

“SMART VOTING SYSTEM WITH FACE RECOGNITION”

Doma Vinay, Mr. N.Thirupathi Rao

¹B.tech Student, Department Of Electronics and Computer Engineering, J.B Institute of Engineering and Technology

²Assistant Professor, Department Of Electronics and Computer Engineering, J.B Institute of Engineering and Technology

Abstract: India is the largest democratic country in the world. So it is essential to make sure that the governing body is elected through a fair election. India has only offline voting system which is not effective and up to the mark as it requires large man force and it also requires more time to process and publish the results. Therefore, to be made effective, the system needs a change, which overcomes these disadvantages. The new method does not force the person's physical appearance to vote, which makes the things easier. It focusses on a system where the user can vote remotely from anywhere using computer or mobile phone and doesn't require the voter to got to the polling station .Voter should register using Voter id, Name, Aadhar number. The face scanning system is used to record the voters face prior to the election and is useful at the time of voting. Facial recognition will takes place at the time of voting which will verify the voters facial data with existing data if both matches then the vote is counted otherwise it will not be marked as invalid.

I. INTRODUCTION

Election plays an important role in such a huge democratic country like India where the leader is elected by residents. Elections preserve a truthful state functioning, as they provide people the choice to select their personal government. So the election ought to be an unfastened and truthful process. Every citizen of a democratic country has a right of voting with own choice. One of the fundamental issues in the conventional democratic framework is that it expends bunches of labor and resources. Also some humans can be worried about illegal publications of movement at some point of this manner of election or its preparation. There are some disadvantages of the conventional election voting process which is being used in our country such as machine stops working, chances of brutality, time consuming, resource consuming, spot arranged etc. Many people couldn't vote because the voter has to reach the poll booths to vote or some people like those who are living far away from their original birth place where they are allowed to vote. So to get rid of their drawbacks, a new System is introduced i.e. Online Voting System, which provides accuracy, security, flexibility, mobility etc. c. An online voting System in a web based application to use in the election process. Initially ballot paper technique was used in the election process. Then the Electronic Voting Machine comes, these are easy to store the data and easily manageable. These are more secure than the ballot paper and less time consuming. Now, a system with biometric authentication to make the voting process more secure and reduce the time taken in the voting process. By the use of this, the electorate can solidify their vote for his or her preferred candidate through the use of their system. It uses Face detection and Recognition Technology for authentication of citizens that is the proper consumer or not. When the Voter uses the system, the system

will capture image using a web camera and try to match with the image stored in the database. If both images are the same then the voter can cast vote.

II. LITERATURE SURVEY

The past work done in this domain involves reviewing the already present algorithms and comparison for these algorithms based on various features and conditions such as the kind of database used, and neural network-based image processing system used for the identification of the facial features. The amount of distortion and attenuation plays a big role in generating a clear and transparent image in a localized area of the image frequency as it would be important aspect while capturing the image and processing of it to accurately match it with one that is present in the database.

Eigenfaces, as its name suggests, involves the use of Eigenvectors for performing facial recognition. The Eigenface technique is commonly used for recognition of faces from the images. The base segments for the recognition process involve the creation of Eigenface basis and recognition of a new face. The Eigenface technique classifies faces based on general facial patterns. These patterns involve various features of the face based on the training set images. Eigenface system involves training on a dataset of known faces where all images are of the same size and pixels, along with other properties like grayscale, with values ranging from 0 to 255.

The Fisherface technique is an extension to the Eigenface technique. The main key difference between Fisherface and Eigenface technique is that Fisherface instead of only Principal Component Analysis (PCA) as dimensionality reduction technique uses a merger of both Principal Component Analysis (PCA) along with Linear Discriminant Analysis (LDA) for dimensionality reduction. The Fisherface is especially used when the images have large variations in illuminations and facial expression. Using LDA for dimensionality reduction maximizes the ratio of between class-scatter to within class scatter and for this reason it works better than PCA. Several authors have put in efforts in the field of face recognition, significant contributions are briefed in the literature review. Vigorous technique for naturally coordinating highlights in pictures compared to the equivalent physical point on an item observed from two discretionary perspectives. Unlike conventional stereo matching approaches coordinating methodologies, the presumption like no earlier information about the relative camera positions and directions.

Actually in this application this is the data wish to decide from the picture feature matches. Highlights are distinguished in two or more pictures and portrayed utilizing affine texture invariants. The fundamental test is the way to improve the recognition performance when influenced by the fluctuation of non-linear effects that incorporate illumination variances, poses, facial expressions, occlusions and so on. A robust 4-layer Convolutional Neural Network (CNN), engineering is proposed for the face acknowledgment issue, with an answer that is equipped for dealing with facial pictures that contain occlusions, poses, facial expressions. There are many face recognition algorithms, just a bunch of them meet the continuous limitations of a software based arrangement without utilizing any committed hardware engine. This paper

presents a real-time and robust solution for mobile platforms, which in general have limited computation and memory resources as compared to PC platforms. This solution includes joining two previous real-time implementations for mobile platforms to address the shortcoming of each implementation. The main execution gives an on the web or on-the-fly light source adjustment for the second usage which is seen as robust to various face postures or orientations. Pattern classification approach by considering every pixel in an image as a coordinate in a high-dimensional space is discussed in.

Along with the upside of the perception that the images of a specific face, under fluctuating illumination but fixed pose, lie in a 3D linear subspace of the high dimensional image space—if the face is a Lambertian surface without shadowing. In any case, since faces are not genuinely Lambertian surfaces and in fact produce self-shadowing; images will deviate from this linear subspace. As opposed to explicitly projecting this deviation, linearly project the image into a subspace in a way which limits those regions of the face with huge deviation. Design and execution of the component extraction strategy for Speeded-Up Robust Features (SURF) and Support Vector Machine (SVM) grouping technique into the traffic signs recognition application is deliberated in.

The yield of this application is the importance of the traffic sign with two languages, Indonesia and English. In the SURF strategy, the littlest huge number of key focuses will influence the accuracy level to perceive a picture. Face detection is the premise of all the face processing systems, while in video the face detection issue has more special importance. By examining the face detection dependent on Adaboost algorithm, this paper presents a quick and good robust face detection method. Firstly, the motion region which contains faces is obtained based on motion detection, excluding the background interference. Secondly, the Adaboost algorithm is used to detect the face in the motion region and locate the face. The experiments show that this method can rapidly and accurately detect human faces .

The face recognition and tracking and the advancement of the customer side of the system uses Android cell phones. For the face recognition stage, Viola-Jones algorithm is used that isn't influenced by illuminations. The face tracking stage depends on the Optical Flow algorithm. Optical Flow is implemented in the framework with two component extraction strategies, Fast Corner Features and Regular Features.

Real-time robust technique is created to distinguish irises on faces with coronal axis rotation within the normal range. The technique permits head movement without any limitations to the background. The technique depends on anthropometric templates applied to recognize the face and eyes. The template uses key features of the face, for example, elliptical shape, and location of the eyebrows, nose, and lip.

Along with the upside of the perception that the images of a specific face, under fluctuating illumination but fixed pose, lie in a 3D linear subspace of the high dimensional image space—if the face is a Lambertian surface without shadowing. In any case, since faces are not genuinely Lambertian surfaces and in fact produce self-shadowing; images will deviate from this linear subspace. As opposed to explicitly projecting this deviation, linearly project the image into a subspace in a way which limits those regions of the face with huge deviation. Design and execution of the component extraction strategy for Speeded-Up Robust

Features (SURF) and Support Vector Machine (SVM) grouping technique into the traffic signs recognition application is deliberated in.

III. ANALYSIS

3EXISTING SYSTEM

The existing system is not too effective. At present there are two types of voting methods, they are:

- 1) Ballot Voting
- 2) EVM Voting

A. Ballot Voting

A ballot is a device used to cast votes in an election, and may be a piece of paper used in secret voting. In this the voter is given a paper which consists of all the party symbols along with representative names in it. Here, people come to the polling booth, take the ballot paper and vote by putting a stamp on the desired party symbol. Finally, the ballot paper is folded and dropped into the ballot box. At last, the votes are counted by the Election commission officers.

IV. DESIGN

UML DIAGRAMS

UML stands for Unified Modeling Language. UML is a standardized general-purpose modeling language in the field of object-oriented software engineering. The standard is managed, and was created by, the Object Management Group.

The goal is for UML to become a common language for creating models of object oriented computer software. In its current form UML is comprised of two major components: a Meta-model and a notation. In the future, some form of method or process may also be added to; or associated with, UML.

The Unified Modeling Language is a standard language for specifying, Visualization, Constructing and documenting the artifacts of software system, as well as for business modeling and other nonsoftware systems.

The UML represents a collection of best engineering practices that have proven successful in the modeling of large and complex systems.

USE CASE DIAGRAM

A use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted.

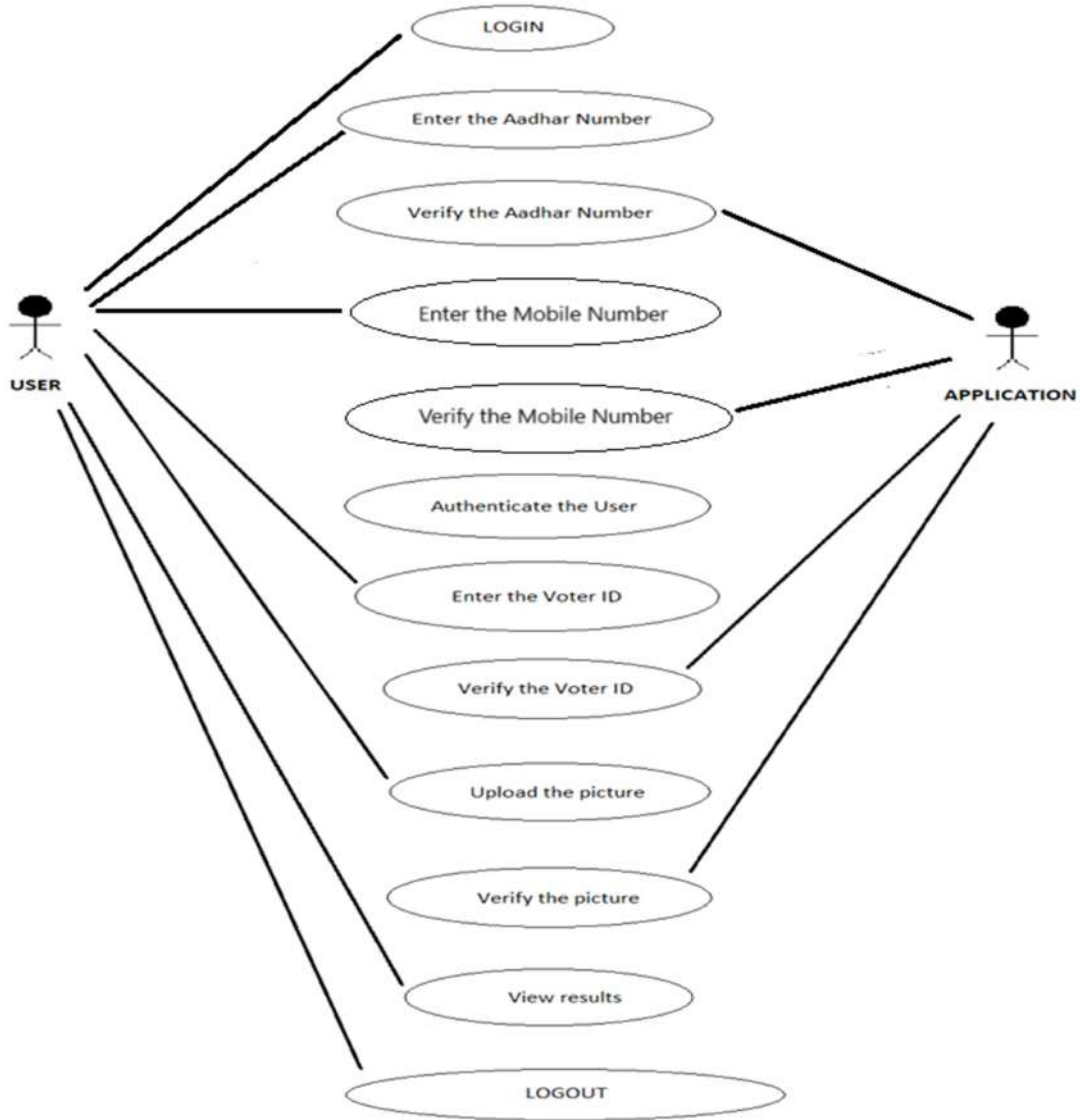


Fig.1 UseCase diagram

CLASS DIAGRAM

The class diagram is used to refine the use case diagram and define a detailed design of the system. The class diagram classifies the actors defined in the use case diagram into a set of interrelated classes. The relationship or association between the classes can be either an "is-a" or "has-a" relationship. Each class in the class diagram may be capable of providing certain functionalities. These functionalities provided by the class are termed "methods" of the class. Apart from this, each class may have certain "attributes" that uniquely identify the class.

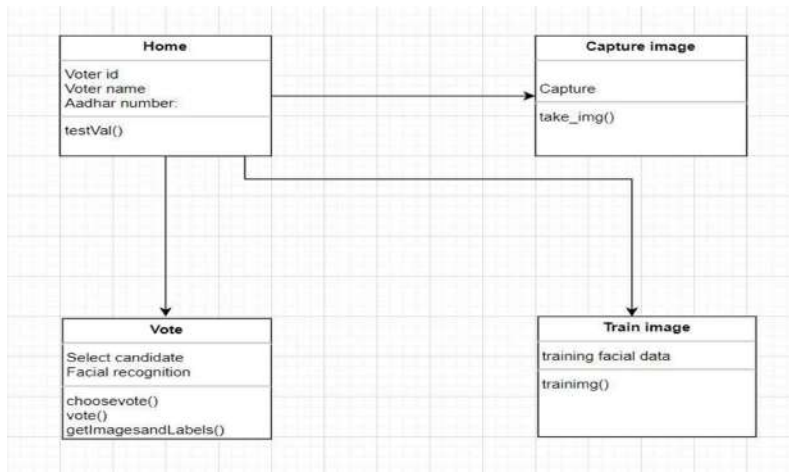


Fig.2 Class diagram

ACTIVITY DIAGRAM

The process flows in the system are captured in the activity diagram. Similar to a state diagram, an activity diagram also consists of activities, actions, transitions, initial and final states, and guard conditions.

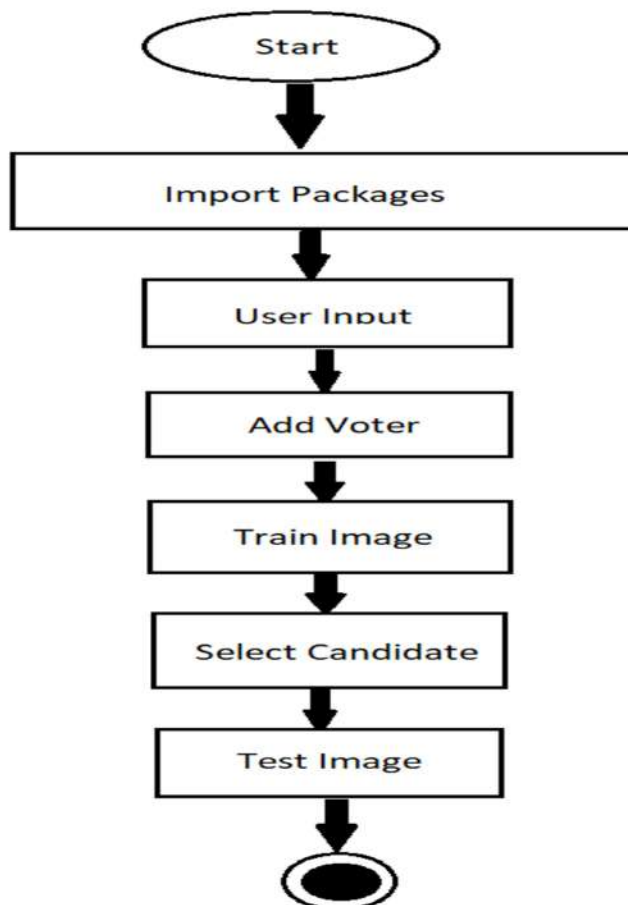


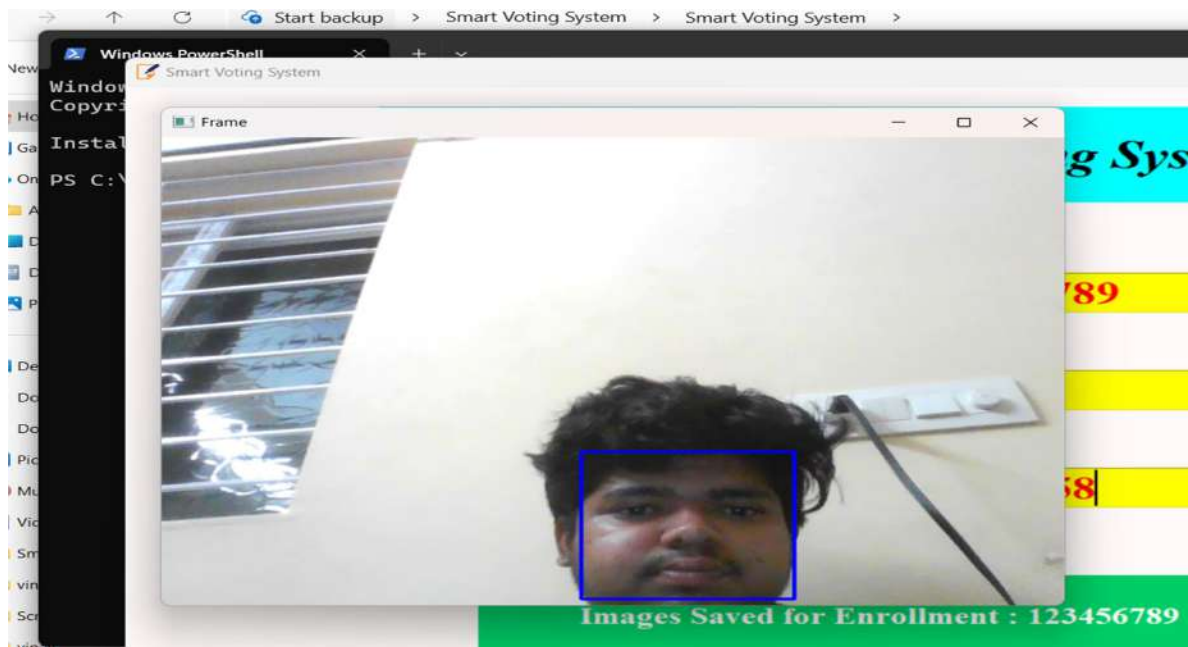
Fig.3 Activity diagram

V. SCREENSHOTS



(Fig 4.1 User Interface)

Enrollment of voter details into the database by collecting Voter Id, Name and Aadhar Number.
If voter is already registered directly voting can be done.



(Fig 4.2 Capturing Facial data)

Device camera will open to collect facial data and the collected images are labeled with enrollment details and stored in database.

Smart Voting System

Voter ID:

Enter Name:

Aadhar Number:

Images Saved for Enrollment : 1XW7445232 Name : vinay Doma

(Fig 4.3 Training Facial data)

Collected Images are trained for verification purpose to identify the voter .

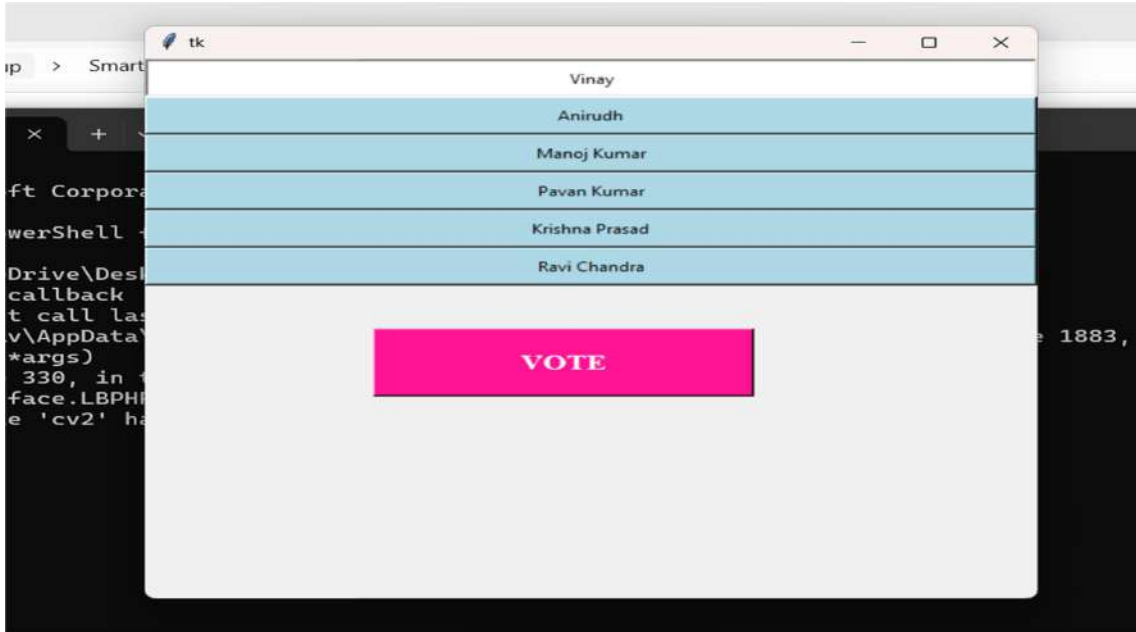
tk

Vinay
Anirudh
Manoj Kumar
Pavan Kumar
Krishna Prasad
Ravi Chandra

Images Saved for Enrollment : 1XW7445232 Name : vinay Doma

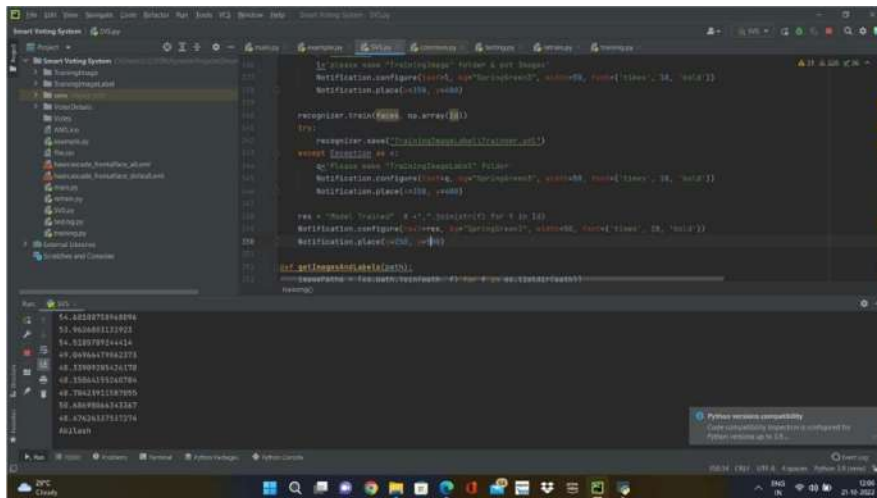
(Fig4.4 Selecting candidate)

List of candidates nominated will be shown one person can be selected from it and button VOTE should be clicked for next step that is facial recognition.



(Fig 4.5 Facial recognition)

Facial data existing in database will be checked for identifying the voter, If data exists then the Voter Id and Name are displayed on the screen.



(Fig 4.6 Voting Result)

After verifying the voter and finding the enrollment details vote is considered for evaluating the results .

repository so, data is accessible at any time as well as backup of the data is possible. Smart voting system provides updated result at each and every minute. Also requires less man power and resources. The database needs to be updated every year or before election so that new eligible citizens may be enrolled and those who are dead are removed from the voter list. The usability of this system is very high if it will use in real life election process. It will definitely helpful for the users who wish to vote and the voting process will be made very easy by using this application.

References

1. Reem Abdelkader, Moustafa Youssef, "UVote: A biquitous E-Voting System", 2012 Third FTRA International Conference on Mobile, Ubiquitous, and Intelligent Computing.
2. Sanjay Saini, Dr. Joy dip Dhar, "An eavesdropping proof secure online voting model", 2008 International Conference on Computer Science and Software Engineering.
3. Vinicius O. Morphet, Tânia C. D. Bueno, Thiago P. S. Oliveira, "Web 2.0 e-Voting System using Android Platform", <http://www.pcadvisor.co.uk/news/index.cfm?newsid=3213010> Accessed in February, 2010.
4. Sheetal Chaudhary, Rajender Nath, "A Multimodal Biometric Recognition System Based on Fusion of Palmprint, Fingerprint and Face", 2009 International Conference on Advances in Recent Technologies in Communication and Computing.
5. AMNA Qureshi, "SEVEP: Verifiable secure and privacy preserving remote polling with untrusted computing devices", Future Network Systems and Security Feb, vol. 22, 2019.
6. S. Ganesh Prabhu, Rachel, Agnes Shiny and A. R. Roshinee, "Tracking Real Time Vehicle And Locking System Using Labview Applications", In 2020 6th International Conference on Advanced Computing and Communication Systems (ICACCS), pp. 55-57, 2020.
7. R. R. Thirrunavukkarasu, T. Meeradevi, A. Ravi, D. Ganesan and G. P. Vadivel, "Detection R Peak in Electrocardiogram Signal Using Daubechies Wavelet Transform and Shannon's Energy Envelope", 2019 5th International Conference on Advanced Computing & Communication Systems (ICACCS), pp. 1044-1048, 2019.
8. S Ganesh Prabhu, K. Vinotha, M. Shanthala, S. Subhashini and S. Vishnu, "IOT Based Home Automation and Security System", SSRG International Journal of Electronics and Communication Engineering (SSRG-IJECE), vol. 4, no. 3, pp. 19-22, 2017.