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MEDICINE NAME PREDICTION USING DEEP LEARNING

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ABSTRACT
Giving blind people with great accessibility to their environment is of great demand. People with visual impairments experience a lot of problem in using the modern assistive device that limits their daily basic activities. The level of assistance provided of these special aids does not meet the consumer requirements and not affordable by the every section of the society. To overcome the some of the limitations of the existing visual aids, in this paper we present the work that helps the visually impaired person with convolutional Neural Networks that provides audio signal to identify the medicine.
Keywords: Medicine names, Deep learning, Convolutional Neural Networks

1. INTRODUCTION

Worldwide around 285 million people are estimated to be visually impaired as reported by WHO. The development of the assistive technology is not affordable to the all the section of the society and cost effective devices are provided with single or the limited function. This inadequacy of the assistive aids has limited the accommodation of visually impaired in schools and other jobs making their life more dispirited. Wearable devices for helping blind people are found to be the most effective because they require minimum use of hands. Giving blind people with great accessibility to their environment is of great demand. People with visual impairments experience a lot of problem in using the modern assistive device that limits their daily basic activities. The level of assistance provided of these special aids does not meet the consumer requirements and not affordable by the every section of the society. To overcome the some of the limitations of the existing visual aids, in this paper we present the work that helps the visually impaired person with convolutional neural network to identify the medicine name that provides audio signal . Giving blind people with great accessibility to their environment is of great demand. People with visual impairments experience a lot of problem in using the modern assistive device that limits their daily basic activities. The objects present in an image are detected and identified using the Object recognition techniques Human eye visualize and observes many objects present in a image with very minimum effort, even when the images varies in size, scales due to translation and rotation. Even an object with a partial view can be recognized by using well- tuned algorithms. Developing an efficient technique to meet the ever growing problem is still challenge for the computer vision systems.

2. EXISTING SYSTEM

Barcode Algorithm: OpenCV (Open Source Computer Vision Library) is an open-source computer vision and machine learning software library. OpenCV was built to provide a common infrastructure for computer vision applications and to accelerate the use of machine perception in commercial products. Barcodes are an integrated part of the world today and are used in many different contexts ranging from the local supermarket to the use in advertising. Barcodes can be split into two different main categories, 1D and 2D barcodes. The best known 1D barcode types are probably the EAN an UPC type which is mainly used for labelling consumer products at the local supermarket. A very known and popular 2D barcode is the QR barcode. The QR barcode is for example used in marketing where it acts as a link between the printed and digital media, by redirecting people to additional information, competitions, social media sites, etc. To decode barcodes, several solutions exist ranging from laser scanners to camera based devices. Traditional solutions such as the laser scanner 13 do not provide the opportunity of decoding 2D barcodes, to do that camera based scanners are needed. A popular camera based

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scanner is the smartphone which allows the user to scan virtually any type of barcode. The smartphone does, however, requires a certain amount of guidance from the user, and are usually only capable of decoding one barcode at the time. To optimise this process, it could be desirable to locate barcodes in an image and thereby be able to decode multiple barcodes at the time and require less guidance from a user.

Disadvantages of existing system

- It can't identify every product.
- Hard to code the system.

3. PROPOSED SYSTEM

- In neural networks, Convolutional neural network (ConvNets or CNNs) is one of the main categories to do images recognition, images classifications. Objects detections, recognition faces etc., are some of the areas where CNNs are widely used.
- CNN image classifications takes an input image, process it and classify it under certain categories .Computers sees an input image as array of pixels and it depends on the image resolution. Based on the image resolution, it will see h x w x d(h = Height, w = Width, d = Dimension). An image of 6 x 6 x 3 array of matrix of RGB (3 refers to RGB values) and an image of 4 x 4 x 1 array of matrix of gray scale image.

Algorithm:

- Step-1: starts with an input image.
- Step-2: applies many different filters to it to create a feature map.
- Step-3: applies a ReLU function to increase non-linearity.
- Step-4: applies a pooling layer to each feature map. Step-5: flattens the pooled images into one long vector. Step-6: inputs the vector into a fully connected artificial neural network.
- Step-7: processes the features through the network. The final fully connected layer provides the "voting" of the classes that we're after.
- Step-8: trains through forward propagation and backpropagation for many, many epochs.This repeats until we have a well-defined neural network with trained weights and feature detectors.

4. SYSTEM ARCHITECTURE

The diagrammatic representation of our proposed system as follows:

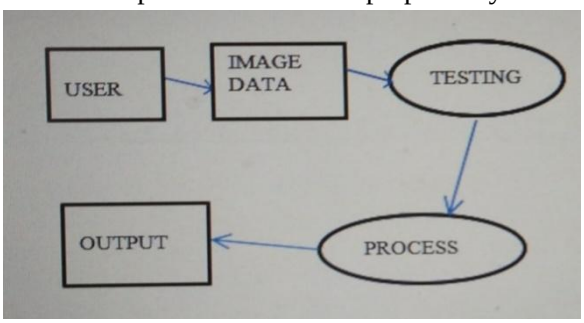

Figure4.1: Proposed System

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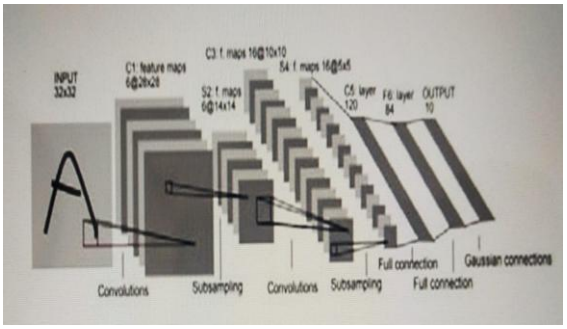

Figure 4.2:Architecture

5. MODULES

Our proposed system is categorized into three modules.

- Module – I: Gathering and Analysing Image Data Set: • The 500 images data set has been collected from various sources on paracetamol and cetirizine hence analysed
- Module – II : Cnn Algorithm: • Convolution neural network is used to trained and tested to produced high defined accuracy in medicine prediction.
- Module – III : Medicine Prediction • After testing, the next step is predicting the medicine through audio signals

6. OUTPUT SCREENS

```
from PIL import Image
import pandas as pd
import numpy as np
import os
import tensorflow as tf
import keras
import warnings
warnings.filterwarnings("ignore")
```

```
import keras
```

```
def cnn_model(path_loc):
    import tensorflow as tf
    import keras
    from keras.models import Sequential
    from keras.layers import Convolution2D
    from keras.layers import MaxPool2D
    from keras.layers import Flatten
    from keras.layers import Dense

    # Initializing CNN

    classifier = Sequential()
```

OUTPUT

```
Found 261 images belonging to 2 classes.
Found 261 images belonging to 2 classes.
Epoch 1/15
12/12 [==============================] - 6s 476ms/step - loss: 0.7128 - accuracy: 0.5390 - val_loss: 0.7225 - val_accuracy: 0.5
250
Epoch 2/15
12/12 [==============================] - 3s 254ms/step - loss: 0.7038 - accuracy: 0.4792 - val_loss: 0.6945 - val_accuracy: 0.4
667
Epoch 3/15
12/12 [==============================] - 2s 178ms/step - loss: 0.6911 - accuracy: 0.5106 - val_loss: 0.6897 - val_accuracy: 0.5
083
Epoch 4/15
12/12 [==============================] - 2s 167ms/step - loss: 0.6958 - accuracy: 0.5390 - val_loss: 0.6820 - val_accuracy: 0.5
917
Epoch 5/15
12/12 [==============================] - 2s 181ms/step - loss: 0.6888 - accuracy: 0.6028 - val_loss: 0.6827 - val_accuracy: 0.6
500
Epoch 6/15
12/12 [==============================] - 2s 193ms/step - loss: 0.6835 - accuracy: 0.5957 - val_loss: 0.6738 - val_accuracy: 0.5
750
Epoch 7/15
12/12 [==============================] - 2s 189ms/step - loss: 0.6760 - accuracy: 0.5674 - val_loss: 0.6824 - val_accuracy: 0.5
333
Epoch 8/15
12/12 [==============================] - 2s 175ms/step - loss: 0.6664 - accuracy: 0.5816 - val_loss: 0.6534 - val_accuracy: 0.6
750
Epoch 9/15
12/12 [==============================] - 2s 181ms/step - loss: 0.6484 - accuracy: 0.6250 - val_loss: 0.6722 - val_accuracy: 0.5
```

```
test = training_set.class_indices
```

```
result = classifier.predict_classes(test_image)
result
result = result[0]
result
```

```
WARNING:tensorflow:From <ipython-input-14-eac782b4a532>:1: Sequential.predict_classes (from tensorflow.python.keras.engine.sequ
ential) is deprecated and will be removed after 2021-01-01.
Instructions for updating:
Please use instead:* `np.argmax(model.predict(x), axis=-1)`,   if your model does multi-class classification   (e.g. if it uses
a `softmax` last-layer activation).* `(model.predict(x) > 0.5).astype("int32")`,   if your model does binary classification
(e.g. if it uses a `sigmoid` last-layer activation).

0
```

```
for key, value in test.items():
        if value == result:
            print("The Predected image is", key)
```

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```
import numpy as np
from keras.preprocessing import image
```

```
%matplotlib inline
test_image = image.load_img('F:/NIT/2020-New_projects/Medical_medicins/Cetirizine images/2Q__.jpg', target_size = (128, 128))
test_image.show()
```

```
test_image = image.img_to_array(test_image)
test_image
np.shape(test_image)
```

```
(128, 128, 3)
```

```
test_image = np.expand_dims(test_image, axis = 0)
test_image
np.shape(test_image)
```

```
(1, 128, 128, 3)
```

```
test = training_set.class_indices
```

7. CONCLUSION

Recognition of visual objects and the reading the text from an image is an important, yet challenging vision task. However, it is still an open problem due to the complexity and limitation of computational resources. Using the concept of deep learning, CNN architecture for recognizing the medicine name was studied and analyzed with dataset containing 236 images. The presented algorithm can predict medicine name through audio signal. The image of the medicine and the name is identified and given as audio output to the visually impaired.

8. SUGGESTED FUTURE WORK

Build the user interface for more interactive user experience. Deployment of the model gives the access to the remotely. Build the more accurate model and using state of art algorithms.

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