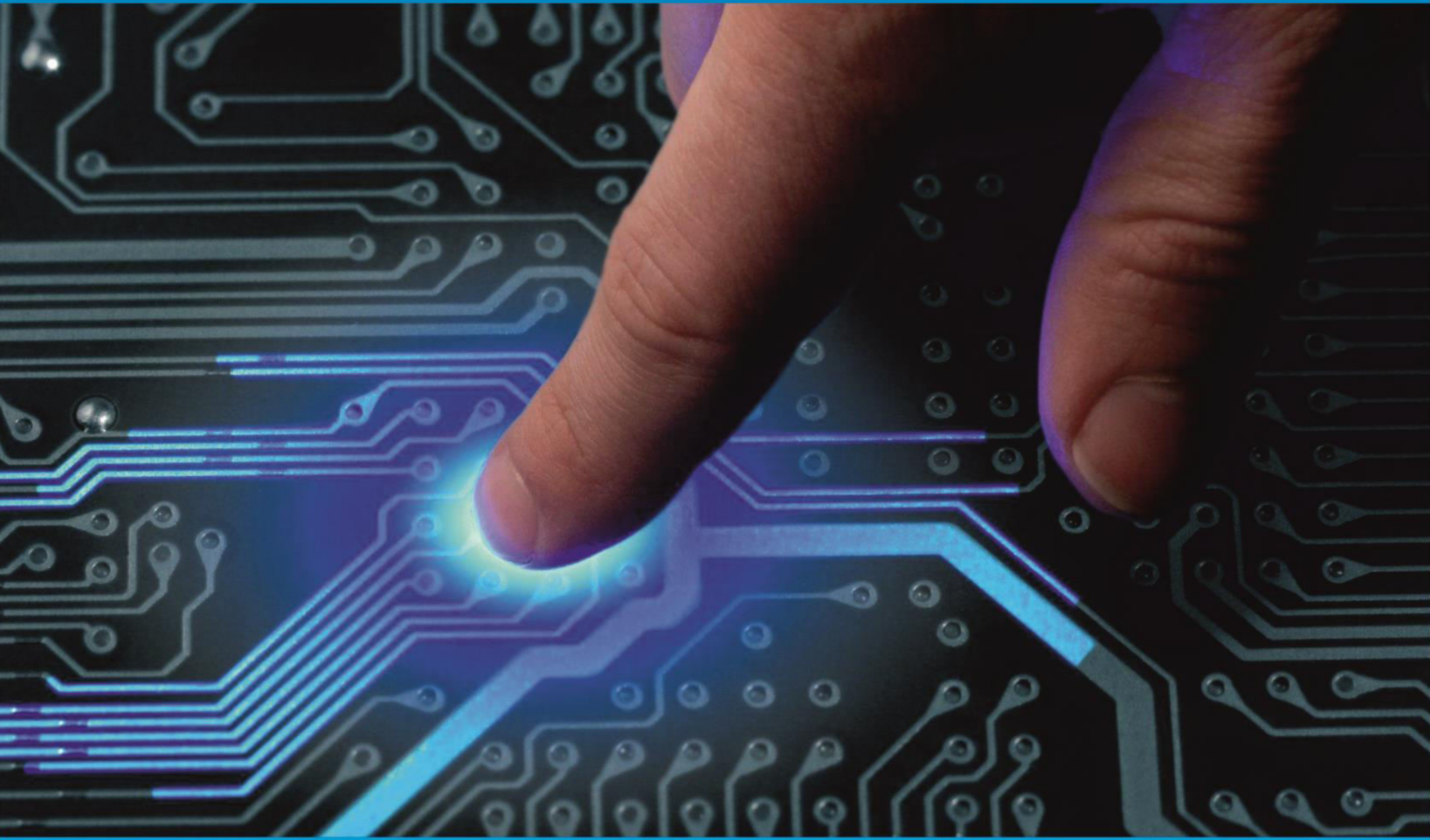
IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 3, March 2021

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.488

| DOI: 10.15680/IJIRCCE.2021.0903206|

Human Signature VerificationUsing CNN with Tensorflow Deployment Using Django Framework

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ABSTRACT: The traditional function of a signature is to permanently affix to a document a person's uniquely personal, undeniable self-identification as physical evidence of that person's personal witness and certification of the content of all, or a specified part, of the document. One of the most important biometric authentication techniques is signature. Nowadays, there are two types of signatures, offline (static) and online (dynamic).Online signatures have higher distinctive features but offline signatures have fewer distinctive features. So offline signatures are more difficult to verify. we proposed a Deep Learning (DL) based offline signature verification method to prevent signature fraud by malicious people. The DL method used in the study is the Convolutional Neural Network(CNN). It is predicted that the success of the obtained results will increaseif the CNN method is supported by adding extra feature extraction methods and classify successfully human hand signature.

KEYWORDS: signature, deep learning, TensorFlow, CNN

I. INTRODUCTION

Signature verification and forgery detection is the process of verifying signatures automatically and instantly to determine whether the signature is real or not. There are two main kinds of signature verification: static and dynamic. Static, or off-line verification is the process of verifying a document signature after it has been made, while dynamic or on-line verification takes place as a person creates his/her signature on a digital tablet or a similar device. The signature in question is then compared to previous samples of that person's signature, which set up the database. In the case handwritten signature on a document, the computer needs the samples to be scanned for investigation, whereas a digital signature which is already stored in a data format can be used for signature verification. Handwritten signature is one of the most generally accepted personal attributes for verification with identity whether it may for banking or business

There are several verification methods for offline signature verification which most of the companies use nowadays. Offline signatures use the static features of the system which involves image processing techniques to analyses the accuracy of the signatures. These include the initial identification of a person throughthe password. There are other multimodal systems that use the two different biometric features in order tostrictly authenticate a persons identity.

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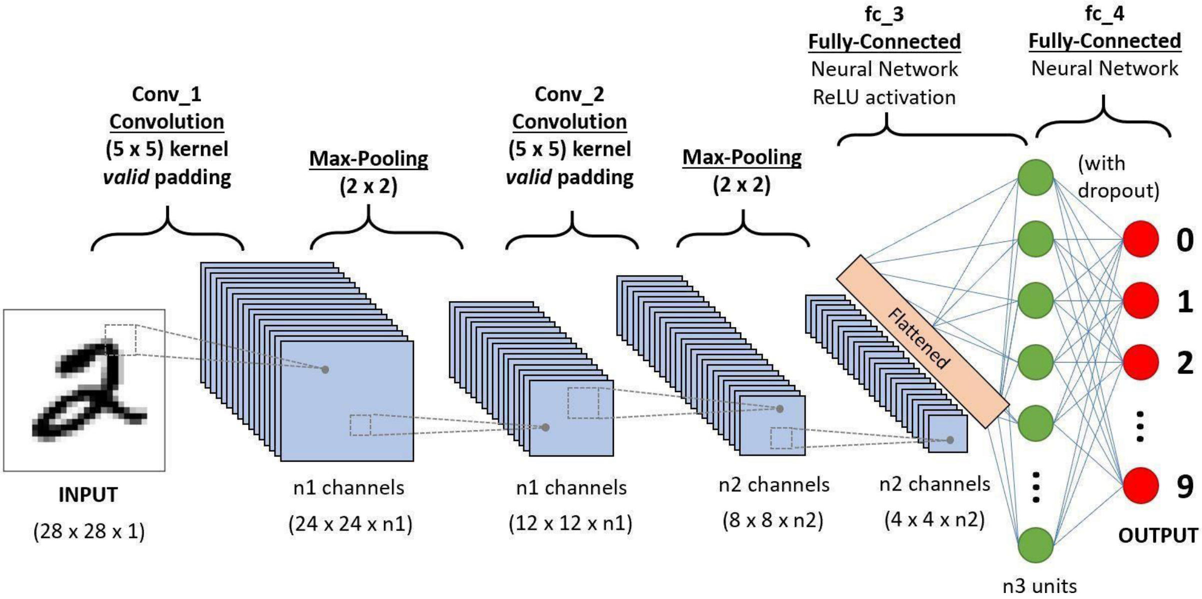

II. LITERATURE SURVEY

In the Year 2020, Deniz Engin; Alperen Kantarcı ; Seçil Arslan ; Hazım Kemal Ekenel has proposed as Research on offline signature verification has explored a large variety of methods on multiple signature datasets, which are collected under controlled conditions. However, these datasets may not fully reflect the characteristics of the signatures in some practical use cases. Real-world signatures extracted from the formal documents may contain different types of occlusions, for example, stamps, company seals, ruling lines, and signature boxes.

In the Year 2019, Taraneh Younesian; Saeed Masoudnia; Reshad Hosseini; Babak Nadjar Araabi has proposed as Offline Signature Verification (OSV) remains a challenging pattern recognition task, especially in the presence of skilled forgeries that are not available during the training. This challenge is aggravated when there are small labeled training data available but with large intrapersonal variations.

In the Year 2020, Chandra Sekhar Vorugunti; Prerana Mukherjee; Viswanath Pulabaigari has proposed as asignature is an ability learned by humans from an elementary age. The skill to generate one's own exclusive signature along with imitating another writer's signature is a challenging and complex task.

In the Year 2018, Moises Diaz; Andreas Fischer; Miguel A. Ferrer; Réjean Plamondon has proposed as The dynamic signature is a biometric trait widely used and accepted for verifying a person's identity. Current automatic signature-based biometric systems typically require five, ten, or even more specimens of a person's signature to learn intrapersonal variability sufficient to provide an accurate verification of the individual's identity.

III. PROPOSED METHODOLODGY AND DISCUSSION

In this existing system, we provide an in-depth study of puncturable signatures and explore its applications in the proof-of-stake blockchain. We formalize a security model that allows the adversary for adaptive signing and puncturing queries, and show a construction with efficient puncturing operations based on the Bloom filter data structure and strong Diffie-Hellman assumption. It has not focused on identifying CNN as classifier. It has not focused on increasing the recognition rate and classification accuracy of severity of face mask identification. They are not using machine learning and Deep learning process.

To detect the human hand signature classification. We planned to design deep learning technique so that a person with lesser expertise in software should also be able to use it easily. It proposed system to predicting human hand signature identification.

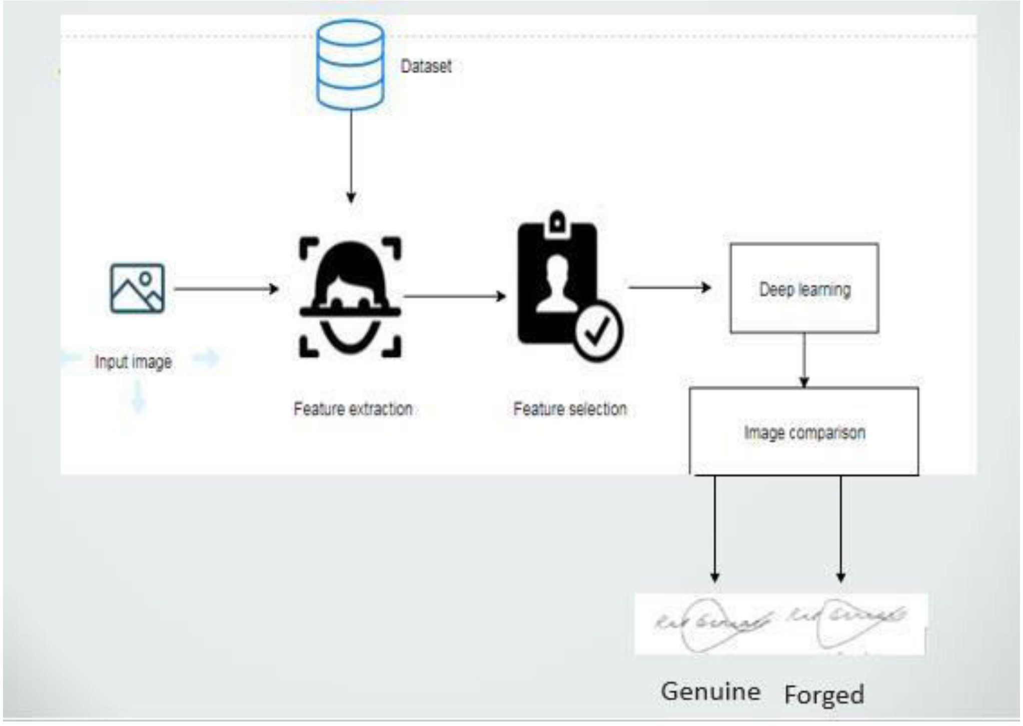

Figure no: 1. Architecture Diagram

1. Import the given image from dataset and training manual CNN

We have to import our data set using keras preprocessing image data generator function also we create size, rescale, range, zoom range, horizontal flip. Then we import our image dataset from folder through the data generator function. Here we set train, test, and validation also we set target size, batch size and class-mode from this function we have to train.

2. To train the module by using AlexNet

To train our dataset using classifier and fit generator function also we make training steps per epoch's then total number of epochs, validation data and validation steps using this data we can train our dataset. Training the module using Alexnet CNN.

3. To train the module by using LeNet

A Convolutional Neural Network (ConvNet / CNN) is a Deep Learning algorithm which can take in an input image, assign importance (learnable weights and biases) to various aspects/objects in the image and be able to differentiate one from the other.

4. Deploying the model in Django Framework and predicting output

In this module the trained deep learning model is converted into hierarchical data format file (.h5 file) which is then deployed in our django framework for providing better user interface and predicting the output whether the given signature is real or forged.

SCREENSHOTS

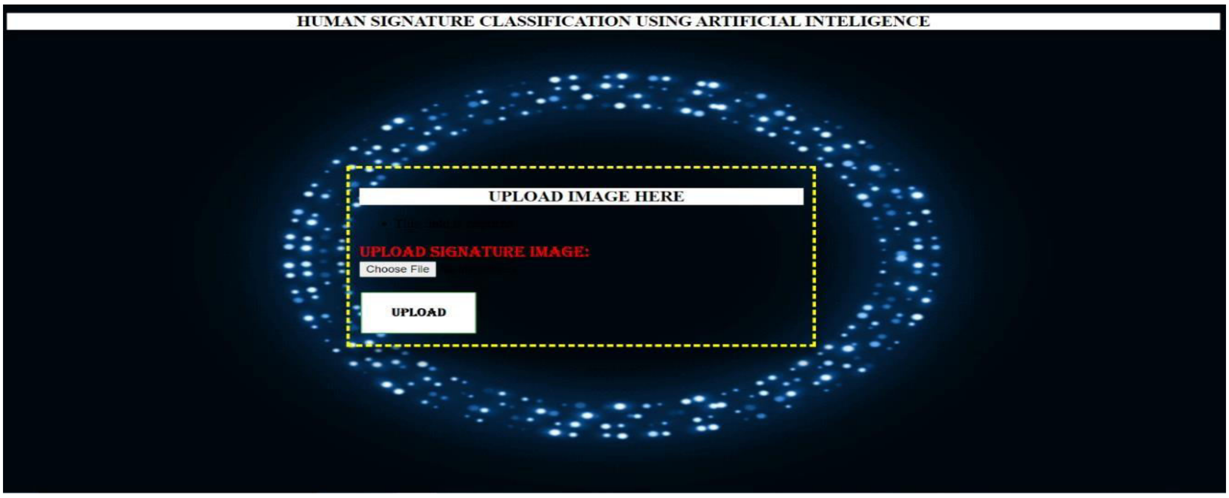

Fig 2. Choose the File and Upload

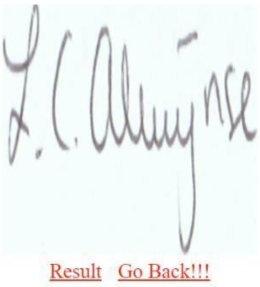

Fig 3. Click on Result

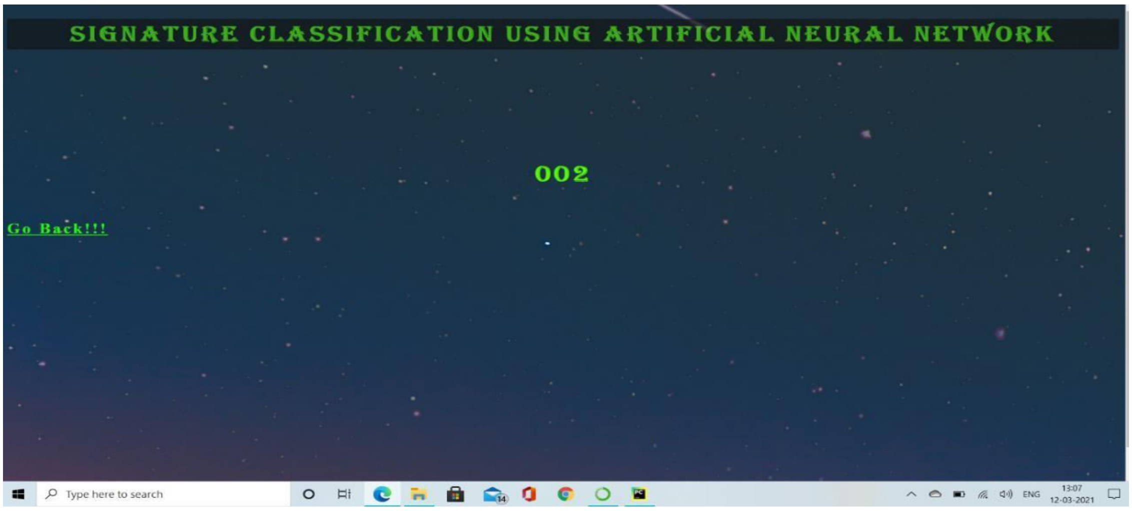

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Fig 4. Output

IV. CONCLUSION

A deep learning technique for predicting human hand signature was proposed. The main contributionof this project is the classification of offline human hand signature using a simple and low computational cost method. The proposed method successfully classified offline signatures with different images. Moreover, the technique was capable of predicting different offline human hand signature. Most of the work done for classification of genuine images.The defects in the signature images is identified with the help of image processing, in that the deep learning concept called neural network is used to identify the forged in the image. Intest image the features are extracted to classify the image. The same features will be extracted in the data set image, by these set of features we can classify the input image is genuine or forged. Based on the training the neural network, the detection is achieved. The proposed method was compared with other methods for classifying genuine or forged. The results showed that the proposed method outperform most of these methods.

FUTURE ENHANCEMENT

To automate this process by show the prediction result in web application or desktop application.To optimize the work to implement in Artificial Intelligence environment.
To deploy this model to AI on web application.

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