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# DRUG DISCOVERY USING MACHINE LEARNING

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## ABSTRACT

Deep learning place an very important role in the identification. In this paper an Identification of drug for medicine preparing machines has been proposed. In general, medicine name contains large characters in the medicine box, the drug identification can be converted into the largest character identification in the image in this proposed system. Firstly, Support Vector Machine (SVM) is used with Connected Component to recognize the text region which intern finds largest region to identify the drug name. Later Fragment Link is used for text division purpose that is it helps to divide the drug name into two elements. Those elements are Fragment and Link which join the full word according to the rules. For identification Convolutional neural network software is used. After identification the final output is played in audio player.

**Keywords:** K-Means Clustering, Image Segmentation ,Hierarchical Segmentation.

## I. INTRODUCTION

Medication safety is a critical issue in daily patient care. In recent reports, the U.S. Institute of Medicine indicates that medication error is the most preventable medical error. Errors in the prescription or administration of a drug pill may lead to adverse drug events (ADE) – injuries caused by medication intervention related to a drug. The correct identification of drug pills has the potential to improve treatment from patient experience to poison control centers. The Food and Drug Administration (FDA), through its regulatory code 21CFR206, imposes a unique appearance for each prescription in terms of size, shape, color, and print. However, the U.S. intellectual-property law (called “trade dress”) has led to a single drug having different appearances. Therefore, identifying pills based on their visual appearance becomes a challenge that requires some degree of health literacy. Technology solutions available on the internet such as Drugs.com, Pillbox, and WebMD, provide manual mechanisms to identify pills. Nevertheless, they require the user (patient, pharmacist) to submit the necessary pill characteristics. While providing a great value instrument, using these tools requires considerable effort. Acknowledging the need for innovation in the automated pill identification problem, the National Library of Medicine (NLM) announced a contest entitled “Pill Image Recognition” (PIR) Challenge, in 2015. This challenge targets the development of software tools to help users accurately identify known prescription pills from supplied smartphone pictures. Afterward, the NLM made their image datasets available.

## II. METHODOLOGY

### a. PROPOSED SYSTEM

- Accurate detection
- Less time complexity

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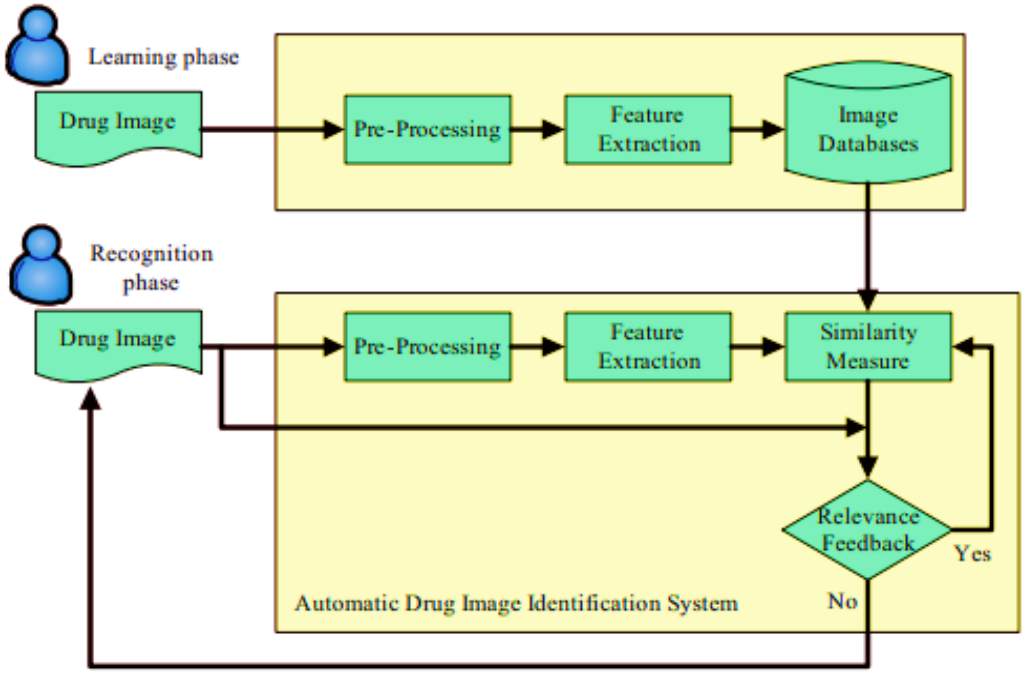
**b. BLOCK DIAGRAM**




- Pre-Processing

It is a commonplace name for exercises with pictures at the most negligible level of reflection. Its information and yield are power pictures. The purpose of pre-getting ready is an improvement of the image data that covers bothersome distortions or redesigns some image features critical for extra taking care of. overhaul in that the latter is proposed to underscore features of the image that make the image all the all the more fulfilling to the observer, anyway not so much to make viable data from an intelligent point of view.

- Feature Extraction

First the co-event grid is developed, in view of the direction and separation between picture pixels. At that point significant insights are removed from the lattice as the surface portrayal. Haralick proposed the accompanying surface highlight

- Neural Networks

The classification of the drug is done by the convolution neural network. The convolution neural network performs pre-processing, extraction of features and classification by learning of the trained parameters.

The four steps used in the development of the ANN model for specific are as follows:

1. Collection of input/output data set.
2. Preprocessing of input/output data set.
3. Neural network designing and training.
4. Testing of the network

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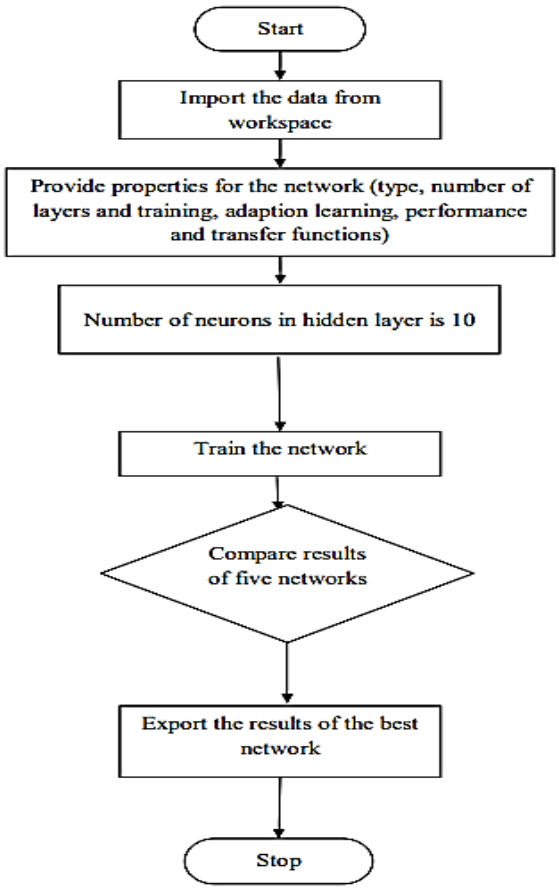
## III. FLOW DIAGRAM




## IV. RESULT ANALYSIS

Experiments were conducted with over two thousand pill images, and promising results were obtained. Multiple appearance features were extracted from a pill image that was taken with a camera, and the features were processed by the proposed system with the SimNet Neural Network for pattern classification. The proposed system showed the information for similar pills that were correctly matched at ranks 1 to 5 (i.e., the 5 pills that were ranked most similar to the image). We conducted experiments with the proposed approach on an image set containing a total of 2,015 pill images.

## V. CONCLUSION

In this work we present a system that may aid a human operator with the task of identifying pharmaceutical pills in a mobile scenario. The target platform of this system is a conventional smartphone, equipped with a camera and a reasonable amount of memory and computational resources. Following a short introduction and motivation of the work presented here, an overview of existing work is given while keeping the limitations of mobile devices as well as the expected operating conditions in mind. A domain analysis on such objects as well as possible means for identification is carried out to identify the most important aspects of such an identification framework, be it in object segmentation or feature extraction.

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