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Currency Classification Using Deep Learning

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ABSTRACT

Among the uses of machine learning is the recognition of facial expressions. Based on the features that are derived from an image, it assigns a facial expression to one of the classes of facial expressions. Convolutional Neural Network (CNN) is a classification technique that may also be used to identify patterns in an image. We used the CNN approach to identify facial expressions in our proposed study. To increase the precision of facial emotion recognition, the wavelet transform is used after CNN processing. Seven distinct facial expressions are included in the facial expression image dataset that was obtained from Kaggle. The findings of the face expression recognition experiment utilizing CNN and wavelet transform show that the accuracy is improved, and the output is audible. Index Terms: Facial and Convolutional Neural Nets

INTRODUCTION

Authenticating money was the only option available to individuals in the past. However, due to limitations in human vision, it is impossible to discern between phony and real information without the use of technology.

Even though UV identification technology has been around for a while, users can still recognize counterfeit banknotes using more sophisticated fraud techniques because of the advancements in counterfeiting technology. ϖHowever, now that image recognition has allowed for the sharing of various perspectives, distinct identification techniques have been provided by first examining the color, design elements, and unique data of the currency.

There were supplied currency categorization methods for data argumentation through picture enhancement, rotation angle, color analysis of cash photos, and more.
ϖDeep learning is a neural network application.

LITERATURE SURVEY

[1] Deng, L., and Yu, D. (2014) Deep learning: foundations and uses. [197–387] Foundations and Trends in Signal Processing, 7(34).
This paper presents an efficient digital image processing approach for real-time banknote recognition. The suggested approach is appropriate for real-time applications since it takes less time and has shown outstanding recognition performance in an indoor setting.
[2] The State-of-the-Art Technology of Currency Identification: A Comparative Study Wang, G., Wu, X., Yan, Q. (2017). IJDCF 9(3): 58–72.

This research compares feature extraction and classification methods of currency note authentication by analyzing related work in currency security.
[3]A. C. Berg, A. C., Erhan, D., Erhan, W. Liu, and Szegedy (2016). Single-shot multibox detector (SSD) (pp. 21–37).

EXISTING SYSTEM

All tasks in the current system are completed by hand. The process of identifying currency involves a human being visually inspecting the money. where prior to now there were no machines to identify or categorize the cash. However, there is already technology for UV recognition. This technology is insufficient to detect the currency using more sophisticated methods. This process takes a while. The Hidden Markov Model is another model. This model's inability to distinguish between filthy paper money is a flaw.

Cons: • Challenging to navigate.

- A lengthy procedure.
- Tough to handle the info.

PROPOSED SYSTEM

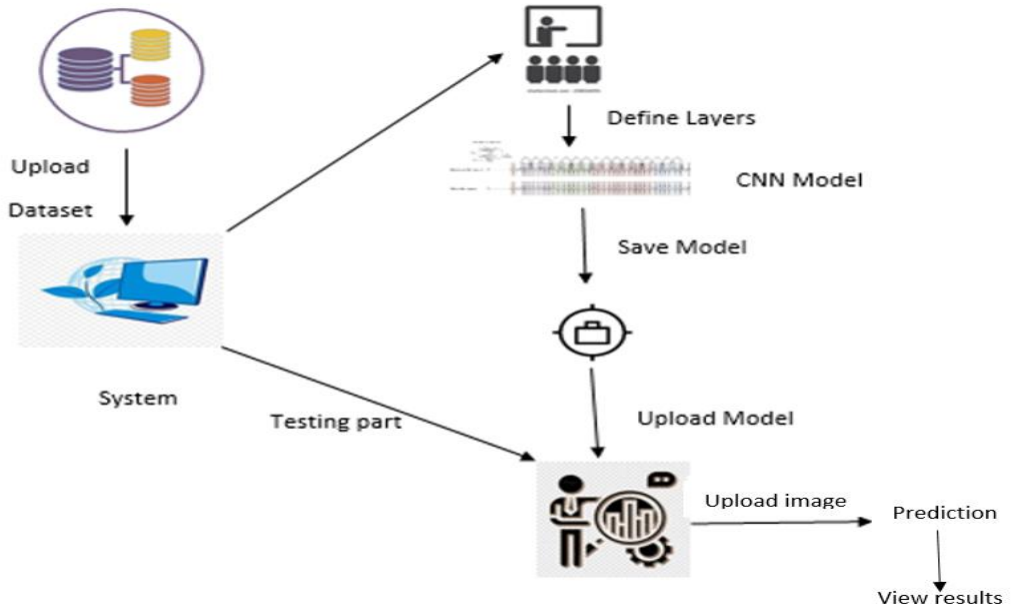
The CNN based transfer learning (MobileNet) model is one of the deep learning techniques used in the proposed monetary system. Using the conceder dataset, features are extracted using this transfer learning technique. Following feature collection, the saved model is utilized to more precisely categorize and predict the different sorts of cash.It can increase speed and accuracy. Additionally, the audio output is audible.

Benefits include:

• Saving time.

• Data management is simple, and accuracy is higher.

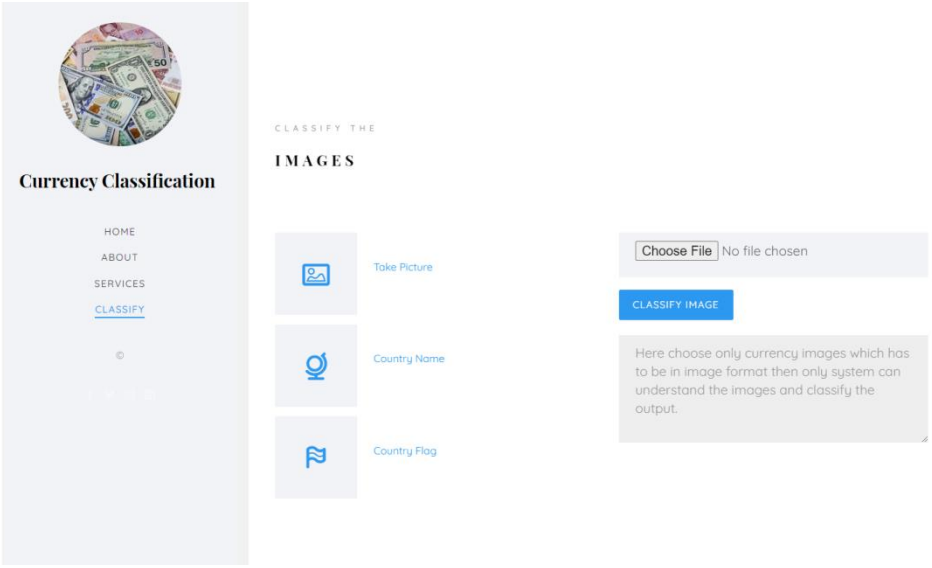
ARCHITECTURE



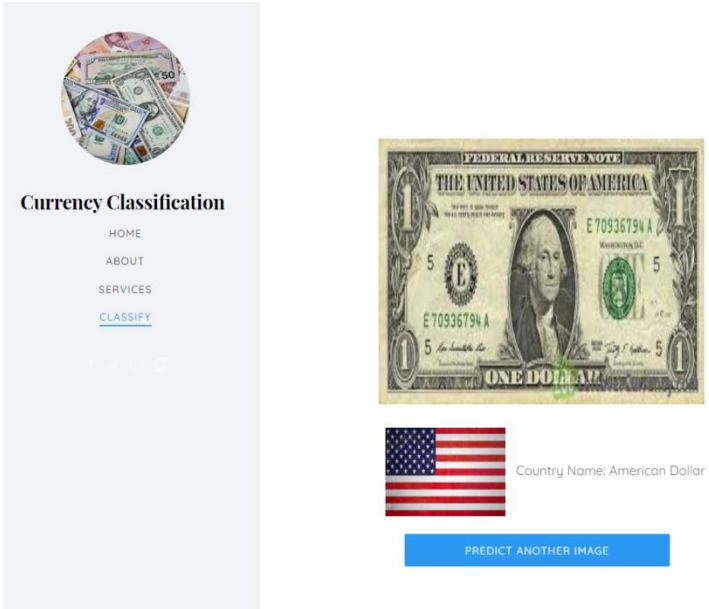
HOME PAGE

IMAGE UPLOAD PAGE

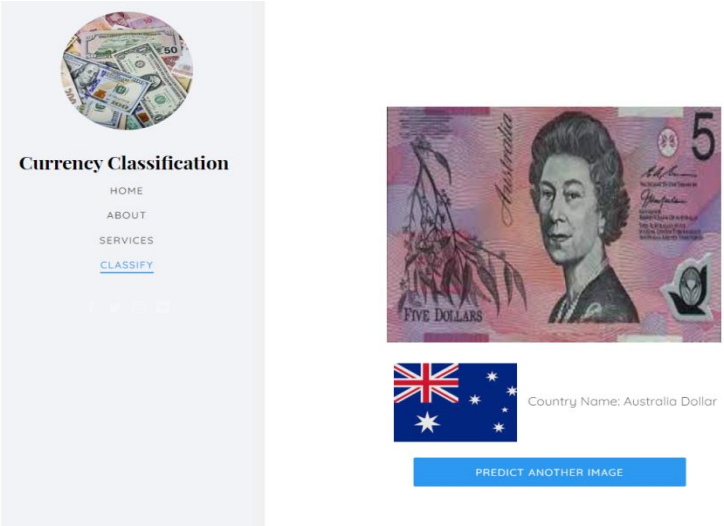
Here image files can be uploaded to classify whether the image which class it is.



Here model classify the image is “American Dollar”.



Here model classify the image is “Australia Dollar”.



CONCLUSION

This paper's primary goal is to perform money detection. Actually, it covers the cash denomination as well. We evaluated various cash images and used the MobileNet model to train the CNN. Additionally, we have had good outcomes. Our choice for a feature extractor was to build a CNN model. after the extraction of features for our training in currency recognition. Ultimately, 99% accuracy could be achieved by the trained model, indicating that our dataset has been thoroughly trained. We can observe from the loss function that there was no overfitting of our model during training. The final research findings are good, with a very high degree of accuracy. Although the recognition accuracy will somewhat decline, currency recognition studies can still be carried out because the dataset has been properly trained.

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