

Fruit Detection and Price Prediction

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Abstract- The ability to identify the fruits based on the price in food industry is very important nowadays where every person has become health conscious. There are different types of fruits available in the market. However, to identify best quality fruits is cumbersome task. Therefore, we come up with the system where fruit is detected under natural lighting conditions. The method used is texture detection method, color detection method and shape detection. For this methodology, we use image segmentation to detect particular fruit. Fruit Detection project is implemented in python image processing toolbox. The project is implemented for both Real time and Non-Real time. The proposed method has four stages: First is Pre-Processing and second is Feature Extraction and third is Segmentation and fourth Recognition. In case of Non- Real time, the first stage is used to browse the image, second stage is extraction of the features from images using Grey Level Co-occurrence Matrix (GLCM), RGB and Color Histogram. System will convert the image from RGB to grayscale image for further processing. The color histogram represents the distribution of colors in an image. Since image is captured under different illumination condition. In the third stage, the three extracted image is obtained in the form of red, green and blue. In the fourth stage, the extracted features are used as input to Support Vector Machine (SVM) classifier. Then name of the fruit is output is obtained.

Keywords—smart agriculture, agriculture technology, mobile application, crop management.

I. INTRODUCTION

In India, price statistics that are used as a proxy for inflation is the Consumer Price Index (CPI). The web scraped data has the possibility to become new source of compiling the CPI. The benefits using the web scraped data is can get the price information on a daily basis as compared to traditional data collection which takes on weekly or monthly basis.

Price movement of the web scraped data can be monitored in real time and can benefits to policy makers. Forecasting price using the web scraped data helps the official statistics office to predict future

value and can be used to control the situation of supply and demand side. Forecasting using web scraped data allow the policy makers to make the quick and right decision at the right time. Numerous studies have been conducted by the other National Statistics Office regarding the web scraped data, however studies on forecasting using web scraped is deficient.

Thus, this study aims to utilize the web scraped data in forecasting ten selected fish and vegetables in India using Auto Regressive Integrated Moving Average (ARIMA) approach. The main objective of this study is to explore and evaluate the dependability of the alternative online data prices to forecast using ARIMA approach. The outcome of this research will benefits to the Department of Statistics, India (DOSI).

Recognizing different kinds of vegetables and fruits is a difficult task in supermarkets, since the cashier must point out the categories of a particular fruit to determine its price. The use of barcodes has mostly ended this problem for packaged products but given that most consumers want to pick their products, they cannot be pre-packaged, and thus must be weighed.

A solution is issuing codes for every fruit, but the memorization is problematic leading to pricing errors. Another solution is to issue the cashier an inventory with pictures and codes, however, flipping over the booklet is time consuming. Automatic classification of fruits via computer vision is still a complicated task due to the various properties of many types of fruits.

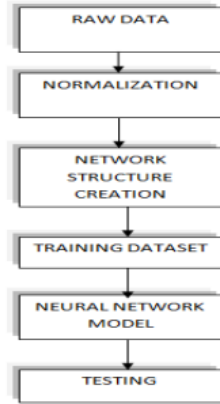
II. SYSTEM DESIGN

A. Architectural diagram

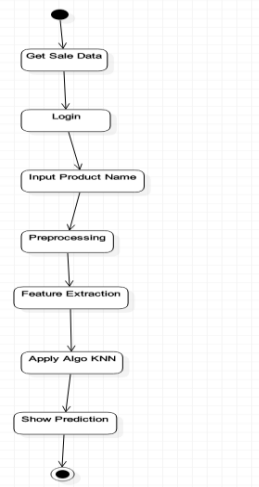
In the proposed work, mango price prediction using time series data is carried out by using genetic based neural network.

The proposed work consists of four steps

- Normalization
- Network structure creation
- Training
- Testing



Activity Diagram



B. Usage scenario

Predicting the mango price is essential in agriculture sector for effective decision making. This forecasting task is quite difficult. Neural network is self-adapted and has excellent learning capability and used to solve variety of tasks that are intricate.

1. User profiles

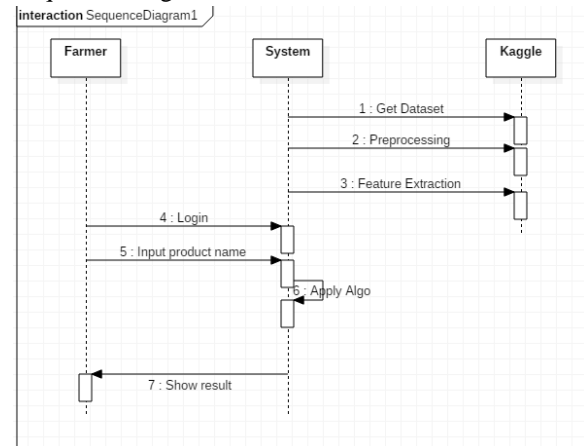
Farmer and System

2. Use cases

All use-cases for the software are presented. Description of all main Use cases using use case template is to be provided.

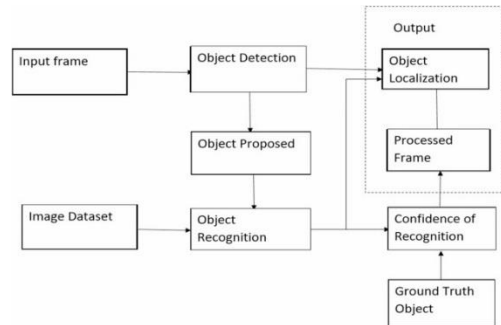
Sr No.	Use Case	Description	Actors	Assumptions
1	Login	User Login	Farmer	Account is created

Sequence Diagram

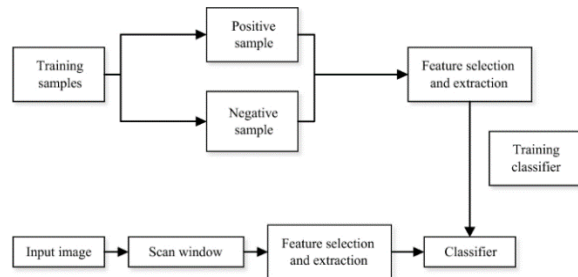


C. Figures

DFD-1



DFD-2



III. MODULE IDENTIFICATION

In existing, we need to maintain the Excel sheets, CSV etc. files for the user daily and monthly expenses. In existing, there is no as such complete solution to keep a track of its daily expenditure easily. To do so a persona to keep a log in a diary or in a computer, also all the calculations need to be done by the user which may sometimes results in errors leading to losses To reduce manual calculations, we propose an application. This application allows users to maintain a digital automated diary. Each user will be required to register on the system at registration time, the user will be provided id, which will be used to maintain the record of each unique user. Expense Tracker application which will keep a track of Income-Expense of a user on a day-to-day basis. The best organizations have a way of tracking and handling these reimbursements. This ideal practice guarantees that the expenses tracked are accurately and in a timely

manner. From a company perspective, timely settlements of these expenses when tracked well will certainly boost employees' morale. Additional feature of Expense and income prediction helps to better budget management.

IV. ALGORITHM

YOLO algorithm:

Introduction: In this tutorial, we'll probably present one of the most popular algorithms for object detection with the name YOLO. YOLO is an acronym for "You Only Look Once" and it has that name because this is a real-time object detection algorithm that processes images very fast. Here, we'll explain how it works and some applications of this algorithm.

You Only Look Once (YOLO) is one of the most popular model architectures and object detection algorithms. It uses one of the best neural network architectures to produce high accuracy and overall processing speed, which is the main reason for its popularity. If we search Google for object detection algorithms, the first result will be related to the YOLO model.

YOLO algorithm aims to predict a class of an object and the bounding box that defines the object location on the input image. It recognizes each bounding box using four numbers:

- Center of the bounding box (b_x, b_y)
- Width of the box (b_w)
- Height of the box (b_h)

Applications

YOLO has a wide range of real-world applications because it solves one of the most common computer vision problems, object detection. Some of them are:

- Autonomous driving – YOLO can be used in autonomous vehicles for detecting objects such as cars, people, traffic signs, and similar
- Security – for example, detecting people in restricted areas
- Manufactory – detecting anomalies in production
- Sport – tracking players and many others

V. EXISTING SYSTEM

The trouble of getting the initial background there is the mistake of continuous background update and the trouble of controlling the update speed in moving vehicle location of traffic video. And with the expanding number of streets and traffic everywhere on

the world, traffic observing and control utilizing current advancements has become a convincing necessity. The Vehicle detection is the key task in this area and counting of a vehicle plays a important role and this two are important applications.

VI. PROPOSED SYSTEM

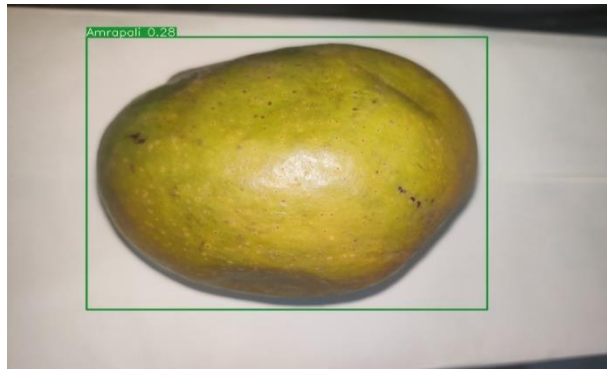
Three models CNN, VGG16, and ResNet50 were developed from scratch. The implementation section follows a pattern of model theory, implemented model, base model results, and model with data augmentation results. To perform a comparative study and considering the computational limitations of the system, a batch size of 16 was kept constant for all models. Also, optimum results were obtained over 5 number of epochs. The validation split was 0.3 throughout the implementation.

VII. SYSTEM TESTING

- Decision table testing
- All-pairs testing
- Equivalence partitioning
- Boundary value analysis
- Cause Effect graph
- Error guessing
- State transition testing
- Use case testing
- User story testing
- Domain analysis
- Syntax testing
- Combining technique

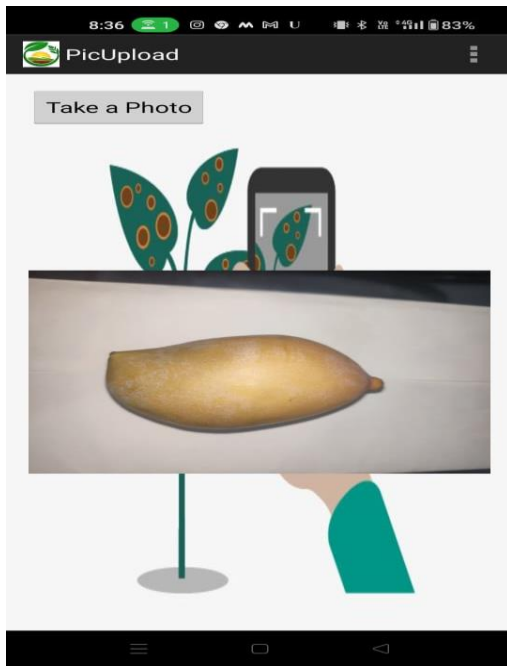
Test ID	Unit to test	Test Data	Test Case	Step to be Executed	Result Expected	Actual Result	Status
1	Login as admin	Password information	Password is empty or incorrect	Click login /Press Enter	Error Message Displayed "Please Enter password"	Error Message Displayed	Pass
2	Login as admin	Password Information	Password is correct	Enter data and Click login	Successfully login	Login successful	Pass
3	Change the password	New password	Old and New password is correct	Perform changing password procedure	Successfully password is changed	Change password	Pass
4	Database file upload	Database file	Database updated successfully	Selected database to be uploaded	Display Msg "Database successfully uploaded"	Message Display	Pass
5	View database	Database content	Content verification	Click on view	Show Database content	Database showed	Pass
6	View database	Database content	Content verification	Click on view	Show Database content	Nothing to display	Fail

VIII. RESULT



1684940911951.jpg Download

Fruit Name	Price
Amrapali	60-100rs/kg



1684940719875.jpg Download

Fruit Name	Price
TotaPuri	138rs

IX. CONCLUSION

- This system would be beneficial for the farmers who are unable to sell their products at right price and get the right price for it according to its quality and market rate.
- After analyzing the product using the image recognition technique price for the product is decided by the software.
- Highest quality product will be sold for the

highest price also the poor-quality product will be sold according to its quality it can also be rejected if the product is not sellable.

- There is no third party involved in the proposed system it is totally under control of the seller and his product.
- Hence, the proposed system could be of great utility to the farmers you are not well educated and face loss all the time while selling the products in the market.

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