Patent Search

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Abstract:

The present invention relates to an automated system for real-time detection of counterfeit Indian currency using deep learning techniques. The system comprises an ima acquisition module, an image preprocessing module, and a lightweight convolutional neural network employing a MobileNet architecture with depthwise-separable convo Captured currency images are preprocessed to normalize variations in lighting, orientation, and noise, and are classified as genuine or counterfeit with high accuracy and l latency. The system operates efficiently on mobile, embedded, and edge-computing platforms without requiring specialized sensors or high-performance hardware. The invention provides a scalable, cost-effective, and reliable solution for counterfeit detection across multiple currency denominations and real-world transaction environmer

Complete Specification

Description:FIELD OF THE INVENTION

[001] The present invention relates generally to the field of computer vision, artificial intelligence, and digital image processing, and more particularly to deep learning–based automated systems for currency authentication and counterfeit detection. The invention specifically pertains to a real-time, convolutional neural network (CNN)–driven system for detecting counterfeit Indian currency notes using lightweight deep learning architectures optimized for mobile, embedded, and edge-computing platforms. The invention further concerns the application of depthwise-separable convolutional models, including MobileNet-based neural networks, for high-accuracy classification of genuine and forged currency notes under diverse environmental and operational conditions. The disclosed system lies at the intersection of financial security technologies, intelligent visual inspection systems, and resource-efficient machine learning, enabling automated counterfeit currency detection with reduced computational complexity, low latency, and high deployment scalability across mobile devices, banking infrastructure, and point-of-sale systems.

BACKGROUND OF THE INVENTION

[002] The circulation of counterfeit currency represents a serious threat to economic stability, public confidence, and national security. Forged Indian currency notes adversely affect financial institutions, commercial transactions, and government revenue, while also facilitating unlawful activities. Traditionally, counterfeit detection has relied on manual inspection techniques such as visual examination of security features, tactile assessment, ultraviolet light exposure, magnetic ink detection, and

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