“Automatic Drug Identification Using Image Processing”

Abstract*: *In today’s world, both the doctors and patients are being affected. The reasons could be many. Doctors are considered to be one of the most important parts of the society. But today doctors are being blamed due to the carelessness of the patients. In many situations, doctors have become helpless. So to overcome these problems this application has been developed. According to this, the patient, who is totally unknown or illiterate, can get all the information of the tablets that is its usage, side effects etc; even if the person is unaware of its name. So that it creates awareness among the people and reduces conflicts. Not only illiterate people but it also helps the educated ones. The person who is confused with doctor’s prescription i.e., if he doesn’t understand what tablet to takefor what problem, this technique is not restricted with only name, even its chemical composition could be enough to tell its details. It builds transparent and fair relation between a doctor and a patient. Using this application people can get information in hand itself. So there would be no blame and disputes. And another most important feature of this system is that people can even check its expiry date. System has been developed, according to this, the patient, who is totally unknown or unaware can get all the information regarding the tablets. By taking the tablet’s image, it is aimed for helping people by providing the respective information.

1. Introduction

In our daily lives, many medicines used in hospitals and primary care centers are difficult to identify. And those used may be burdensome to detect on a day-to-day basis unless they are obvious. Medicines are one of the most important health care technologies for improving health and quality of life for the generations. Unfortunately, medications are a double-edged sword. Medications will results the side effects also, drug interactions and other undesired outcomes. Many of these medicine-related problems are predictable and therefore can be prevented.

Primary care it is the most important part of the healthcare system that helps to reduce complications and hospitalization through prevention and early intervention. However, there are a number of challenges that are facing primary care that must be addressed to maintain the quality and benefits that primary care can afford.

In this paper, the model is proposed to identify the tablet strip using image processing technique.

2. Literature Review

2.1 In this paper, authors suggested an automatic drug image identification system (ADIIS) based on multiple image features. ADIIS, it is able to improve drug identification errors and also it provides drug information. By using tablet image, the system will be able to retrieve the top ten similar drugs for the user to identify the specific drug, and out of the ten identified drugs retrieved by ADIIS, the first of the ten drug identifications was more than 90% of the correct match.

2.2RUNG-CHING-CHEN (2011) in this paper, propose an automatic drug image identification system (ADIIS) based on multiple image features ADIIS is able to reduce drug identification problems as well as provide more precise drug information. By using an image, the system is able to provide the top ten similar drugs, enabling the user to identify the specific one. Their experimental results show that the first drug of the ten identified by ADIIS was the exact drug in 92.6% of tests.

2.3 Shilpa and Arun Bhatia (June2016) proposed a method to identify damaged and missing tablets with Centre of Mass (COM) edge detection method. This method says that finding edges of tablets by knowing their Centre. The no of capsules in the vesicle are calculated by Centre of Mass (COM) edge detection method.

2.4 Ramya.S, Suchitra.J, Nadesh R. proposed some ideas to identify the defective tablets after production using "Detection of Broken Pharmaceutical Drugs using Enhanced Feature Extraction Technique". This method involving image enhancement, segmentation, thresholding, filtration, pixel calculation, region based statistic to identify the defective tablets. In the case of tablets we propose a feature extraction technique to find the defective blister.

2.5 Dr. H.B. Kekre, Dr. Dhirendra Mishra, Mr. Varun Desai, proposed approaches of image processing for detection of defective capsule and presence of category of defects. All other different methods, proposed and compared in this paper are applied over database of 39 images of pharmaceutical tablet strips speeded over 3 different classes those are single color, double color and multi color. The method has been taken out to detect different possible types of tablet defects i.e., missing, broken, missing and broken and many other possible defects.

2.6 Jesus J Caban, Adrian Rosebrock, Terry S Yoo, propose an "Automatic identification of prescription of drugs using shape distribution models". This paper introduces a simple yet strong classification technique that can be used to automatically identify prescriptions drugs within images. The system uses a modified shape distribution method to identify the shape, color, and imprint of a tablet and create an invariant descriptor that can be used to recognize the same tablet under different viewing conditions. The proposed technique has been successfully calculated with 568 of

the most relate tablets in the United States and has shown 91.13% accuracy in automatically identifying the correct medication.

2.7 Yafei Hou1, Kan Wang1,2, Kun Xiao1, Weijian Qin1, Wenting Lu3, Wei Tao1,2 and Daxiang Cui1,2 proposes“A smartphone-based dual-modality imaging system” was developed for quantitative detection of color or fluorescent lateral flow test strips, which can be operated anywhere at any time. In this system, the white and ultra-violet (UV) light of optical device was designed, which was tunable with different strips, and the Sobel operator algorithm was used in the software, which could enhance the identification ability to recognize the test area from the background boundary information.

2.8 Dr.D.Jayashree1, Afritha Farhath.K2, Amruthavarshini.R3, Pavithra.S4. Propose a “Voice Based Application as Medicine Spotter for Visually Impaired” system. In this application; a reminder is set which tells the user when to take the medicines, as voice output. The pictures of the medicine strip held in the hand are captured by the inbuilt camera of the mobile. The image is processed then text localization and extraction is done by which the name of the medicine is recognized. It is also combined with this application which checks the prescription which has been already uploaded in the user’s mobile database, compares with the name of the medicine identified and if the medicine has to be taken at that time, and then it tells the quantity of medicine to be taken to the user as voice output. After receiving the voice output from the mobile, the user takes their medicines according to their prescription. This idea would achieve good results in practice.

3. Proposed Work

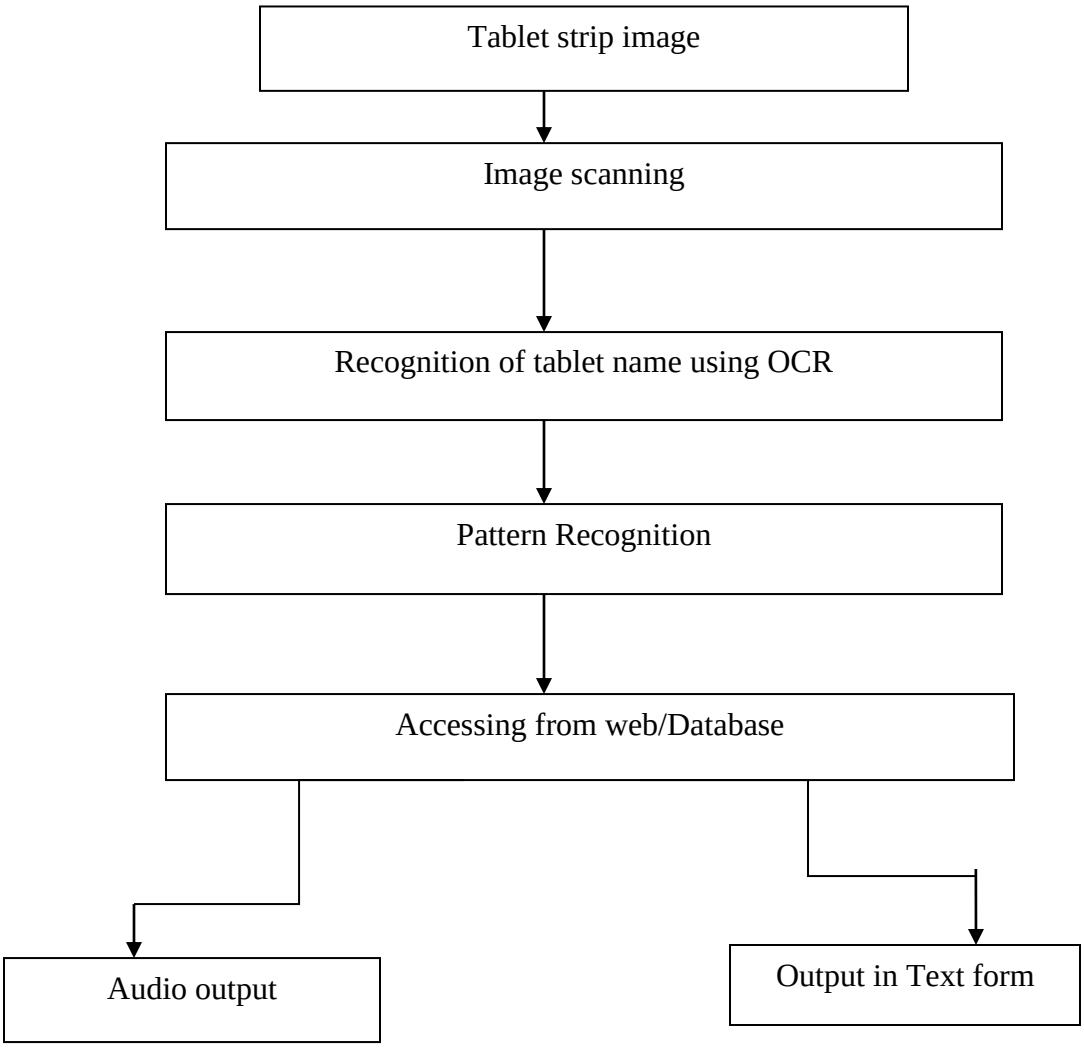

Fig: 1 Input Image

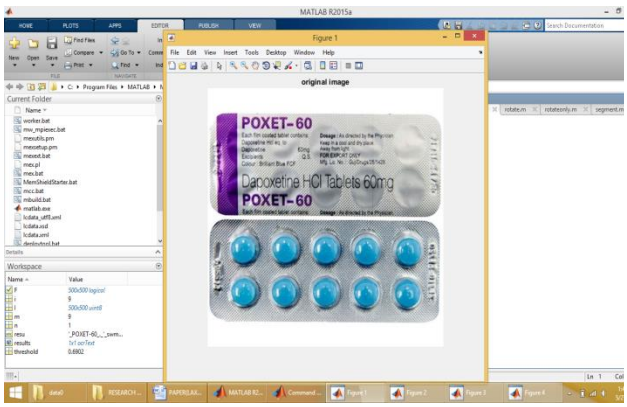

Fig: 2 Gray image

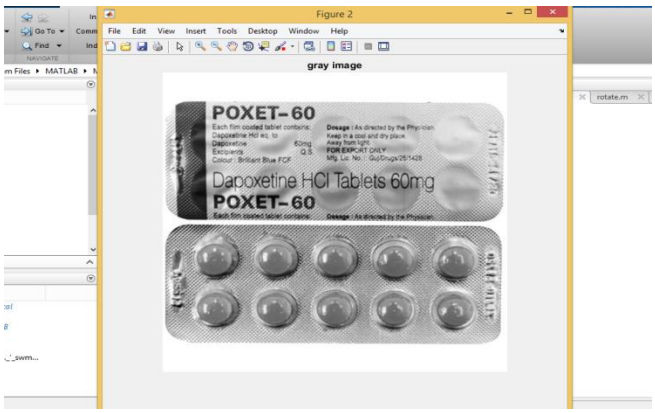

Fig: 3 Non local mean filter applied image

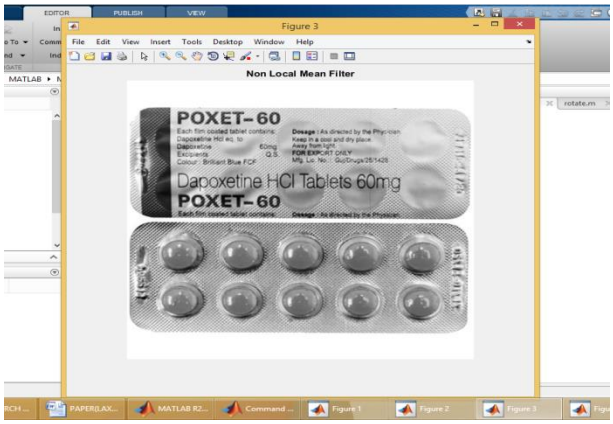

Fig: 4 Binary images

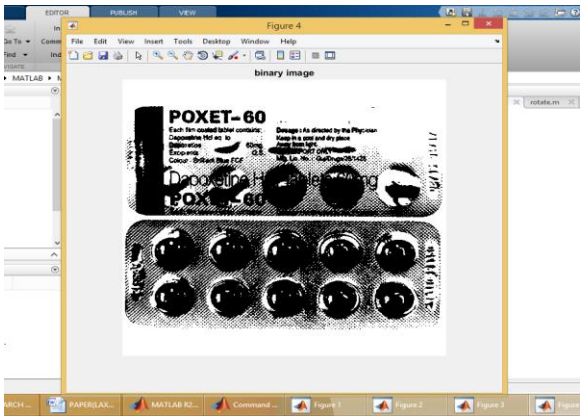

Fig: 5 OCR Results

```
results =

  ocrText with properties:

                      Text: 'POXET-60 . '

swmmuun-wuuum nan-unmuw-s-Ir-llvw
nag:-unuu-an . raun--any-In



'
    CharacterBoundingBoxes: [82x4 double]
      CharacterConfidences: [82x1 single]
                     Words: {9x1 cell}
        WordBoundingBoxes: [9x4 double]
          WordConfidences: [9x1 single]


m =

     9


n =

     1
```

Methodology (Steps):

Step 1: Input the tablet strip (Fig: 1)

Step 2: Convert the original image into Gray Image (Fig: 2)

Step 3: Applying Non local mean filter to Gray Image (Fig: 3)

Step 4: Conversion of filtered image to Binary image (Fig: 4)

Step 5: Recognition of the Tablet strip Using OCR technique (Fig: 5)

Step 6: Connecting to the web/Databases (Matching OCR results to the Web/database)

Step 7: Displaying the tablet usages and the Side effects (Audio message)

4. Conclusions

This paper provides the system for identifying the tablet strip, its usage, and side effects for the person who is uneducated or unaware of the tablets or having confusion in the doctor's prescription. This model is implemented by using the image processing technique. The input will be given in the form of image only.

5. References

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