Currency Identification Mobile Software for the Visually Impaired

CSP 315

Submitted by:-

Sangeet Aggarwal 2008EE10364

Sanjeev Kumar 2008EE10365

Saqib Mumtaz 2008EE10366

Vidit Aatrey 2008EE10370

Vikram Singh Meena 2008EE10371

Yashdeep Singh 2008EE10372

Abstract

Visually impaired people have difficulties in identifying currency. They rely on the size and features of the currency which can result in wrong identification. This project aims to develop a mobile application targeted towards them. The application will be able to recognize Indian currency and determine the denominations.

Specifications

Platform :

J2ME (Java Micro Edition)

MIDP 2.0 and CLDC 1.0

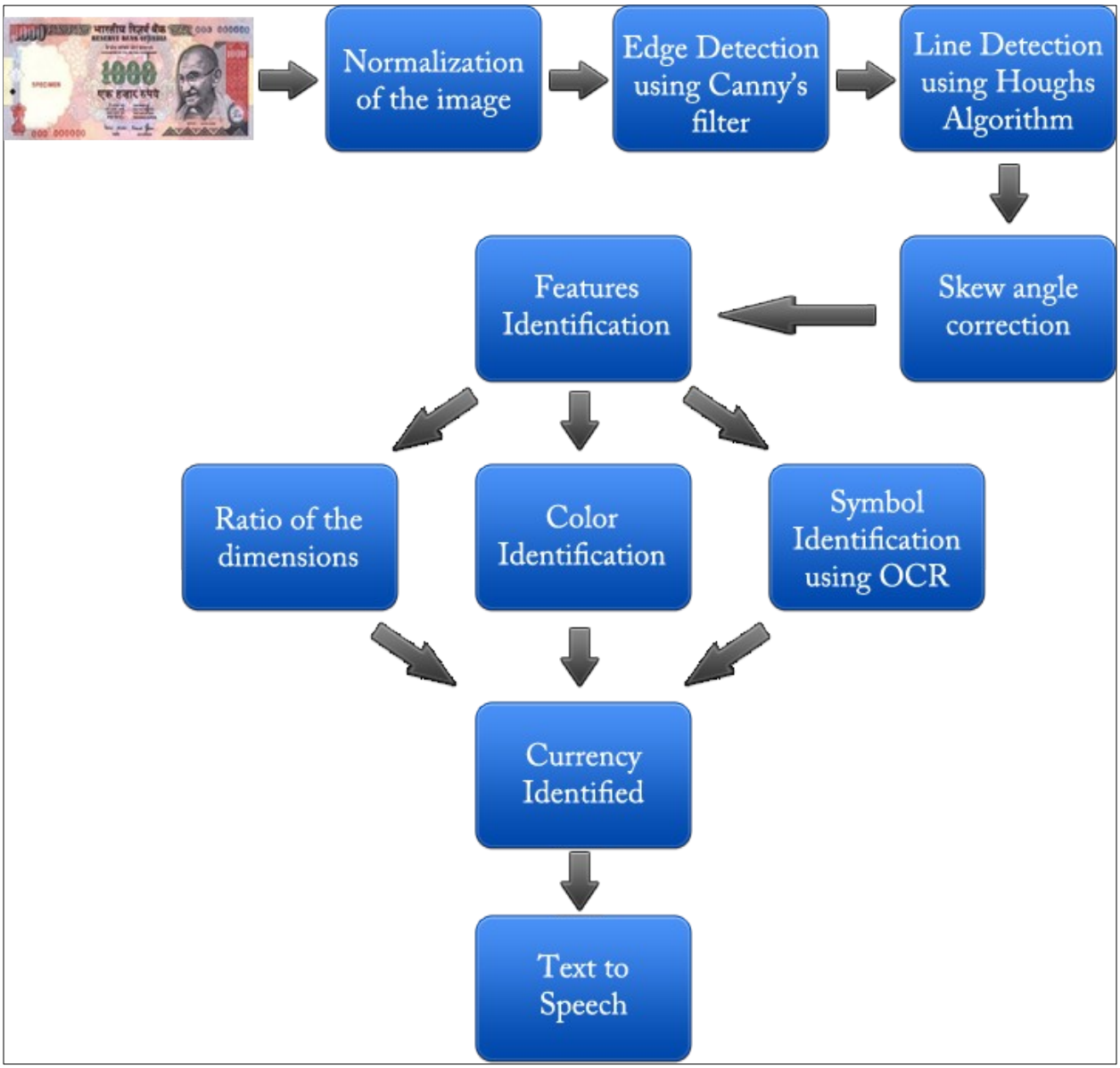
Supported Mobile Operating Systems :

- Symbian S40
- Symbian S60 all editions
- Sony Ericsson OS
- All other Mobile OS which support jar applications such as Android, Blackberry, Windows etc.

Methodology

Our software guides the user through voice commands. When the user runs application, it guides him to capture the image of the Indian Currency to be identified by his mobile camera. After this, the image processing starts to extract the unique features and identify its denomination. The user is then informed through voice commands.

Software Design



Approach

- After taking image from the camera, normalization is done to counter varying intensity images.
- Using edge detection (Canny's) and line detection (Hough's), the boundary of the currency is determined.
- Also, using this boundary, the skew angle is determined and the currency image is rotated by this much angle
- Now, we try to determine what is the denomination of the currency using the following three criteria :-

1. Comparing the width is to height ratio with predetermined values
2. Comparing the overall color variation with predetermined values using some statistical measures.
3. Identifying the geometric shape found near the left edge(different in all currencies) using simple OCR techniques.

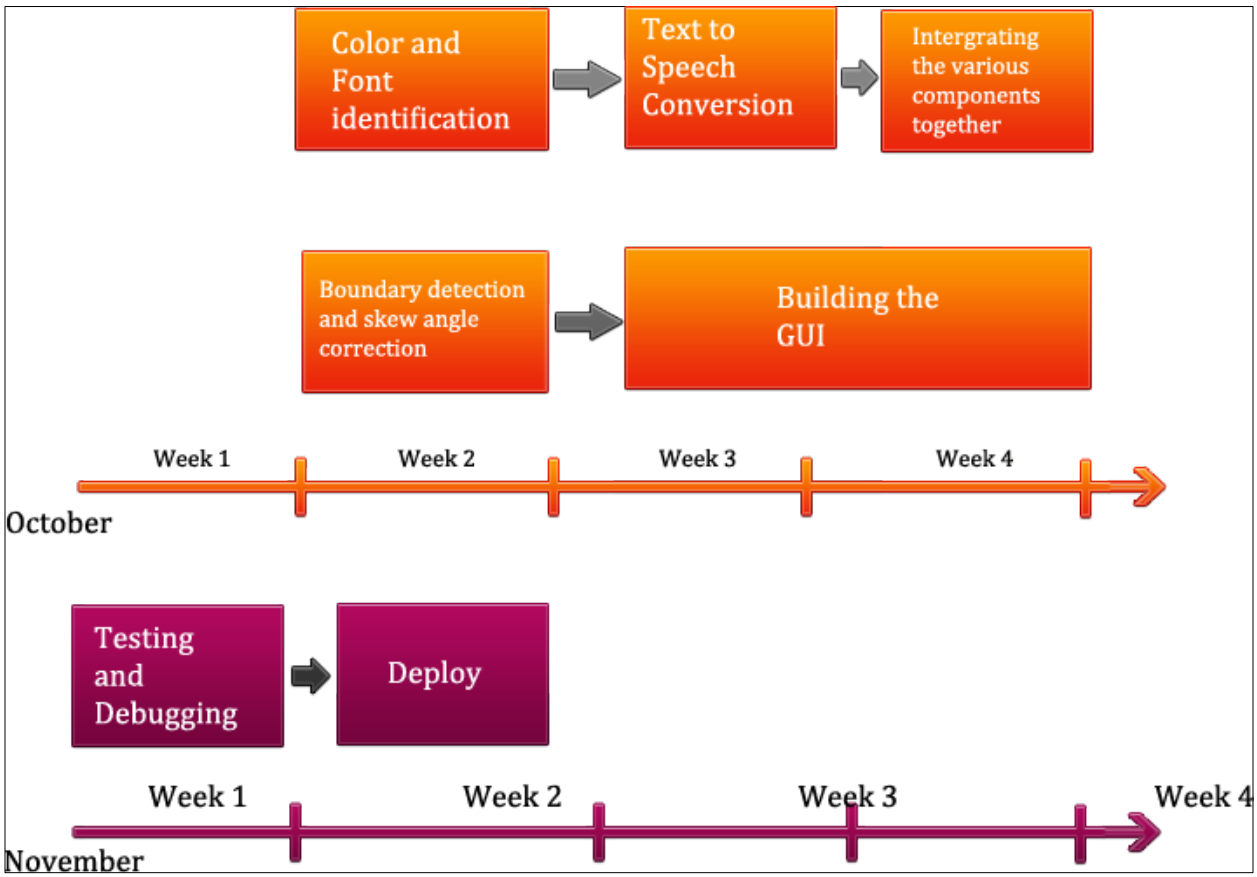
- Finally, translating the result using audio output.

Progress

- Edge detection using Canny Filter has been implemented on J2ME and tested successfully
- Line detection using Hough Transform has been implemented in JAVA and tested successfully
- Symbol identification using OCR has been implemented J2ME. This is to incorporate special symbols that are unique for different denomination notes.

- Accessing cell phones basic resources like camera, vibrator and basic Midlets have been developed.

Future plan



Web Link

http://www.rupeereader.webs.com