENTOR(S)

ID	Name	Nationality	Address	Mobile No.	Email Address
1	Raval Vrushank Atulbhai	Indian	101/Vinayak app. khadiya pole no.2 . Near Khnderav market.Vadodara 390001 Gujarat	9662284079	vrushankraval@yahoo.in
2	Trivedi Yatharth Trusharbabu	Indian	2/Shivam Duplex.B/H Asopalav Complex.Alvanaka.Manjalpur.Vadodara 390011.Gujarat	8401734940	yathartht@yahoo.com

3. TITLE OF INVENTION / PROJECT

Image Processing based Door Security System.

NOTE: This is just a mock Patent Drafting Exercise (PDE) for semester 8, BE students of GTU. These documents are not to be submitted with any patent office.

4. ADDRESS FOR CORRESPONDENCE OF APPLICANT/AUTHORIZED PATENT AGENT IN INDIA

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5. PRIORITY PARTICULARS OF THE APPLICATION(S) FIELD IN CONVENTION COUNTRY

Country	Application No.	Filing Date	Name of the Applicant	Title of the Invention
N/A	N/A	N/A	N/A	N/A

6. PARTICULARS FOR FILING PATENT COOPERATION TREATY (PCT) NATIONAL PHASE APPLICATION

International application number	International filing date as allotted by the receiving office
N/A	N/A

7. PARTICULARS FOR FILING DIVISIONAL APPLICATION

Original(First) Application Number	Date of filing of Original (first) application
N/A	N/A

8. PARTICULARS FOR FILING PATENT OF ADDITION

Main Application / Patent Number	Date of filing of main application
N/A	N/A

9. DECLARATIONS:**(i) Declaration by the inventor(s)**

I/We, the above named inventor(s) is/are true & first inventor(s) for this invention and declare that the applicant(s) herein is/are my/our assignee or legal representative.

Date: 02-May-2014

<u>Name</u>	<u>Sign & Date</u>
1 Raval Vrushank Atulbhai	_____
2 Trivedi Yatharth Trusharbabu	_____

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(ii) Declaration by the applicant(s) in the convention country

I/We, the applicant (s) in the convention country declare that the applicant(s) herein is/are my/our assignee or legal representative.

Not Applicable

(iii) Declaration by the applicant(s)

I/We, the applicant(s) hereby declare(s) that:-

- ☒ I am/We are in possession of the above mentioned invention.
- ☒ The provisional specification relating to the invention is filed with this application.
- ☒ The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by me/us before the grant of patent to me/us.
- ☒ There is no lawful ground of objection to the grant of the patent to me/us.
- ☒ I am/we are the assignee or the legal representative of true & first inventors.
- ☒ The application or each of the application, particulars of each are given in the para 5 was the first application in the convention country/countries in respect of my/our invention.
- ☒ I/we claim the priority from the above mentioned applications(s) filed in the convention country/countries & state that no application for protection in respect of invention had been made in a convention country before that date by me/us or by any person from which I/we derived the title.
- ☒ My/Our application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in para 6.
- ☒ The application is divided out of my/our application(s) particulars of which are given in para 7 and pray that this application may be treated as deemed to have been filed on _____ under section 16 of the Act.
- ☒ The said invention is an improvement in or modification of the invention particulars of which are given in para 8.

10. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION:

- ☒ (a) Provisional specification/Complete specification
- ☒ (b) Complete specification(In confirmation with the international application) / as amended before the international.Preliminary Examination Authority(IPEA),as applicable(2 copies),No.of pages.....No.of claims.....
- ☒ (c) Drawings(In confirmation with the international application)/as amended before the international Preliminary Examination Authority(IPEA),as applicable(2 copies),No.of sheets.....
- ☒ (d) Priority documents
- ☒ (e) Translations of priority documents/specification/international search reports
- ☒ (f) Statement and undertaking on Form 3
- ☒ (g) Power of Authority
- ☒ (h) Declaration of inventorship on Form 5
- ☒ (i) Sequence listing in electronic Form

(j)

Fees Rs. XXX in Cash/Cheque/Bank Draft bearing No. XXX Date: XXX on XXX Bank.

I/We hereby declare that to the best of my /our knowledge, information and belief the fact and matters stated herein are correct and I/We request that a patent may be granted to me/us for the said invention.

Dated this day of 20.....

Name

Sign & Date

1 Raval Vrushank Atulbhai

2 Trivedi Yatharth Trusharbabu

To
The Controller of Patent
The Patent Office, at Mumbai.

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FORM 2
THE PATENTS ACT, 1970
(39 OF 1970)
&
THE PATENTS RULES, 2003
PROVISIONAL SPECIFICATION

1. TITLE OF INVENTION / PROJECT

Image Processing based Door Security System.

2. APPLICANT(S)

Raval Vrushank Atulbhai (Indian)

101/Vinayak app. khadiya pole no.2 . Near Khnderav market. Vadodara 390001 Gujarat

Trivedi Yatharth Trusharbabu (Indian)

2/Shivam Duplex.B/H Asopalav Complex.Alvanaka.Manjalpur.Vadodara 390011.Gujarat

3. PREAMBLE TO THE DESCRIPTION

The following specification describes the invention.

4. DESCRIPTION

a. Field of Application / Project / Invention

The present invention relates generally to security monitoring systems and, more particularly, to a security monitoring sy

b. Prior Art / Background of the Invention / References

Security systems of the prior art, particularly high security systems, are known to employ biometrics face recognition, to detect the face of an approaching individual or for recognition of the individual. These types of security systems are also referred to as access control systems.

In most access control systems of the prior art, specifically those that employ face recognition, a static camera is placed inside a sysytem. The camera typically faces towards an entrance door for either detection of the face of an entering individual or for recognition of the individual's face. A problem associated with these prior art systems is that, even with a good camera, the resolution might not be as good as is necessary to detect the face. Thus, the system is likely to fail in detecting the face as well as the eventual recognition of the face. Still other access control systems of the prior art place the camera on top of the door for achieving the recognition. This system works well when the individual is walking towards the door. However, if the individual is approaching the door from the side, no frontal face would be recorded by the access control system. Furthermore, when approaching from the side, the individual is exposed to the camera for a shorter time. If the time the individual is exposed to the camera is too short, e.g., less then a second, the system may not have sufficient time to detect and recognize the individual.

Furthermore, in the prior art systems, the individual having his or her face recognized needs to cooperate with the system, in other words, the individual must stand in front of the camera so as to enable the system to detect their face. Therefore, those who do not wish for their face to be detected easily avoid the systems of the prior art.

In view of the prior art, there is a need for a security system employing face recognition which is easier and more likely to capture a full frontal face of an entering or exiting person for detection as well as recognition of the individual.

c. Summary of the Invention/Project



it is an object of the present invention to provide a security/access control system which employs biometrics and is more likely to detect and recognize an approaching individual than the systems of the prior art.

It is a further object of the present invention to provide a security/access control system which employs face recognition and which is easier and more likely to capture a full frontal face of an entering or exiting person for recognition of the individual.

It is still a further object of the present invention to provide a security/access control system, which employs face recognition that makes it difficult for an individual to avoid having his or her face being recognized .

Accordingly, a security system is provided. The security system comprises: at least one camera mounted to a door of a structure for capturing image data of an individual approaching the door; and processing means for further processing the image data. Preferably, the security system further comprises: a database for storing the image data; and a recognition system for analyzing the stored image data. The stored image data in the database is typically face images where the recognition system is a face recognition system in which case the database can further contain image data for each authorized individual of the structure and the recognition system can compare images of the individual from the at least one camera with the stored image data in the database and for determining if the individual is one of the authorized individuals. If the individual is determined not to be one of the authorized individuals, the processing means , preferably in the form of an alarm system, can transmit an alarm signal and/or the image data, preferably, to a central monitoring site. Alternatively, the system can transmit the image data without further processing to a central monitoring site for purposes of logging the individuals who enter/leave the structure.

In a preferred implementation of the security system of the present invention, the security system further comprises a detection means for detecting the arrival of the individual approaching the door and signaling the at least one camera to capture the image data of the individual. The detection means preferably comprises a sensor operatively connected to a door knob on the door, such that operation of the door knob signals the at least one camera to capture the image data of the individual. The at least one camera is preferably mounted to the door in proximity to a door knob on the door and more preferably the at least one camera is mounted above the door knob and directed upwards at an angle from a surface of the door.

In a variation of the preferred implementation of the security system of the present invention, -the at least one camera comprises a first and second camera. The first camera is preferably mounted on a first side of the door in proximity to a door knob on the door, and the second camera is preferably mounted on a second side in proximity to the door knob on the door. More preferably, the first and second cameras are each mounted above the door knob and directed upwards at an angle from their respective side of the door. The variation of the preferred implementation preferably further comprises a detection means for detecting the arrival of the individual approaching the door and signaling one of the first or second cameras to capture the image data of the individual approaching the door. The detection means preferably comprises first and second sensors operatively connected to the door knob, such that operation of the door knob from the first side operates the first sensor to signal the first camera to capture the image data of the individual approaching from the first side and operation of the door knob from a second side operates the second sensor to signal the second camera to capture the image data of the individual approaching from the second side.

Also provided is a method for responding to an individual approaching a door of a structure. The method comprises the steps of: providing a means for detecting the individual approaching the door; producing a signal in response to the individual approaching the door; and triggering an event in response to the signal. The event is preferably an instruction to a camera to capture image data of the individual.

Still yet provided is a system for responding to an individual approaching a door of a structure. The system comprises : means for detecting the individual approaching the door; means for producing a signal in response to the individual approaching the door; and means for triggering an event in response to the signal. The means for detecting is preferably either a sensor operatively connected to the door knob of the door and the signal is produced upon the operation of the door knob or a recognition system for detecting changes in the background near the door. The system preferably further comprises a camera, preferably mounted to the door, wherein the event is preferably an instruction to the camera to capture image data of the individual.

d. Objects of the Invention/Project

1. The objective is to help the organisation those are concern with the security with the help of face detection methods, their merits, demerits and problem faced.
2. After study of various methods of face detection a suitable system is proposed keeping all the requirements and conditions in the organization.
3. This system is better than finger print based door lock system as well as regular door lock system.

e. Drawing(s)

1 The basic Block Diagram is shown. In this, whatever

f. Description of the Invention

This invention is applicable to numerous and various types of security systems, it has been found particularly useful in the environment of residential security systems and face recognition. Therefore, without limiting the applicability of the invention to residential security systems and face recognition, the invention will be described in such environment

The system is described as a security system, however, the term "security" is intended to incorporate not only a system which triggers an alarm in response to an unauthorized intruder into a structure, but also security systems which detect individuals entering or leaving a structure and recognizes.

The system generally comprises a camera mounted to a door of a structure for capturing image data of an individual approaching the door. The camera can be a black and white or color camera. The camera can be a stationary camera with a wide enough field of view to appropriately capture the intended features, e.g., the face, of the approaching individual.

The camera is preferably mounted to the door in a suitable housing. The camera could be wired or wireless with respect to both power as well as transmission of image data taken thereby. In the case of wireless transmission, a standard wireless protocol is preferably used, or Bluetooth protocols for residential wireless transmissions. The camera is preferably battery operated and transmits the image data through a wireless link.

The system also preferably includes a detection means for detecting the arrival of the individual approaching the door and signaling the camera to capture the image data of the individual. The detection means preferably comprises a sensor operatively connected to a door knob on the door.

When opening a door, an individual always consciously or sub-consciously looks at either the door knob or a key hole on or near the door knob, the camera is preferably mounted to the door in proximity to the door knob. More preferably, the camera is mounted above the door knob and directed upwards at an angle from a surface of the door. Thus, the camera so configured and positioned is assured of a good view of the face of the individual approaching the door. As discussed above, the term "door knob" is intended to mean any device used to open and close a door and is not intended to be limited to a round knob type door knob which is rotated, but also other types of "door knobs" known in the art such as levers and the like. As also discussed above, the term "operation" is also used here in generally and is intended to generally describe accessing the door knob such as to touch the door knob, open and close the door (such as by rotation of the door knob or by depressing a lever on the door knob), or by inserting something into the door knob. There is illustrated a variation of the door and camera configuration. In some circumstances it may be advantageous to detect an individual approaching the door from either an exterior side or an interior side. In other words, it may be necessary to detect an individual both entering and leaving a structure through an entry door. In the variation of the security system, first and second cameras are provided on the door. Each camera being mounted in an appropriate housing and preferably configured and positioned as discussed above. The first camera is mounted on a first side of the door in proximity to the door knob, and the second camera is mounted on a second side in proximity to the door knob.

Referring back, the system of the present invention further includes processing means for further processing the image data or means for triggering an event based on the detection of the approaching individual. The alarm system can also transmit the image data to the central monitoring site without further processing to log the image data. Alternatively, the alarm system can sound an alarm and or transmit the alarm signal to the central monitoring site. The triggering of an event can be the instruction of the camera(s) to capture the image data or simply turning the lights on in the structure. Those skilled in the art will realize that these events are given by way of illustration only and not to limit the scope or spirit of the invention. The system preferably further comprises an image recording system for recording the captured image data from the camera and a database for storing the image data, such as face images. A recognition system such as a face recognition system can then be utilized to analyze the stored image data. The database preferably contains image data for each authorized individual and the recognition system compares images of the individual from the camera with the stored image data in the database and determines if the individual is one of the authorized individuals. In such a configuration, the processing means preferably comprises the alarm system which transmits the image data if the individual is determined not to be one of the authorized individuals.

g. Examples

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h. Unique Features of the Project

NA

5. DATE & SIGNATURE

Date: 02-May-2014

NameSign & Date

1 Raval Vrushank Atulbhai

2 Trivedi Yatharth Trusharbabu



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6. ABSTRACT OF THE INVENTION

Our project deals with very high security system where only few authorized persons are allowed to enter such high secure area.

With the help of Image processing we are going to secure the door security by doing Image and if the matched then the door will open else will not open.

Our project deals with long term goal of a computer vision, but only in recent years reliable automated face recognition has become a realistic target of biometrics research. New algorithms, and developments spurred by falling costs of cameras and by the increasing availability processing power have led to practical face recognition systems. These systems are increasingly being deployed in a wide range of practical applications, and future improvements promise to spread the use of face recognition further still.



Drawing Attachment:

Total Drawing Sheet(s):1
Current Drawing Sheet:1

BLOCK DIAGRAM

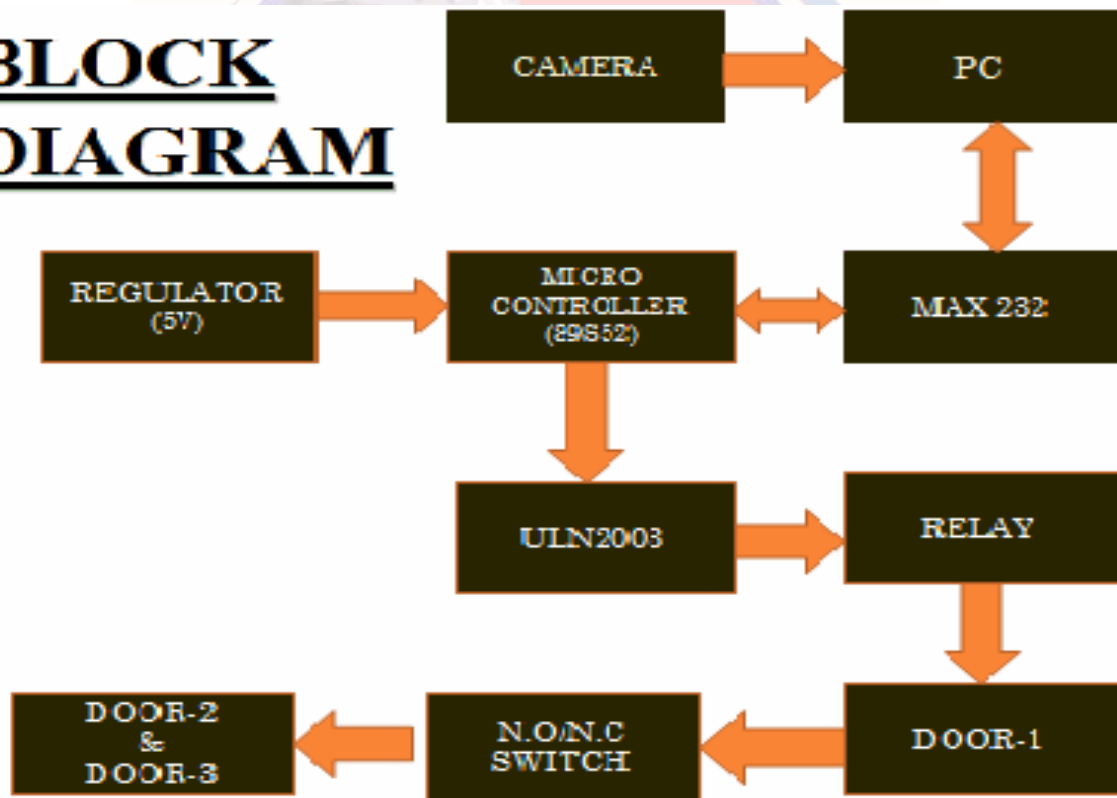


Figure:1 The basic Block Diagram is shown. In this, whatever

FORM 3

**THE PATENTS ACT, 1970
(39 OF 1970)
&
THE PATENTS RULES, 2003
STATEMENT AND UNDERTAKING UNDER SECTION 8**

1. Declaration

I/We, Raval Vrushank Atulbhai
Trivedi Yatharth Trusharbabu

2. Name, Address and Nationality of the joint Applicant

Raval Vrushank Atulbhai (Indian)

101/Vinayak app. khadiya pole no.2 . Near Khnderav market. Vadodara 390001 Gujarat

Trivedi Yatharth Trusharbabu (Indian)

2/Shivam Duplex.B/H Asopalav Complex.Alvanaka.Manjalpur.Vadodara 390011.Gujarat

hereby declare:

- (i) that I/We have not made any application for the same/substantially the same invention outside India.
- (ii) that the right in the application(s) has/have been assigned to,

Name of the Country	Date of Application	Application Number	Status of the Application	Date of Publication	Date of Grant
N/A	N/A	N/A	N/A	N/A	N/A

- (iii) that I/We undertake that up to the date of grant of patent by the Controller, I/We would keep him inform in writing the details regarding corresponding application(s) for patents filed outside India within 3 months from the date of filing of such application.

Dated this _____ day of _____, 20____

3. Signature of Applicants

(Sign and Date)
Raval Vrushank Atulbhai

(Sign and Date)
Trivedi Yatharth Trusharbabu

To
The Controller of Patent
The Patent Office, at **Mumbai**.