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E-Rationing by Face Detection Using Image Processing

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ABSTRACT : Ration card plays a vital role for the household details such as to get gas connection, family member details; it acts as address proof etc. In this rag, we have wished-for a smart measure card system using Face Recognition Technique and IOT to thwart the derelictions and corruption in the current ration distribution system. In this system conventional quota card will be replaced by a Face Recognition system. This Faces will be verified with family members for authentication of the user. If user is found to be authentic then monthly quota of the ration available for the user is displayed. After successful transaction the database will be updated stating the ration content delivered to the user. This system will require very less human efforts for operation and is also very secure. By implementing this system government can keep track of all the delivered ration content very easily.

KEYWORDS: Face Detection, Face Recognition, Capture Face.

I. INTRODUCTION

The public distribution stores or ration stores use ration cards which are in the form of a book are used for general identification of the customer and holds the user's personal information and purchase history. On successful purchase, the details of purchase are entered in the card and in the purchase register at the employee's side. This is the system which is exists at the ration stores now. This system has a lot of drawbacks. The ration card should be renewed every year by pasting additional leaves in the same card. There is a possibility of the ration card being torn. In some ration stores, dealers involve in malpractices like diverting food grains to open market to make profits. As a result there is a possibility of consumers sent back with a no stock sign even though there are food grains in stock. Having said the limitations imposed by the conventional ration system, we propose a solution in the form of a ration card system based on Face Recognition technology. The user will be authenticated and the user details are retrieved from the user database from the web server and are updated in the window application which is open in a computer system at the employee side. When the user asks for a particular quantity and type of food grain, the details are entered in the application by the employee and are updated in the web server. Additionally the users can check their purchase history and their details in the dedicated website by entering their registered username and password.

II. EXISTING SYSTEM

In current ration distribution system of India there are many limitations and malpractice at various levels, which needs to be improved. Furthermost of the helping shopkeepers keep fake allotment greetings card with them. Due en route for fake ration cards, the dealer receives the extra helping from higher govt. authority and he jumble sale it into the open fair at higher amount to earn some extra takings. Even and yet the system will shrink the security issues and malpractices present popular the current PDS the final cost of the ordering is high. To enter the database and proof of user involves internet connectivity which can be a unruly in secluded places.

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A. DISADVANTAGES OF EXISTING SYSTEM

1. Due to fake ration cards, the dealer receives the extra ration from higher govt. authority and he sales it into the open market at higher price to earn some extra profit.
2. The quantity of ration that is being allocated might differ significantly from the actual allocated ration quota.

III. PROPOSED SYSTEM

The Smart ration card system uses Face Recognition. This system successfully eliminates the errors due to manual monitoring of ration data as all the data is automatically updated in the cloud based database. Also this system will enable the government to keep track of the consumers and their transactions. Although the system will reduce the security issues and malpractices present in the current PDS the starting cost of the system is high. To access the database and authentication of user requires internet connectivity which can be a problem in remote locations.

A. ADVANTAGES OF PROPOSED SYSTEM

1. An efficient method for the consumer to buy the products in the ration shop.
2. After the purchase is validated by the employee the consumer gets a text message mentioning the purchase details.
3. The government database is updated immediately after every transaction made by the consumer.

IV. SYSTEM ARCHITECTURE

System architecture consist of train dataset with consumer faces. Consumer face is captured for testing. Captured consumer face is compared with the face stored in the dataset. If captured face match with the face stored in the dataset then system calculates the quantity of grains. After that it is distributed to consumer. This system will require very less human efforts for operation and is also very secure. By implementing this system government can keep track of all the delivered ration content very easily.

In this system conventional quota card will be replaced by a Face Recognition system. This Faces will be verified with family members for authentication of the user. If user is found to be authentic then monthly quota of the ration available for the user is displayed. After successful transaction the database will be updated stating the ration content delivered to the user.

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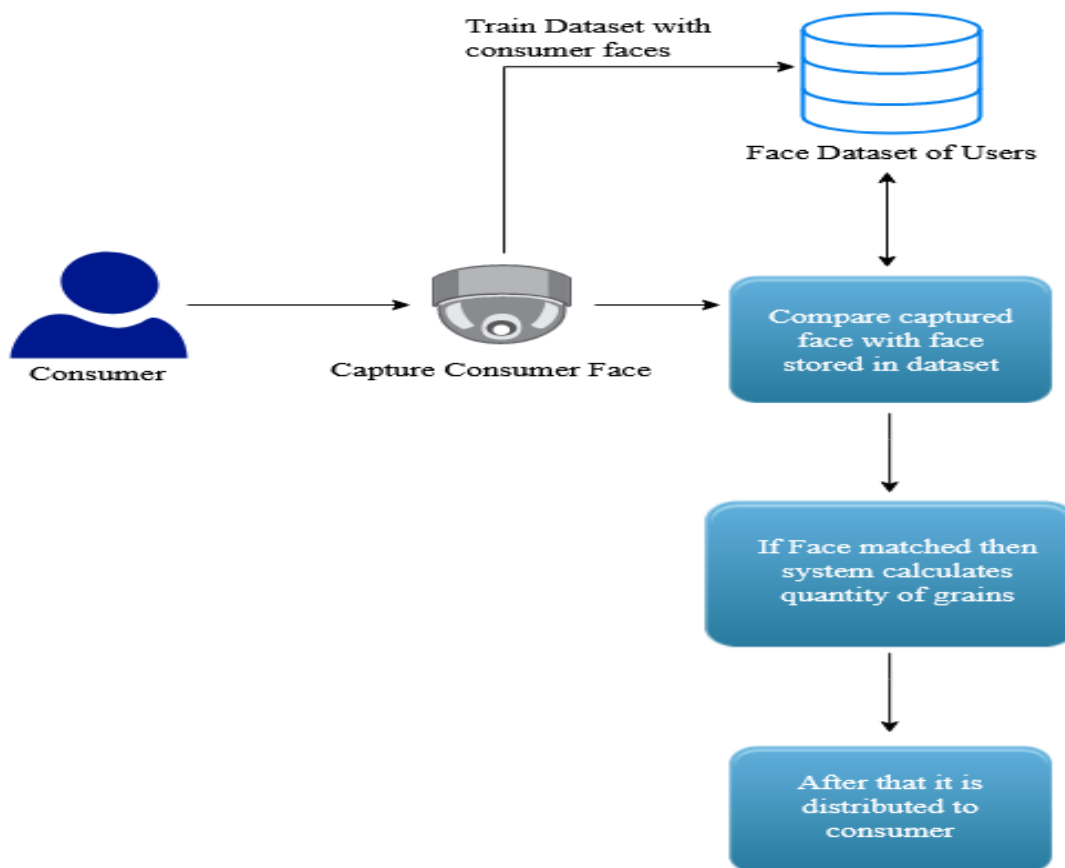


Fig-1: Working of the system

V. ALGORITHM

A. HAARCASCADE CLASSIFIER:-

A Haar Cascade is basically a classifier which is used to detect the object for which it has been trained for, from the source. The Haar Cascade is trained by superimposing the positive image over a set of negative images. The training is generally done on a server and on various stages. Better results are obtained by using high quality images and increasing the amount of stages for which the classifier is trained.

B. CNN:-

This algorithm works in layer by layer. Tensorflow machine learning framework use for training test and train. Numpy library used. We use Epoch formula to increase accuracy of our system. Convolutional Neural Networks have a different architecture than regular Neural Networks. Regular Neural Networks transform an input by putting it through a series of hidden layers. Every layer is made up of a set of neurons, where each layer is fully connected to all neurons in the layer before. Finally, there is a last fully-connected layer the output layer that represent the predictions.

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Convolutional Neural Networks are a bit different. First of all, the layers are organised in 3 dimensions: width, height and depth.

1. CNN PREPROCESSING

- a. Noise Remove
- b. Edge Detection
- c. Thresholding
- d. Binary to Gray Conversion

2. CNN LAYER

a. Convolutional

The complication procedure brings a solution to this problem as it reduces the digit of free parameters, allowing the network in the direction of be deeper with fewer parameters

b. Pooling

Convolutional networks may include foreign or global pooling covers to streamline the underlying multiplication. Sharing layers reduce the dimensions of the data by mingling the harvests of neuron clusters at one and only deposit into a single neuron in the next layer. Local pooling combines small clusters, normally 2 x 2. Comprehensive pooling acts proceeding all the neurons of the convolutional layer. Trendy addition, pooling may reproduce a max or an middling. Sail through integrating uses the thoroughgoing value beginning each of a cluster of neurons at the prior sheet. Average amalgamating uses the middling value from each of a gathering of neurons at the prior layer.

c. Fully connected

Abundantly connected withdrawals connect every single neuron in one layer en route for every neuron in a new layer. It is fashionable assessment the same as the traditional multi-layer perceptron neural complex (MLP). The compacted matrix goes through a effusively connected withdrawal to classify the images.

d. Receptive field

Up-to-the-minute neural complexes, every single neuron bring together input from some encryption of localities in the previous deposit. In a abundantly discrete layer, each one neuron convey together input foundation *every single* detachment of the previous layer. Contemporary a convolutional layer, neurons collect input on or after individual a controlled subarea of the aforementioned layer. Typically the subarea is of a square shape (e.g., size 5 by 5). The participation area of a neuron be present called its concerned field. WeightsEach one neuron in a neural linkage divides an output assessment by spread over a unambiguous function to the input values coming beginning the approachable field in the previous layer. The function that is applied to the input values is firm by a vector of weights and a preference (typically real numbers).

VI. LITERATURE SURVEY

In paper [1], E-ration PDS using SMART CARD and GSM technology is an innovative approach in public distribution system (PDS) which is very useful for efficient, accurate, and automated distribution of ration distribution system. Presently ration distribution system has drawbacks like inaccurate quantity of goods, large waiting time, low processing speed and material theft in ration shop. Main objective of the designed system is to replace manual work with the atomization of ration shop to have a transparency in PDS. Proposed E- ration shop for public distribution system replaces conventional ration card by smart cards which consist of all the details about the card holder like family details, type of card and its validity etc.

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In paper [2], Ration card plays a vital role for the household details such as to get gas connection, family member details; it acts as address proof etc. In this paper, we have proposed a smart ration card system using Radio Frequency Identification (RFID) Technique and IOT to prevent the malpractices and corruption in the current ration distribution system. In this system conventional ration card will be replaced by a unique RFID tag. This RFID tag will be verified at the fair price shop for the authentication of the user. The user's identity will be verified by microcontroller which is connected to an Amazon Web Services (AWS) database. For added security One Time Password (OTP) is also sent to user's registered mobile number which needs to be entered in the system

In paper [3], System is to reduce forgery from ration shops and users will get their grocery in easy way. Also to reduce manual work. In this system we will develop the smart ration card system based on the RFID and the BIOMETRICS, in which the user can fill their data online. And also the manual working is not there. When user wants a ration, he/she comes with the Smart ration card, then the card is swiped and checked whether the user is valid or not. The fingerprints of that user also checked and the allocated ration is distributed to that particular user, changes of adding and issuing of ration is done automatically in the government database.

VII. CONCLUSION

The Smart ration card system uses Face Recognition. This system successfully eliminates the errors due to manual monitoring of ration data as all the data is automatically updated in the cloud based database. Also this system will enable the government to keep track of the consumers and their transactions. Although the system will reduce the security issues and malpractices present in the current PDS the starting cost of the system is high. To access the database and authentication of user requires internet connectivity which can be a problem in remote locations.

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