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Implementation of Malnutrition Detection using Machine Leaning based on Convocation Neural Network

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ABSTRACT

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. It is implemented as desktop application based on PyQt in python programing in which user submits the heterogeneous data like image of skin and nails images. It retrieves hidden data from stored database and deep learning model and compares the user values with trained data set. Once input get then system will take action to detect the malnutrition result based on neural network model file.

Keywords: Machine Learning, Malnutrition, Disease Detection, PyQt, Deep Learning.

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I. INTRODUCTION

In most cases, people's homes, preventing starvation is achievable with ready-to-to-use therapeutic diets. Extreme undernutrition should be treated in a hospital facility, if possible. Treatment usually includes maintaining low blood sugar and the body's moisture, treating dehydration, and closely monitoring caloric intake. Antibiotics should be given as a course treatment due to the increased risk of infection. Time-worn steps include: doing more about farming activities, alleviating hunger, and reducing the spread of disease.

The medical term for malnourishment is both deficits and excesses of calories, or imbalances of basic nutrients, respectively. both diet-related morbidity-related disorders, twice the burden of malnutrition The four manifestations of malnutrition include wasted weight, retarded development, size gains, and low weight for height, under nutrition, and micronutrient deficiency. “For many, the term “ malnutrition” seems to conjure up a picture of a thin third-world kid with a distended stomach and muscular arms” This picture alone, however, does not provide a realistic impression of starvation. Additionally, someone who is 150 pounds overweight is not only at risk of health problems but is also at risk of undernourishment.

National Nutrition Mission

1. The government had introduced a new National Nutrition Scheme in March of the year 2018.
2. 3% under per annum.
3. It also wants to total the percentage of stunted children in the population by 2% by the year 2022, thereby lowering the number to 25%.
4. It attempts to draw up different schemes dealing with malnutrition and put in place a convergence process, and a real-time surveillance framework, besides offering incentives to states and territories for their participation.
5. A national nutrition strategy is supported by the NIT Aay group with the goal of eliminating all malnutrition by the year 2022.

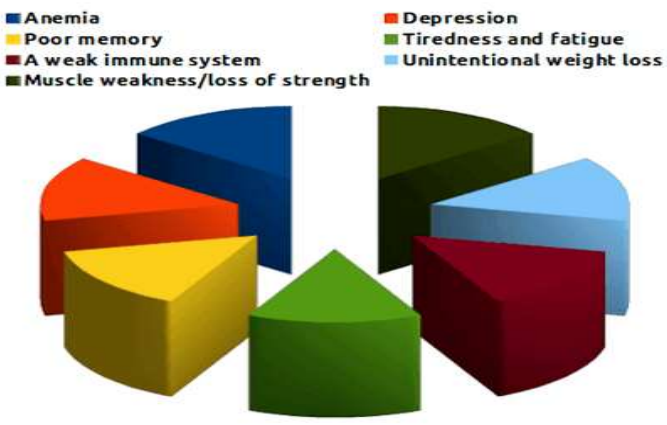

Fig 1. Malnutrition In Senior

II. PROPOSED METHODOLOGY

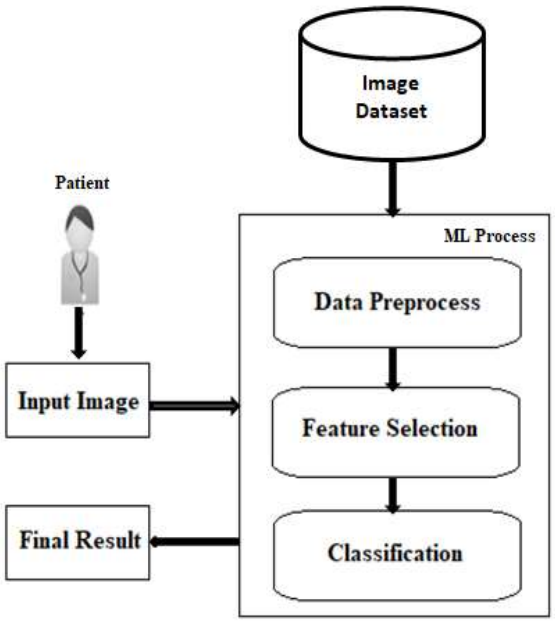

Fig 2. System architecture

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.

CNN Training 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. *Algorithm*

The four important layers in CNN are:

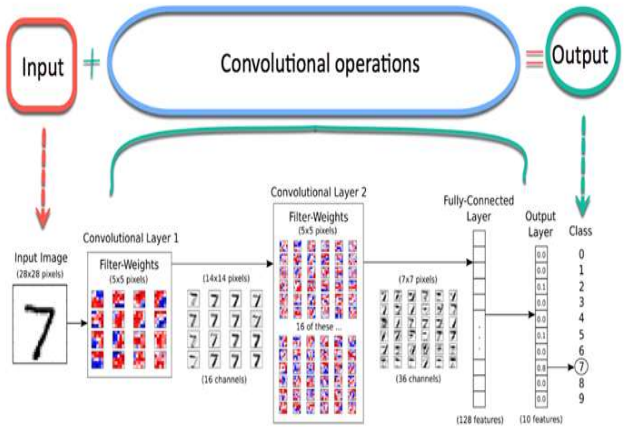

Fig 3: Architecture of CNN

1. Convolution Layer

The first move in removing valuable material from a photograph is to take a look at it. Several filters in a convolution layer conduct the convolution process. Every image is interpreted as a matrix of pixel values.

2. ReLU layer

The abbreviation ReLU stands for rectified linear unit. After removing the feature charts, they must be shifted to a ReLU sheet. ReLU goes through each factor one by one, converting all negative pixels to zero. The network becomes nonlinear as a consequence, and the result is a rectified function map.

3. Pooling Layer

Pooling is a downsampling technique that reduces the dimensionality of a feature map. The rectified feature map is now moved into a pooling layer to build a pooled feature map. The pooling layer uses a series of filters to recognise points, corners, the body, feathers, pupils, and the beak, among other things.

4. Fully Connected Layer

To classify the image, the flattened matrix is fed as an input to the fully connected layer. The flattened feature map is then moved into a neural network after flattening. The input layer, completely linked layer, and output layer make up this level. In ANNs, the fully related layer is identical to the secret layer, but it is completely associated. The predicted groups are stored in the output layer.

C. *Result and Discussion*

The improved findings obtained in detecting and avoiding dermatological diseases utilising Deep Learning Neural Networks (CNN) and Residual Neural Networks (ResNet) strategies give greater precision than other neural networks.

The accuracy rate is tabulated below:

CLASSIFIERS	TEST ACCURACY
CNN	91%
ResNet	77%

Table 1: Experimental results

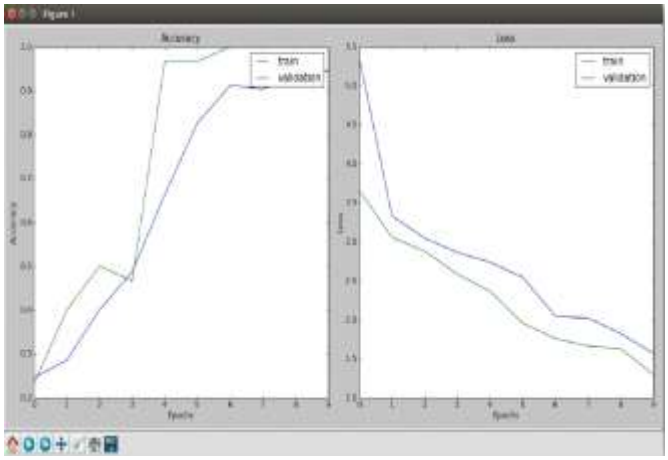

Fig 5. Result of Accuracy & Loss Graph

III. CONCLUSION

The machine analyses a person's nail and decides whether or not they have an illness, even though they are well, according to the proposed scheme. The average RGB value of the nail is used as a nail function for disease prediction. This model is more realistic than the human eye in terms of subjectivity and resolving power. When utilising a machine learning method to identify human health problems, this will produce a more accurate outcome.

To predict disease, this project will use an abstract colour feature of a human nail picture. The framework is based on human nail colour analysis and relies on image recognition. The fitness of an individual may be determined by looking at their nails. A camera in this system is used to get an image of a human nail.

IV. FUTURE SCOPE

- Any patient may use this approach to analyse the Illness and identify particular disease patients since the proposed system's scope is well-known in the medical community.
- To enlist the government's assistance in doing patient-centred health studies.
- To correctly forecast a patient's disease using the diagnostic camp.
- This system's functionality will expand as more implementations are used, and it will be expanded with new algorithms and input parameter types from other enhance systems in the future.

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