

# Enhancing Election Integrity in India Through Iris Recognition-Based Voter Verification

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**Abstract:** One of the main results of the validation system is based on the fingerprint-based iris recognition system and respective technology. The entire biometric process is very much authentic and unique than the other types of recognition system and validation process. This has provided innovative ideas in the daily lives of human beings. The multimodal biometric process has generally applied various types of applications for properly dealing with the appropriate and most significant limitations of the “unimodal biometric system”. The entire process has been generally included with the proper sensitivity of noise, the population coverage areas, variability cases of the inter class and intra class issues, vulnerability cases of possible hacking and the non-universality criteria. The entire research paper has been mainly focused on the deep learning-oriented machine learning system. The fingerprint-based iris recognition system to do the proper validation of human beings has been mainly done by convolutional neural network (CNN) technique. In the existing data validation process, the iris recognition system has been mainly done with respect to the “high security protection system with actual fingerprints”. The entire paper has been briefly elaborated on the best uniqueness, reliability process and the proper “validity of the iris biometric validation system” for the actual purpose of the person identification.

**Keywords:** Iris Recognition, Voter Authentication System, Artificial Intelligence in Voting, Identity Management, Fraud Prevention and Indian Election System.

## 1. INTRODUCTION

The biometric process has been mainly used to recognize individual types of physical aspects and features. For this purpose, a tremendous amount of acknowledgement technologies has been generally provided with the actual fingerprint, iris procedures and voice acknowledgement. The biometric mainly deals with the proper technical and technological fields for the body controls and body dimensions. The authentication system is based on the appropriate biometric security system that has increased the actual importance within all countries. The used system has been shown the proper valid and best impressive performance based on all these procedures and aspects. For this purpose, the fingerprint is the only procedure for providing the proper security techniques to provide the true uniqueness and the strong privacy properties of the entire system. The exceptional fingerprint assurance or the proper kind of imprint approval has been mainly insinuating the automated methods and procedures to ensure similarity between the two people fingerprints.

## 2. LITERATURE REVIEW

The literature review chapter has been mainly provided with a detailed description of the various problems and different types of recognition aspects that has been mainly associated with the entire area of the research study. The fundamental research has been conducted with the help of the different types of research notes of different authors and researchers. The entire process is also evaluated by the brief description of the research from the different online articles, journals and various websites. The fundamental research has been conducted with respect to the in-depth analysis process of the entire validation-based recognition system. Including all of these, this particular chapter has also demonstrated the particular models and theories of the proposed topic for evaluating the entire description process. In this part, there are also described the literature gaps that are generally missing in the existing research notes of various authors.

## 3. EXISTING SYSTEM

The process of encoding and processing an individual's irises requires a large number of new calculations. When it comes to build frameworks and calculations, almost always only superior is guaranteed. However, neither of the computations has been subjected to extensive testing due to the lack of publicly available large-scale and even medium-size databases. The largest collection of infrared frontal iris images is now available online. Two notable solutions to the calculation testing problem in the lack of data.



**Normalization process of Convolutional Neural Networking (CNN) model** – This particular area has been mainly enclosed by both the outer boundaries and inner boundaries of the iris that will be mainly varied with respect to the contraction of the entire pupil. The extraction of the various features of the "**convolution neural network (CNN)**" is totally based on the classification module.

## 7. IMPLEMENTATION MODULES

### Upload Iris dataset

This section is for integrating the Iris dataset into the program.

### Preparing the Data

When a dataset is preprocessed with this module, it is ready for further analysis.

### Purpose: Feature Extraction

In this step, information is divided into two categories: training data and test data. Data, for instance, might be split into a "training" set and a "test" set with a 70%:30% split.

### Synthesis of Models

As for the language used to actualize the strategy, it would be Python. Theano and TensorFlow, two Python packages, are very potent for any given deep learning model. Indirectly constructing a model from these libraries, however, is challenging.

### Construction of a Convolutional Neural Network Model

Using this component, a CNN Model can be constructed for testing and training purposes.

### Graph of Accuracy and Error

By doing so, we may compare the efficiency of different deep learning methods with that of feature extraction algorithms in a graphical format.

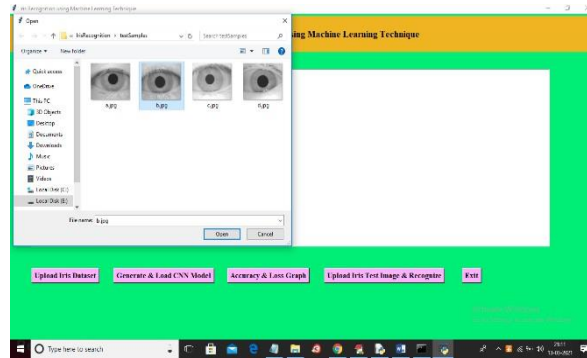
### Iris Recognition Test Image Upload

With this feature, users can put an image through its paces by uploading it for testing and subsequent recognition by the software.

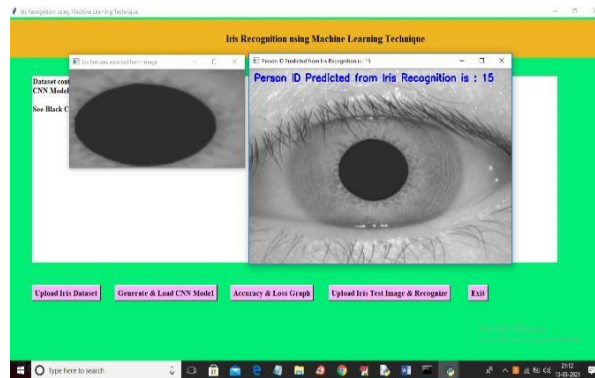
## 8. RESULTS



In above graph red line represents CNN model loss value and we can see at first iteration loss was more than 4% and when epoch increases then LOSS value reduces to 0 and green line represents accuracy and at first iteration accuracy was 0% and when epoch/iterations of model increases then accuracy reached to 100% and in above graph x-axis represents EPOCH and y-axis represents accuracy and loss values.



In above screen selecting and uploading 'b.jpg' file and then click on 'Open' button to get below screen.



In above screen from uploaded image we extract IRIS features which is displaying in first image and then this image feeds to CNN and then CNN predicted that IRIS belong to person ID 15.

## 9. CONCLUSION

This work proposes a machine learning-based method for iris recognition using photos taken with a smartphone. The results shown above demonstrate that machine learning techniques are competitive with, and in some cases superior to, state-of-the-art methods when applied to iris photos collected in the visible spectrum using a smartphone. Still, precision can be enhanced. We also found that proper segmentation is a key factor in precision. Therefore, various powerful methods may be used to enhance the segmentation outcome. We aimed for simplicity by using only standard techniques for identifying and separating groups. The transmitted information will be matched and confirmed by a classifier that runs on the server. That's why it's possible to create a comprehensive security system utilizing only the smartphones.

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