Abstract

Fake Currency has always been an issue which has created a lot of problems in the market. The increasing technological advancements have made the possibility for creating more counterfeit currency which are circulated in the market which reduces the overall economy of the country. There are machines present at banks and other commercial areas to check the authenticity of the currencies. But a common man does not have access to such systems and hence a need for a software to detect fake currency arises, which can be used by common people.

This proposed system uses Image Processing to detect whether the currency is genuine or counterfeit. The system is designed completely using Python programming language. It consists of the steps such as grayscale conversion, edge detection, segmentation, etc. which are performed using suitable methods.

Introduction

Technology is growing very fast these days. Different countries around the world use different types of currencies for the monetary exchange of some kinds of goods. One common problem faced by many countries related to currency, is the inclusion of fake currency in the system. India is one of the countries that face a lot of problems and huge losses due to the fake currencies. Due to this there are losses in the overall economy of the country ‘s currency value. The technological advancements have made a pathway for currencies to be duplicated such that it cannot be normally recognized. Advanced printers and new editing computer software’s are used to create counterfeit currencies. Fake currencies can just be slipped into bundles of genuine currency which is how they are usually circulated in the market. Commercial areas like the banks, malls, jewelry stores, etc. have huge number of transactions on a daily basis. Such places may be able to afford and find it feasible to buy machines that use UV light and other techniques to detect the authenticity of the currency. But for common people it is very difficult to just detect whether the currency is fake or genuine and they may face losses especially during bank deposits or transactions.

Fake currency detection using image processing is a method of identifying counterfeit currency notes using computer vision and machine learning. It is a non-destructive method that can be used to quickly and accurately detect counterfeit notes.

The process of fake currency detection using image processing typically involves the following steps:

**Image acquisition:** The first step is to acquire an image of the currency note. This can be done using a digital camera, scanner, or other imaging device.

**Image preprocessing:** The image is then preprocessed to improve its quality and reduce noise. This may involve tasks such as resizing, cropping, and contrast enhancement.

**Feature extraction:** Next, various features of the currency note are extracted. These features may include the color, texture, and geometry of the note.

**Classification**: Finally, a machine learning classifier is used to classify the currency note as genuine or counterfeit. The classifier is trained on a dataset of images of genuine and counterfeit currency notes.

Image processing can be used to detect a variety of security features on currency notes, such as watermarks, security threads, microprinting, and intaglio printing. It can also be used to detect counterfeit notes that have been poorly made, such as notes with misaligned text or images or the wrong color or texture. Fake currency detection using image processing has a number of advantages over traditional methods of counterfeit detection, such as visual inspection and ultraviolet light detection. Image processing is more accurate and reliable, and it can be used to detect a wider range of counterfeit notes. It is also more efficient and cost-effective, as it can be automated and used to scan large numbers of currency notes quickly.

Fake currency detection using image processing is a promising technology for combating the problem of counterfeit currency. It is accurate, reliable, and efficient. As image processing technology continues to develop, we can expect to see even more innovative and effective ways to detect counterfeit currency.