



**IJIRCCCE**

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 11, Issue 5, May 2023

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

**Impact Factor: 8.379**

 9940 572 462

 6381 907 438

 [ijircce@gmail.com](mailto:ijircce@gmail.com)

 [www.ijircce.com](http://www.ijircce.com)

# Fruit Detection, Price and Class Prediction System

Prof Prajakta Dhamdhare<sup>1</sup>, Yogita Rasal, Mayuri Kawar, Praduman Kumar, Kalyani Nagarkar

<sup>1</sup>Professor, Department of Information Technology, MIT School of Computing, Pune, India

<sup>2</sup>Student, Department of Information Technology, MIT School of Computing, Pune, India

**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 :-** GLCM,RGB,SVM

## 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). The forecasting model will be used to forecast price in the CPI compilation. This information offers better estimation and more timely. The modernization of the data collection by using the web scraped data will helps to reduce the burden of the establishments/supermarkets/wet markets. The coverage of CPI will be extended and will produce good quality statistics. The forecasting using web scraped data will improve understanding or perception of price behavior. Price forecasting will be an input to the policy makers when the price is increasing.

## II. 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 personas to keep a log in a diary or in a computer, also all the calculations needs 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.

### III. SCOPE

Daily Expense Tracker System is designed to keep a track of Income-Expense of an organisation on a day-to-day basis. This System divides the Income based on daily expenses. If exceed day's expense, system will calculate income and will provide new daily expense allowed amount. Daily expense tracking System will generate report at the end of month to show Income-Expense graph. And employees send reports to the manager for verification. Manager send final reports to administrator. Based on the final reports system predict the next month expense. It will helps to manage over all expense and income. Businesses utilize expense management software to process, pay, and audit employee-initiated expenses.

### IV. 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.

### V. RELATED WORK

In [1], they have recognized nine different classes of fruits. Fruit image dataset are obtained from web as well as certain images are acquired by using mobile phone camera. These images are pre-processed to subtract the background and extract the blob representing fruit. For representing fruits and capturing their visual characteristics, combination of color, shape and texture features are used. These feature datasets is further passed to two different classifiers multiclass SVM and KNN. The color image is firstly

converted to grayscale by GLCM (Gray Level Co-occurrence Matrix). The image is further converted to binary image. Further, Morphological operations are used to fill the holes and extract the largest blob or object from the image which would further be considered as fruit. After that this largest blob is cropped and the binary values are replaced with original intensity values. From the experiments it can be concluded that the combination of color texture and shape gives better or comparable results in most of the cases than when any two categories of features are used. Also, the second conclusion which can be made is that KNN gives better results for this case than SVM.

In [2], has different steps of the training process in this research which are as follows: Initially collect fruits image, then feature extraction process using FCH & MI method to get the characteristic of fruits image then transformed into vector feature form which will be stored in the database. Later clustering process is done using the K- Means Clustering method on the vector of the fruits image in the database. The steps of the testing process in this research are as follows: Open file image query to detect fruits. The next step is to get the feature of the face image then transformed into the vector feature form same as training process. Then, the process of recognition using the KNN method by calculating the distance between the new fruits image features and features of the existing on the database by using Euclidian distance which then matched with the clustering results.

### 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. CONCLUSION

Agricultural production is important for any nation. Production depends upon on the services available to the farmers, which totally depends on government agricultural policies. If the government provides services to farmers, production will increase. In this project, we will develop techniques for predicting agricultural production using existing fruit price data, and we present the results of the analysis.

## REFERENCES

- [1] X. Li, L. Yang, F. Xue, and H. Zhou, "Time series prediction of stock price using deep belief networks with intrinsic plasticity," in Proceedings of the 29th Chinese Control and Decision Conference, CCDC 2017, 2017.
- [2] D. M. Q. Nelson, A. C. M. Pereira, and R. A. De Oliveira, "Stock market's price movement prediction with LSTM neural networks," in Proceedings of the International Joint Conference on Neural Networks, 2017.
- [3] L. Li and K. H. Chu, "Prediction of real estate price variation based on economic parameters," in Proceedings of the 2017 IEEE International Conference on Applied System Innovation: Applied System Innovation for Modern Technology, ICASI 2017, 2017.
- [4] Z. Amekraz and M. Youssef, "Prediction of Amazon spot price based on chaos theory using ANFIS model," in Proceedings of IEEE/ACS International Conference on Computer Systems and Applications, AICCSA, 2016.
- [5] T. Gao, X. Li, Y. Chai, and Y. Tang, "Deep learning with stock indicators and two-dimensional principal component analysis for closing price prediction system," in Proceedings of the IEEE International Conference on Software Engineering and Service Sciences, ICSESS, 2016.





**INNO**  **SPACE**  
SJIF Scientific Journal Impact Factor  
**Impact Factor: 8.379**



**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
**INDIA**



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 **9940 572 462**  **6381 907 438**  **ijircce@gmail.com**



[www.ijircce.com](http://www.ijircce.com)

Scan to save the contact details