A REVIEW ON A FAKE CURRENCY DETECTION USING CONVOLUTION NEURAL NETWORK

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Abstract:

The current goal of the Fake Money Acknowledgment System is to recognise counterfeit paper money and determine whether it is genuine or not. The potential gap between people and machines has been seamlessly closed because to advancements in artificial intelligence. And data enthusiasts from all over the world work on a variety of AI-related topics to make visions a reality. One such fantastic area is the field of computer vision. In order to utilise the knowledge for various tasks and processes. And the developments in computer vision made possible by deep learning—particularly those involving the Convolutional Neural Network algorithm—have been a great success.

The present fake currency problem brought on by demonetization affects the banking system as well as other areas. Another approach using a convolution neural network to identify fake currency through its images is being tested right now, and it performs comparably well to earlier methods for processing photographs. This method was developed in response to Deep Learning, which has achieved great success in photo arrangement job. The suggested framework may also be distributed as a mobile application that encourages the general public to distinguish genuine and fake currency. With the use of a large number of fake and distinct notes, the Precision in the suggested framework may be increased.

Keywords:

CNN, Convolution Neural Networking, Deep learning, Artificial Intelligence, Currency.

Introduction:

These days, acknowledging fake Indian cash is crucial in important fields like finance. This framework, which uses a convolution neural network in profound learning, is used to determine whether the money is real or unique. In the assignment of acknowledgement and order of photos over a sizable informational index, which is also primarily used in object class acknowledgment, profound learning outperforms expectations. The current demonetization campaign may be a step towards eliminating debasement and dark money, but it ignores the problem of counterfeit money. A sophisticated neural system is a computational representation that functions similarly to the neurons in the human brain.

Each neuron processes information, performs a few tasks every frame, and then transfers its output to the neighbouring neuron in the layer beneath it.

Literature Review:

Money counterfeiting is not a recent issue; it has existed since since the Greeks first began minting coins about 600 B.C. Coin edges were then routinely snipped off to get precious metal, which was then utilised to create counterfeit money. In China, paper money first appeared in the 1200s when mulberry tree wood was utilised to create currency. During that time, guards were responsible for maintaining the mulberry bushes, and counterfeiting money was a capital offence. Money fraud is a long-standing sin, according to history. The issue is still present in current times, hence efforts have been made to make it simpler to spot forgeries by using various printing processes and including various characteristics in currencies. But, as science and technology develop, more and more accurate methods of detecting counterfeit money are emerging, which makes the process much simpler. Holograms, multicoloured stripes, counterfeit pens with iodine (which react with the starch in paper money), and UV rays are just a few modern methods used to spot false money. As far as money deposit in an ATM is concerned, the phoney currency detection was of utmost importance. The fake currency detection for Bangladeshi notes based on image processing has been done by Ahmed et. al. Another interesting approach was presented by Santhanamet. al. by including polarization

concept and holographic detection methods along with image processing technique

Proposed Methodology:

We will construct a convolutional neural system according to the proposed computation, which will be created on the given phoney and unique cash informative collection. We are currently facing an image grouping issue, and our goal is to determine which class the information picture belongs to. The way we will do it is by creating a counterfeit neural system on the currency photo informational collection and training the NN (Neural Network) to predict which class the picture belongs to whether it detects a picture of a fake note or a real note at any time. Convolutional neural networks (CNNs) are now often used to solve design recognition and image recognition problems.

Compared to other treatments, they have a lot of advantages. Convolution neural networks typically employ ten distinct layers of example recognition. Without the need for an underlying discrete pre-preparing or highlight extraction arrangement—in a CNN, the highlight extraction and grouping often take place within a single structure—they use raw data. When compared to alternative photo handling processes, which just require some computations for the pre-processing step, this is a big advantage.

Architecture of Convolution Neural Networking:

A three-dimensional photo volume (width, height, and depth) is converted into a three-dimensional output volume via the CNN architecture, which consists of a number of layers. It is crucial to note that each neuron in the current layer is connected to a little piece of the output from the previous layer, which is the same as overlaying a NxN filter over the input image.

It uses M filters, which are feature extractors that distinguish between define functionality such as borders, corners, etc. Convolutional neural networks (CNNs) are constructed at the following levels:

1. INPUT
2. Convolutional layer, second
3. RELU
4. A layer of pooling
5. Layer with all connections

Pre-processing:

The primary goal of information pre-handling is to raise the base value of the informative index that is created. The main informational wiggle room is to demonstrate progress while getting ready for se.t. The primary objective of pre-handling information is to raise the basic value of the assembled informative collection, which is its generated worth. The main benefit of information pre-handling is that it enhances the preparation process.

Training of Convolution Neural Networking:

In actuality, it is best to start with a poorly performing neural network and build the neural system up with high accuracy. In terms of misfortune labour, we want to have much reduced misfortune capability at the end of training. This demonstrates the great learning rate and precision of our neural system. The challenge of setting up the system is equivalent to producing unpleasant work with a very low error rate. While limiting bad luck is far easier than maximising it, for unknown reasons, doing so is important and even effective. We use ReLU (Rectifier direct unit) as our enactment job despite the fact that there are several computations that include actuation capabilities and enhancement capacities. If we increase our picture informational gathering through real-world instances, the model can be more accurately built and our findings might be above 80% accurate, which is a good indication of what to expect from the results.

Conclusion:

When the currency characteristic summary is come across step by step, the light on accuracy is often accurate. Here, we've taken into account the full cash picture, but moving forward, we will try to bring a change that is secure and fundamentally organized. By using instances of cash surfaces as highlights for increasing the finding accuracy, the acknowledgment and fake money recognition may also be attained. In the future, research may focus on implementing the model as a mobile application to help society and its citizens identify fake money. CNN architectures, which may have lower error rates than the current model, and which can be integrated by using image pre-processing methods like edge-detection to clip the money note out of a picture, which will produce better results.

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