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Implementation of Malnutrition in Children's Using Machine Learning

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ABSTRACT

In this project we are elaborating concept of disease detection of human body using nail image of human fingers and analyzing data from the image of basic of nail color. In this project the procedure of disease detection is as follows: The input to the system is a person nail image. The system will process an image of nail and extract feature of nail which is used for disease diagnosis. Here, first training data is prepared using Machine Learning from nail image of patient of specific disease. A feature extracted from input nail image is compared with training data set. In this project we found that color feature of nail image are correctly matched with training set data.

Keywords: Machine Learning, Malnutrition, Disease Detection.

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I. INTRODUCTION

Malnutrition is a complex topic that draws the attention of the world and many researchers. Nutrition is vital for the health at all ages. The Health and nutritional status of children is one of the benchmarks that can indicates the nutritional condition of the wider community, because the pattern of parenting in many communities more priority to toddler. Malnutrition does not occur suddenly, but begins with insufficient weight gain. Changes in toddler weight within a certain time are an early indication of child nutritional circumstances.

In the six-month period, infants who did not gain weight 2 times, were at risk of malnutrition 12.6 times than those with regular weight gain. Based on this, the weight change information can be the parameter to mapping the potential malnutrition problems. Thus, information of area with potential malnutrition is needed as input for government and public policy makers to prevent malnutrition and make a nutritional intervention.

The desired paper is organized as follows. The problem statement and existing system in Section 2; System motivation is presented in Section 3; literature survey in Section 4; Proposed model in Section 5; and concludes the paper.

II. PROBLEM STATEMENT

Malnutrition is one of the largest public health problems in developing countries. India contributes 1/3rd of total malnourished children in the world, with prevalence as high as 29.4%.

The purpose of this study was to assess the association of malnutrition with scholastic performance among 8–12 year children data to analysis the health records. This cross sectional study was done among 8–12 year children, with sample children photos with text input data, taking the prevalence as 50%, precision as 10%.

III. MOTIVATION AND OBJECTIVE

Motivation:

Thus our main motivation is to find the solution over an it. Where, our system will show the dashboard representation where we can see all the variation in increasing and decreasing order.

Detection of malnourished people is main task of our system.

The proposed scheme should be efficient and the system will be scalable. Through this research it is highlighted that e-government initiative has been expanded to some extent, there are lack of health related projects.

Objectives:
The main objective of this system to detect malnutrition's without doctor as an early stage and treatment is taken.

To minimize the malnutrition's children ratio before different health issues.

To reduce the manual process and automation implemented with accurate result

IV. PROPOSED SYSTEM

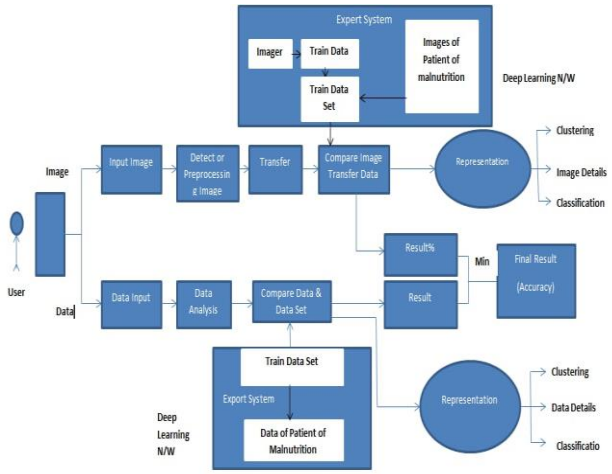

Fig 1. Block diagram

A. Description

The main application of this system is to government to minimize malnutrition percentage.

Patient module:
Upload malnutrition image in this module by patient to check the diseases. Here patient will get the Patient health is critical or not menace disease without any doctor suggestion.

Admin module:
Here admin train the image dataset based on medical related backend for analysis and comparison of upcoming patient images.

Processing module:
Once get the image from patient then proposed algorithm apply the detection process on that image to find out the malnutrition patient or not.

B. Mathematical Model:

Input Set:
The malnutrition child images and text input. Text input is also through user. So the set of inputs will be,
I1 = {predefined command, fixed pattern sentential command, random sentences as command}
I2 = {text, image, remote text} Thus,
I = I1 U I2
Input I = {all sentences in English via text, all photos in image format, remote text input}

Output Set:
The output for the specified inputs above will be response determined by the system according to the input given and the database containing all the necessary inputs and their respective outputs.
O1 = {malnutrition accuracy, display, text}
O2 = {GUI, application response}
Thus, O = O1 U O2
Output O = {Response for corresponding text input and image input, Response for corresponding input via GUI, application response}

C. Algorithm:

CNN ALGORITHM:
Step 1: Convolution Operation
Here are the three elements that enter into the convolution operation:

1. Input image
2. Feature detector
3. Feature map

Step 1(b): ReLU Layer
The reason we want to do that is that images are naturally non-linear.
When you look at any image, you'll find it contains a lot of non-linear features (e.g. the transition between pixels, the borders, the colors, etc.). The rectifier serves to break up the linearity even further in order to make up for the linearity that we might impose an image when we put it through the convolution operation.

Step 2: Pooling
Again, max pooling is concerned with teaching your convolutional neural network to recognize that despite all of these differences that we mentioned, they are all images are same. In order to do that, the network needs to acquire a property that is known as "spatial variance." This property makes the network capable of detecting the object in the image without being confused by the differences in the image's textures, the distances from where they are shot, their angles, or otherwise.

Step 3: Flattening
This will be a brief breakdown of the flattening process and how data move from pooled to flattened layers when working with Convolutional Neural Networks.

Step 4: Pooling
What happens after the flattening step is that you end up with a long vector of input data that you then pass through the artificial neural network to have it processed further which is called pooling.
Types of pooling: Mean, Max, Sum

Step 5: Full Connection
In this part, everything that we trained throughout the section will be merged together. By learning this, you'll get to envision a fuller picture of how Convolutional Neural Networks operate and how the "neurons" that are finally produced learn the classification of images.

Step 6:Summary
In the end, it will wrap everything up and give a quick recap of the concept covered in the training.

Step 7: SoftMax& Cross-Entropy
Optimization Functions for CNN model. To calculate final accuracy and losses.

CNN IN Our Project:

1. Classify dataset under labeled folders such as healthy and unhealthy nails and skin images.
2. Read dataset
3. Read features of all images and label (here name of dataset folder) of it
4. Store it in model file
5. Get input image
6. Read features of input image
7. Compare features of stored features
8. Show label as prediction of nearly matched features.

V. RESULT

Fig 2. Home Page

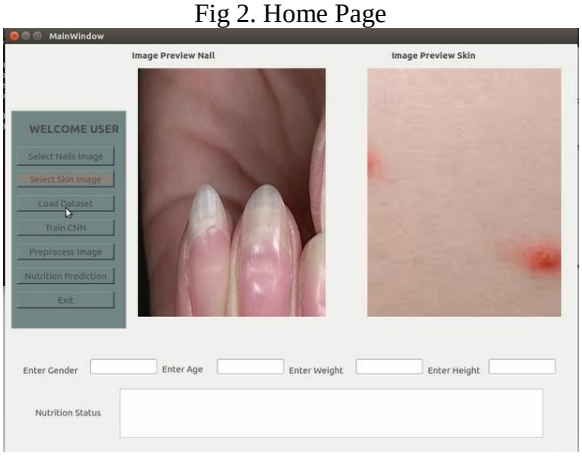

Fig 3. Upload Image

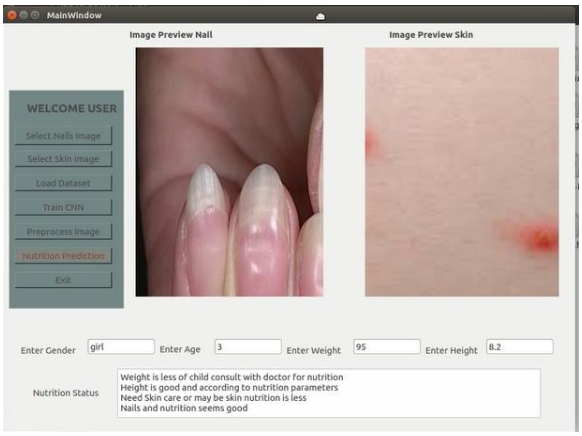

Fig 4. Result

VI. CONCLUSION

In presented system, system analyzes the human nail and gives probable disease for person including healthy case. Here, for disease prediction nail color (average RGB) value used as a nail feature. This model gives more accurate results than human eye like subjectivity and resolution power. This may give more accurate result for identifying human health condition using machine learning algorithm.

VII. ACKNOWLEDGEMENT

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VIII. REFERENCES

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