



# CURRENCY RECOGNITION APPLICATION

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**Abstract :** The Currency Detection Android Application with Image Processing is an revolutionary answer designed to empower visually impaired people and help tourists in figuring out and handling paper foreign money notes with accuracy and convenience. This software leverages superior photograph processing techniques, inclusive of aspect detection, shadeation analysis, texture recognition, and optical individual recognition (OCR), to extract vital functions from forex notes. Machine learning models, including convolutional neural networks (CNNs) and recurrent neural networks (RNNs), are employed to recognize currency denominations based on these extracted features. The software affords real-time audio feedback, saying the diagnosed denomination, and capabilities a user-pleasant interface with voice-guided instructions, catering to each visually impaired and sighted user. A comprehensive currency library ensures coverage of major world currencies, with regular updates to accommodate new designs and security features. Offline functionality further enhances accessibility. The project's scope encompasses primary functionalities, target audience, supported currencies, technological considerations, and acknowledges project limitations.

**Keywords:** Currency Recognition, Android Application, Image Processing, Machine Learning, Accessibility, Visually Impaired, Travelers, Optical Character Recognition(OCR)

## I. INTRODUCTION

### 1.1 Background

The coping with of paper forex is a important factor of everyday life, specifically for visually impaired people and worldwide travelers. This document discusses the improvement of a Currency Detection Android Application, which harnesses photo processing and device gaining knowledge of to facilitate correct and unbiased foreign money recognition. In an technology characterized by rapid technological advancement, the development of applications that foster social inclusivity is a testament to the positive impact technology can have on our lives. This project is dedicated to the creation of a cutting-edge currency detector application, a solution designed to empower visually impaired individuals and simplify financial transactions for businesses and individuals alike.

Currency detection applications are instrumental in bridging accessibility gaps, ensuring that individuals with visual impairments can confidently manage their finances, thereby promoting equal access to financial services and greater independence. Simultaneously, this innovative technology offers the convenience of swift and error-free currency identification, enriching the everyday lives of a diverse user base.

### 1.2 OBJECTIVE OF THE PROJECT:

The main objectives of this project are as follows:

- 1] Accessible Currency Identification: Enable blind users to accurately identify and differentiate various currency denominations by utilizing smartphone technology.
- 2] User-Friendly Interface: Provide an intuitive and easy-to-navigate interface, designed with accessibility features to cater to the unique needs of blind users.
- 3] Real-Time Detection: Ensure real-time and green foreign money recognition, allowing customers to optimistically take part in monetary transactions without delays or dependence on sighted assistance.
- 4] Currency Database: Maintain an updated database of forex denominations for one-of-a-kind countries, permitting customers to seamlessly control each neighborhood and global currencies.
- 5] Audio and Tactile Feedback: Incorporate audio cues and haptic feedback to provide users with sensory information, reinforcing the app's ability to accurately identify banknotes. Scope of the Project

## II. LITERATURE SURVEY

- [1] IPCRF: An end-to-end Indian Paper Currency recognition framework for Blind and Visually Impaired People (BVIP), IEEE 2022, Mandhatya Singh
- [2] YOLO V-3 Based Currency Detection and Recognition System for Visually Impaired Persons, Rakesh Chandra Joshi, Saumya Yadav. 2020
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- [5] Currency Identifier for Indian Denominations to Aid Visually Impaired, Barani S, ICCPCT-2019

## III. METHODOLOGY

### 1] Data Collection:

Data series includes the purchase of a various dataset of foreign money pix from numerous countries. This dataset serves as the inspiration for education and trying out the device mastering fashions utilized in forex recognition.

### 2] Image Processing Techniques:

Image processing techniques encompass a series of procedures, including edge detection, color analysis, texture recognition, pattern matching, and optical character recognition (OCR). These strategies are instrumental in extracting applicable capabilities from foreign money notes.

### 3] Machine Learning Models:

Machine mastering models, especially convolutional neural networks (CNNs) and recurrent neural networks (RNNs), are hired to apprehend forex denominations primarily based totally at the extracted features. Training and fine-tuning of those fashions are crucial for accomplishing excessive accuracy.

## IV. PROJECT SCOPE:

- 1] Currency Recognition
- 2] Currency Library
- 3] User-Friendly Interface
- 4] Offline Mode

## V. HARDWARE REQUIREMENTS:

- 1] Android Smartphone: A modern Android smartphone with a camera (compatibility with recent Android versions).
- 2] Sufficient RAM: The smartphone should have adequate RAM for smooth app performance.
- 3] Sufficient Storage: Sufficient internal storage space to run the app.
- 4] Camera: A high-resolution camera with autofocus capabilities for capturing currency images. USB cable: For connecting smartphone to Android Studio.

## VI. SOFTWARE REQUIREMENTS:

- 1] Operating System: Android OS (compatibility with recent versions), Windows 7 or Latest Development Platform: Android Studio and Eclipse for app development.
- 2] Programming Languages: Java.
- 3] Version Control: Git for collaborative development.

## VII. FEATURES:

- 1] Image Capture: Users can capture currency notes using their smartphone cameras, with real-time guidance and feedback.
- 2] Image Processing: Advanced image processing techniques are utilized to analyze and extract relevant features, ensuring accurate currency recognition.
- 3] Currency Recognition: Machine learning models accurately identify the denomination of the currency based on extracted features.
- 4] Audio Feedback: The application provides audio feedback, announcing the recognized denomination to users, enhancing accessibility.

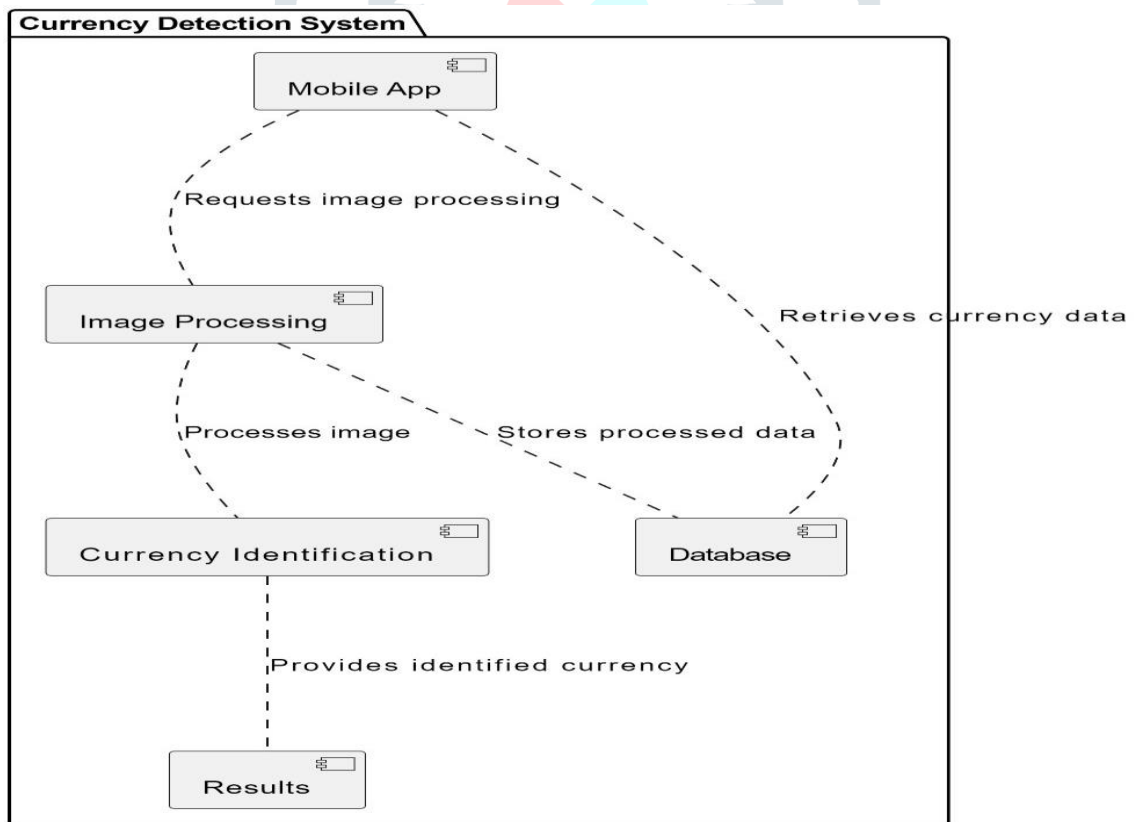
- 5) Currency Library: A comprehensive library of currencies from various countries is included, continuously updated to cover new currency designs.
- 6) Offline Mode: The application functions offline, ensuring accessibility even in remote areas or without an internet connection.
- 7) Regular Updates: Regular updates enhance the accuracy of currency recognition and introduce new security features.

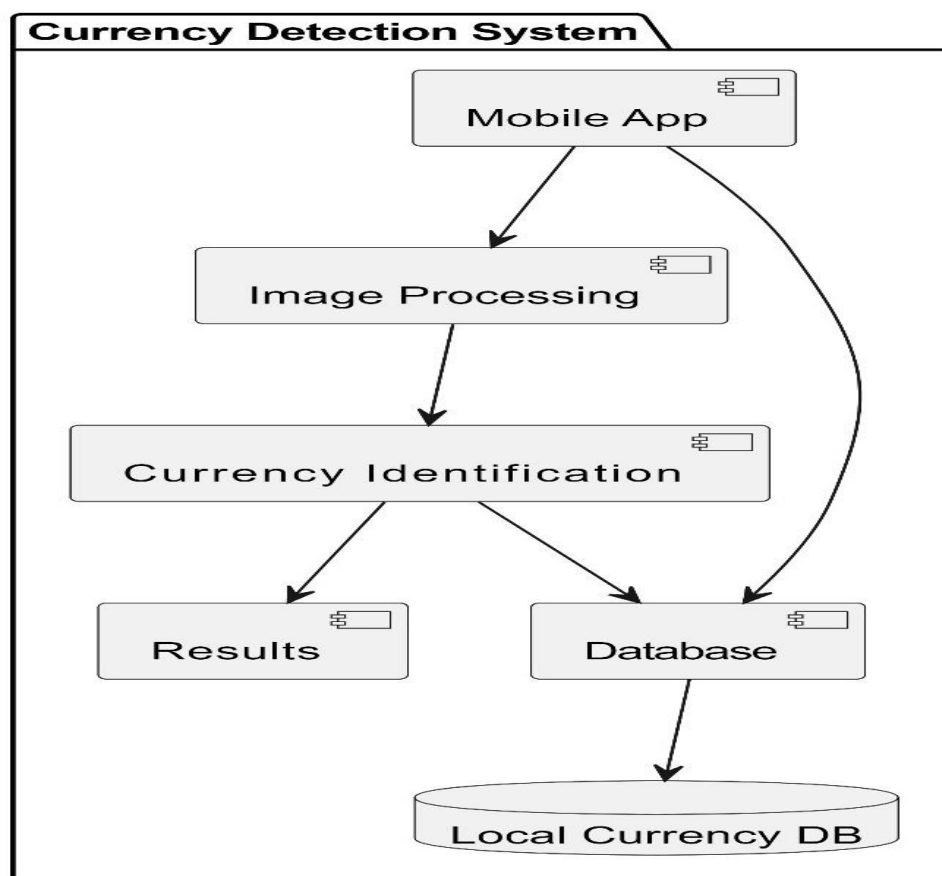
**VIII. SYSTEM ANALYSIS AND PROPOSED ARCHITECTURE**

The foreign money detector gadget objectives to empower visually impaired people through imparting an reachable and user-friendly solution for currency recognition. Current demanding situations encompass constrained accessibility and dependence on outside assistance.

- 1) Components: Image Capture, Image Processing, Text-to-Speech, User Interface, Currency Database.
- 2) Flow: Capture image, system for forex identification, convert to speech, gift consequences through available interface.
- 3) Accessibility: Voice guidance, excessive contrast, massive font options, gestural enter support, display screen reader compatibility.
- 4) Platform: Android improvement the use of Java/Kotlin, Android Accessibility API integration.
- 5) Security: Encryption, secure communication, regular updates.
- 6) Future Enhancements: Real-time foreign money updates, multi-foreign money support, collaboration with foreign money authorities.

**System Architecture:**



**System Design:****IX. CONCLUSIONS**

The Currency Detection Android Application, powered through picture processing and system learning, serves as a precious device for foreign money recognition, with extensive benefits for each visually impaired people and travelers. It streamlines monetary control and decreases the margin of error. While now no longer with out its limitations, its fantastic effect is clear.

The development of the currency detection application represents a significant step forward in leveraging technology for social inclusivity and accessibility in the financial realm. With a foundation built on meticulous data collection, machine learning model training, and integration into an Android application, this project has the potential to bring tangible benefits to a diverse user base.

For visually impaired individuals, the application promises newfound independence, empowering them to confidently manage currency notes ultimately enhancing their quality of life.

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