IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 8, April 2025
Impact Factor: 7.67

Currency Recognization for Blind People

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Abstract: *Visually Impaired & foreign people are those people who have vision impairment or vision loss. Problems faced by visually impaired in performing daily activities are in great number. They also face a lot of difficulties in monetary transactions. They are unable to recognize the paper currencies due to similarity of paper texture and size between different categories. This money detector app helps visually impaired patients to recognize and detect money. Using this application blind people can speak and give command to open camera of a smartphone and camera will click picture of the note and tell the user by speech how much the money note is.*

This Android project uses speech to text conversion to convert the command given by the blind patient. Speech Recognition is a technology that allows users to provide spoken input into the systems. This android application uses text to speech concept to read the value of note to the user and then it converts the text value into speech. For currency detection, this application uses Azure custom vision API using Machine learning classification technique to detect currency based on images or paper using mobile camera.

Keywords: Azure custom vision API, Machine learning, visually impaired patients, mobile camera

I. INTRODUCTION

Visual object recognition on a mobile phone has many applications. In this paper, we focus on the problem of recognition of currency bills on a low-end mobile phone. This is an immediate requirement for the visually impaired individuals. There are around 285 Million people estimated to be visually impaired worldwide, out of which 39 Million are blind and 246 Million have low vision. The differences in texture or length of currency bills are not really sufficient for identification by the visually impaired. Moreover, bills are not as easy to distinguish by touch as coins. Certain unique engravings are printed on the bills of different currencies but they tend to wear away. We adopt an approach based on computer vision on mobile devices, and develop an application that can run on low-end smartphones. We consider the bills of Indian National Rupee (|) as a working example, but the method can be extended to a wide variety of settings. Our problem is challenging due to multiple reasons. We want all the computations to happen on the phone itself and this requires appropriate adaptation of the recognition architectures to a mobile device.

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II. LITERATURE SURVEY

Main purpose of the system is to provide object recognition facility. There are lots of machines are available that helps the people to recognize different features of objects. But for blind people in the world have to keep a lot of different features and label for different commonly-used currencies. However, everyone has a handbook that about the features and labels of come commonly- used currencies. No one can ever be 100 percent confident about the manual

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recognition. So, our purpose is to detect notes with accurate results without any interference also our proposed system will save time to recognize currency by detecting notes in less time.

Existing systems uses optoelectronic device to produce the signal from the light refracted by the banknote. There are many currency recognition machines are available in current market through which currency can be recognize whether by using image processing technique or neural networks. Existing currency recognition systems are mainly based on processing of image using image processing techniques and neural networks. Some system uses Gaussian function in hidden layer and output layer of CNN in the place of sigmoid function. System shown that the Gaussian function is more effective than sigmoid function for the recognition of known features and rejection of unknown patterns and we are going to use machine learning to recognize notes. The term Deep Learning or Deep Neural Network refers to Artificial Neural Networks (ANN) with multi layers. Over the last few decades, it has been considered to be one of the most powerful tools, and has become very popular in the literature as it is able to handle a huge amount of data. The interest in having deeper hidden layers has recently begun to surpass classical methods performance in different fields; especially in pattern recognition.

III. SYSTEM ARCHITECTURE DIAGRAM

In this system we used Spiral model for development of the web application.

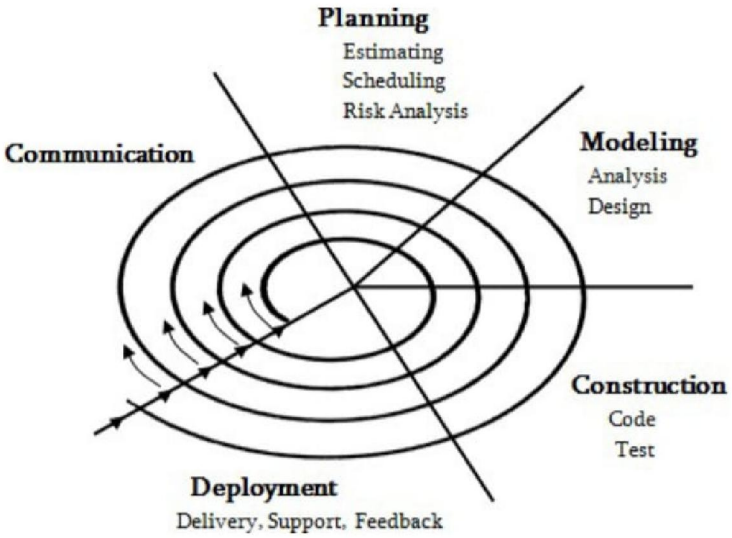

Figure: Spiral model

This model is combination of well-known waterfall model and iterative prototyping .It yields rapid development of more complete version of software. Using spiral model software is developed as series of evolutionary releases. During the initial releases, it may just paperwork or prototype. But during later releases the version goes towards more completed stage.

The spiral model can be adopted to apply throughout entire lifecycle of the application from concept development to m1aintenance .The spiral model is divided into set of framework activities defined by software engineer team.

The initial activity is shown from centre of circle and developed in clockwise direction. Each spiral of the model include following steps: In this phase we planned about when to release the software, cost estimation, risk in the project regarding messenger application and transfer of files in that

IV. WORKING METHODOLOGY

1. Capture Image – User scans the currency note using the phone camera.
2. Preprocessing – Image is cleaned and prepared for analysis.

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3. Feature Extraction – Key patterns and symbols are detected from the note.
4. ML Classification – A trained model identifies the currency denomination.
5. Audio Output – The app announces the value using text-to-speech.
6. Offline Support – Works without internet for user convenience.
7. Error Handling – Prompts user if the note is unclear or not detected.

V. FEATURES

1. Camera-Based Currency Detection
Uses the smartphone's camera to scan and detect currency notes in real time.
2. Machine Learning-Powered Recognition
Implements a trained ML model to accurately recognize different currency denominations.
3. Audio Output for Accessibility
Provides spoken feedback of the detected currency denomination to assist blind users.
4. Offline Functionality
Operates without requiring an internet connection, ensuring usability anytime, anywhere.
5. Multi-Currency Support (Optional)
Can be trained to support recognition of multiple countries' currencies.
6. User-Friendly Interface
Designed with simple gestures and minimal interaction for ease of use by visually impaired users.
7. Fast Processing Time
Delivers quick recognition results to improve efficiency and user experience.
8. Error Handling & Notifications
Alerts users when the currency is not detected properly or the image is unclear.
9. Light & Orientation Adjustment (Optional)
Enhances recognition accuracy by automatically adjusting for lighting and note orientation.
10. Text-to-Speech Integration
Uses TTS engines for clear and customizable voice output.

VI. CONCLUSION

The development of Currency Recognition App involved many phases. The approach used is a top-down one concentrating on what first, then how and moving to successive levels of details. The first phase started with a detailed study of the problems and prospects of ordering in Foods. In the course of this study, many problems were discovered to have hindered the effectiveness of the existing manual system. These problems, information needs and activities were documented and later used as the basis for system design, which immediately followed the first phase. The design phase was concerned primarily with the specification of the system elements in manner that best met the organization's business needs. During this phase, strict adherence was made on proven software engineering principles and practices. It is hoped that effective implementation of this software product would eliminate many problems discovered during systems investigation.

REFERENCES

[1]. Takeda F. and OmatuS. ,OnamiS. ,Kadono T. and Terada K,"A Paper Currency
[2]. Recognition Method by a Small Size Neural Network with Optimized Masks by GA",
[3]. Proceedings of IEEE World Congress on Computational Intelligence, 1994, 42434-246.
[4]. FrosiniA. ; Gori M. and Priami P. "A Neural Network- Based Model For Paper Currency Recognition And Verification", IEEE Transactions On Neural Network, Vol: 7, Nov1996 Issue: 6, 1482-1490.
[5]. http://www.isr.umd.edu/Courses/BARASENSE623/secured/Class%20Handouts/Trade-off- 1.pdf
[6]. https://www.wikipedia.org/
[7]. https://www.javatpoint.com/android-tutorial

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[8]. www.w3school.com
[9]. www.google.co.in
[10]. www.tutorialspoint.com
[11]. https://www.youtube.com
[12]. http://developer.android.com/reference/packages.html.