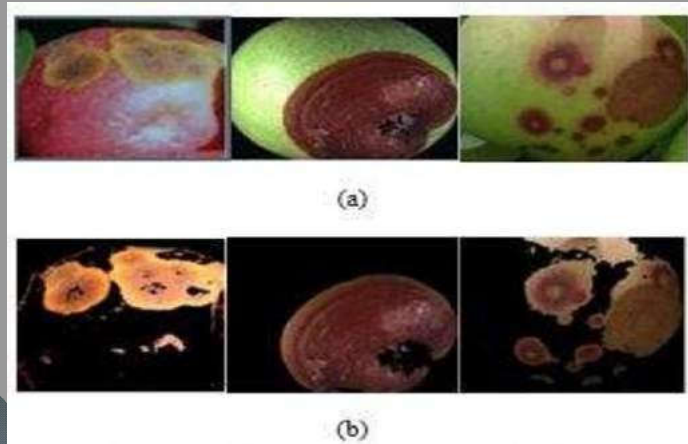
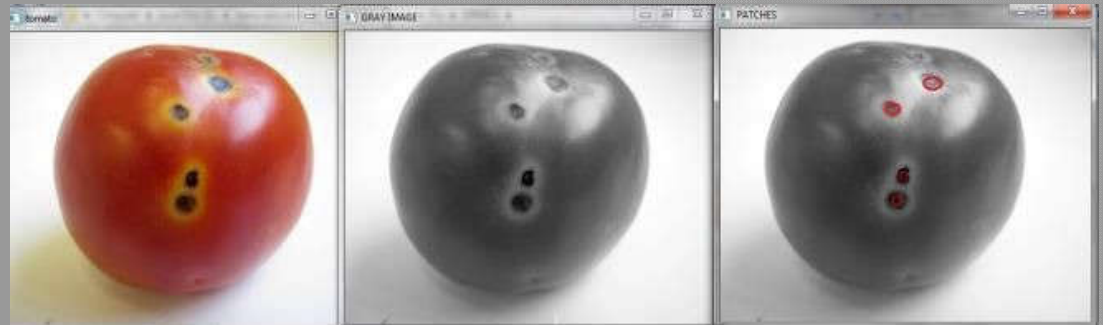


An Automated Fruits Quality Detection Framework Using Colour Spectrography



CONTENTS

- Abstract
- Introduction
- Literature Review
- Problem statement
- Technology Stack
- Use-case Diagram
- Implementation
- Result
- Project Plan
- Conclusion
- Project Future Plan
- References





ABSTRACT

An automated fruit quality detection system for grading of fruits and defected fruits detection discussed here. The hardware prototype is being created by using low power arduino. The main aim of this system is to replace the manual detection system. This helps in speed up the process improve accuracy and efficiency and reduce time. The system design considers some features that includes fruit colors and size, which increases accuracy for detection of fruits pixels. Then colour scanning is done to get required features of fruits such as texture, color and size. Defected fruit is detected based on color detection is done based on thresholding and size detection is based on binary color of fruits. grading is done based on color. Color Spectrography offers solution for the automated fruit size grading to provide accurate, reliable, consistent and quantitative information apart from handling large volumes, which may not be achieved by employing the human graders.



INTRODUCTION

Many hundreds of fruits, including fleshy fruits (like apple, kiwifruit, mango, peach, pear, and watermelon) are commercially valuable as human food, eaten both fresh and as jams, marmalade and other preserves. Fruits are also used in manufactured foods or beverages, such as fruit juices or alcoholic beverages. Fruits are also used for gift giving, e.g., in the form of Fruit Baskets and Fruit Bouquets.

An automated fruit quality detection system for sorting and grading of fruits and defected fruits detection discussed here. “color spectograph” offers solution for the automated fruit size grading to provide accurate, reliable, consistent and quantitative information apart from handling large volumes, which may not be achieved by employing the human graders. The hardware prototype also created by using low power microcontroller.

Fruit size estimation is also helpful in packing planning, transportation and marketing operation.



INTRODUCTION

SPECTROMETER

A spectrometer is a device used to detect spectra, which are specific wavelengths of electromagnetic radiation.

SPECTROPHOTOMETER

A spectrophotometer is a color measurement device that is used to capture and evaluate color on just about anything, including liquids, plastics, paper, metal and fabrics.

LITERATURE REVIEW

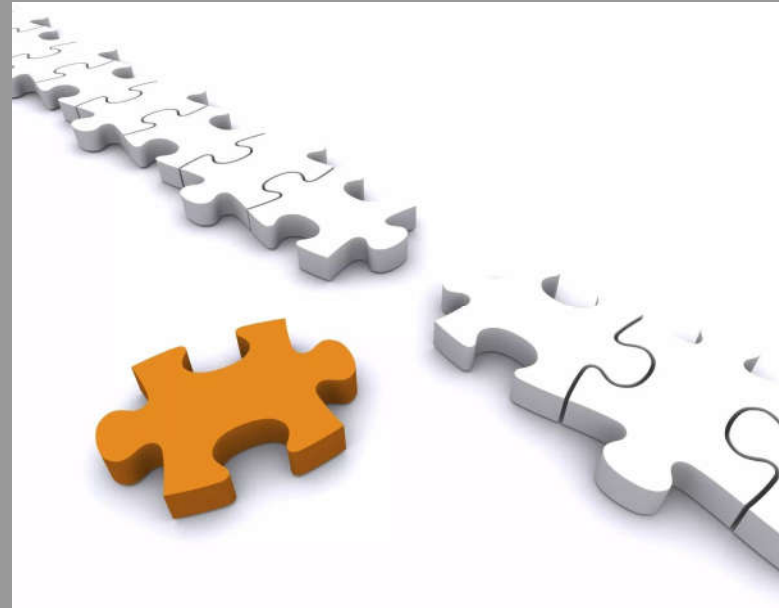
SR NO	TITLE OF PAPER	AUTHOR	PUBLICATION	METHODOLOGY	LIMITATION
1.	Hybrid Approach Of Fruit Detection	Bhavani J .S	IEEE(2016)	Random Forest classifier	Not Accurate
2.	Color Based Fruit Analysis Using Raspberry Pi	Ms.P.R Chavan	IEEE(2018)	Raspberry Pi & Color Image Processing	Costly & More Complex Hardware
3.	Fruit Quality Inspection System	Manali R.S	IEEE(2017)	RGB Image Processing	Non Effective For Large Scale





PROBLEM STATEMENT

1. Quality
2. Saves Man-power
3. Grading Of Fruits
4. Low cost system

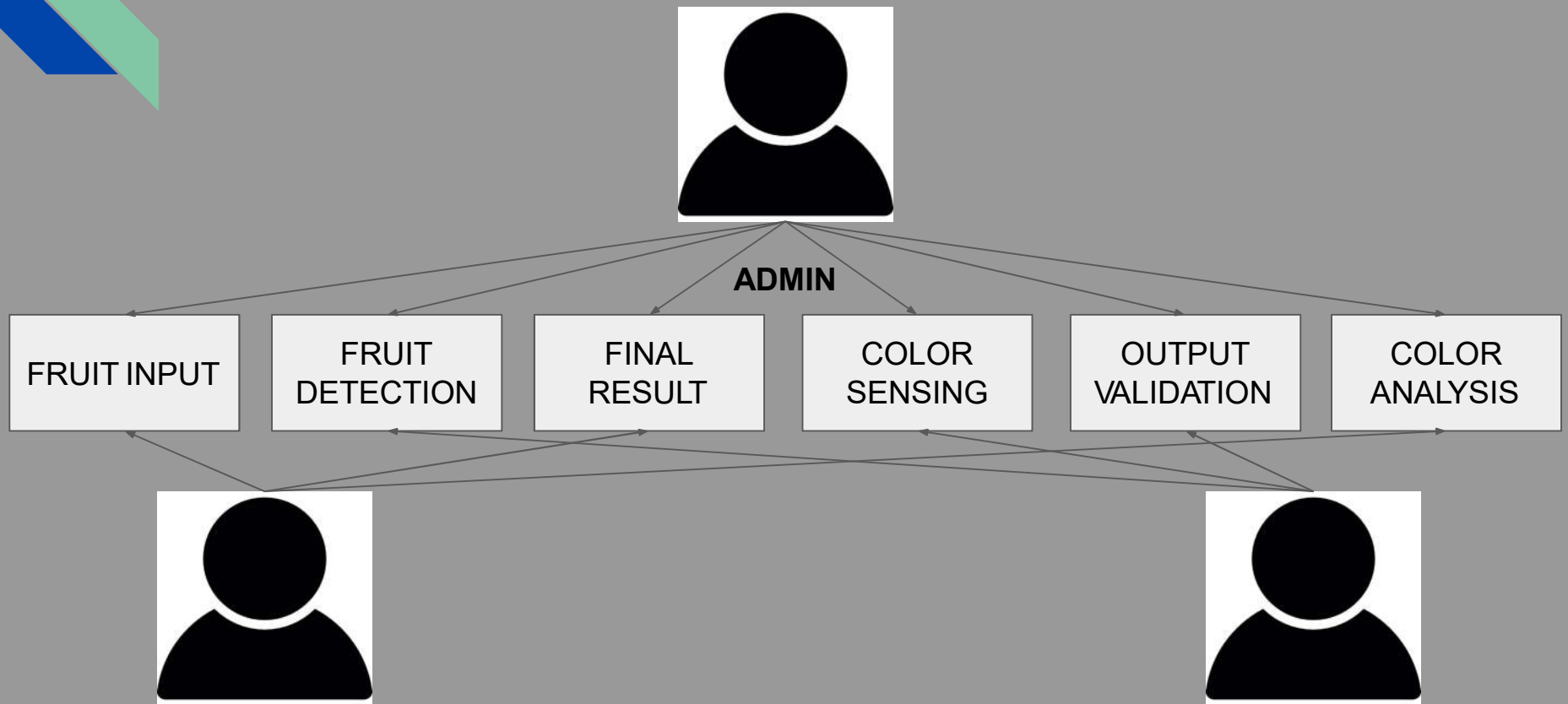




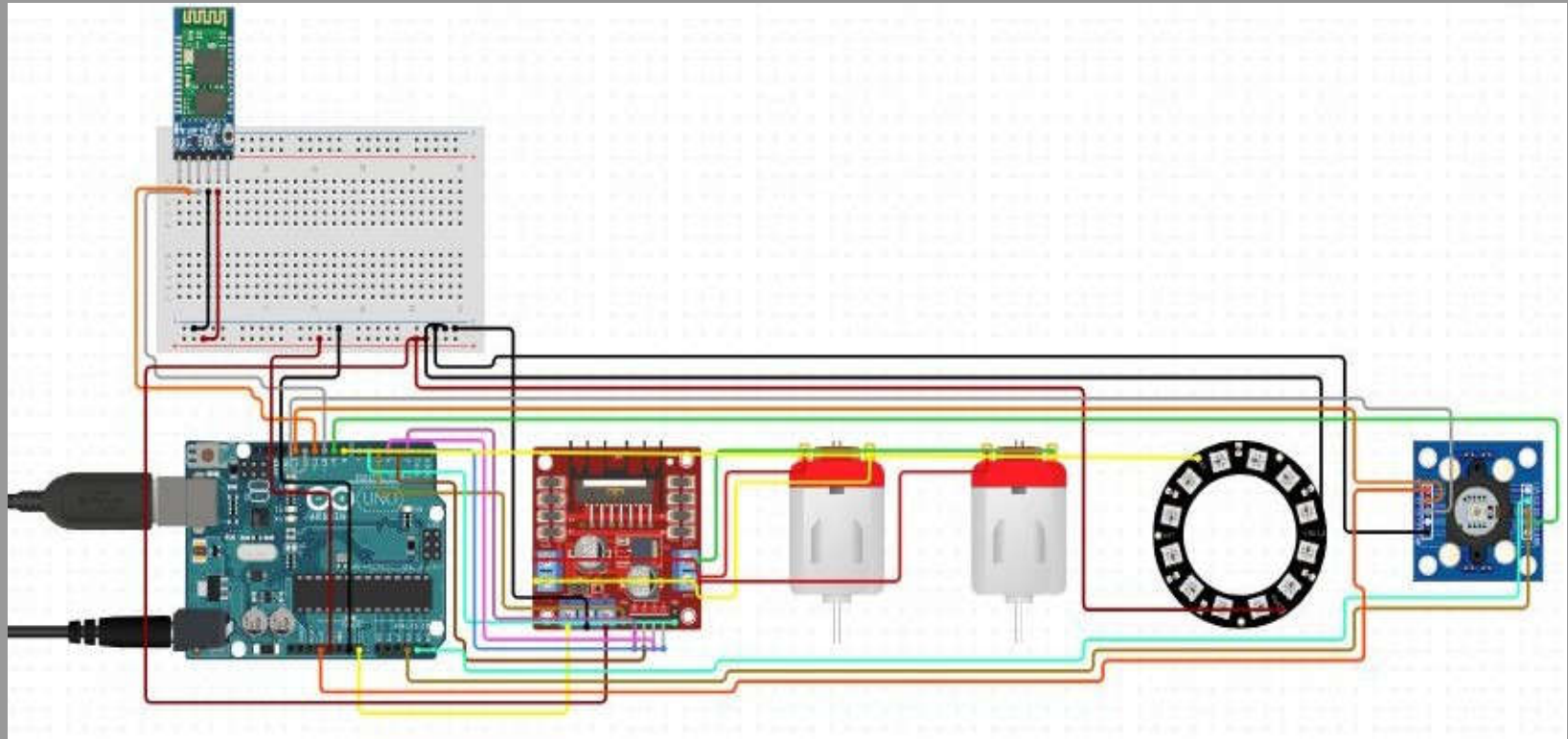
TECHNOLOGY STACK

HARDWARE	SOFTWARE
Arduino Uno - R3	Arduino IDE
L298N Motor Driver	Visual Basic
DC motors	
HC - 05 Bluetooth Serial Module	
TCS230 Color RGB Sensor	
LED Lights	
Jumper Wire	

USE CASE DIAGRAM

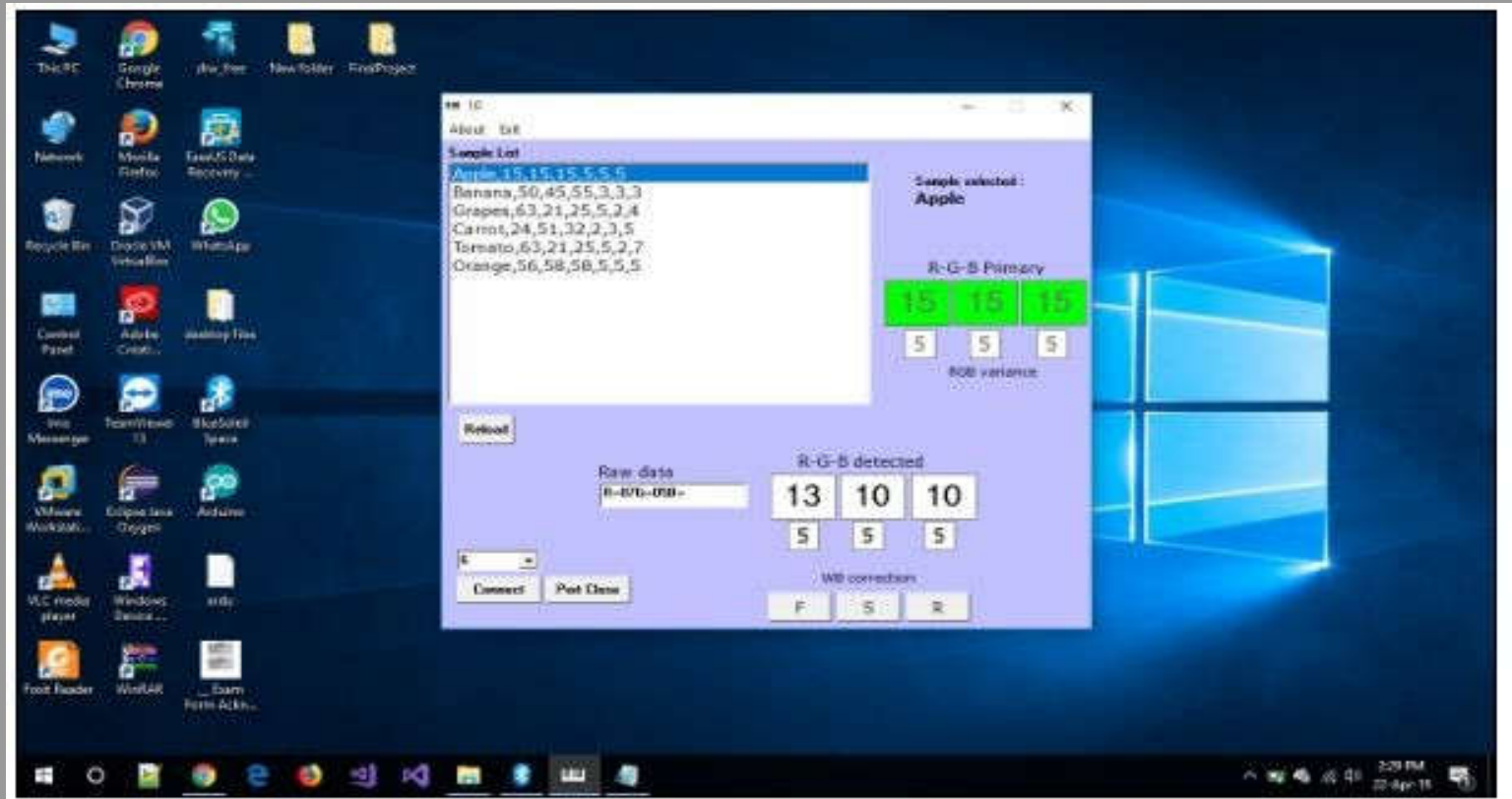


IMPLEMENTATION



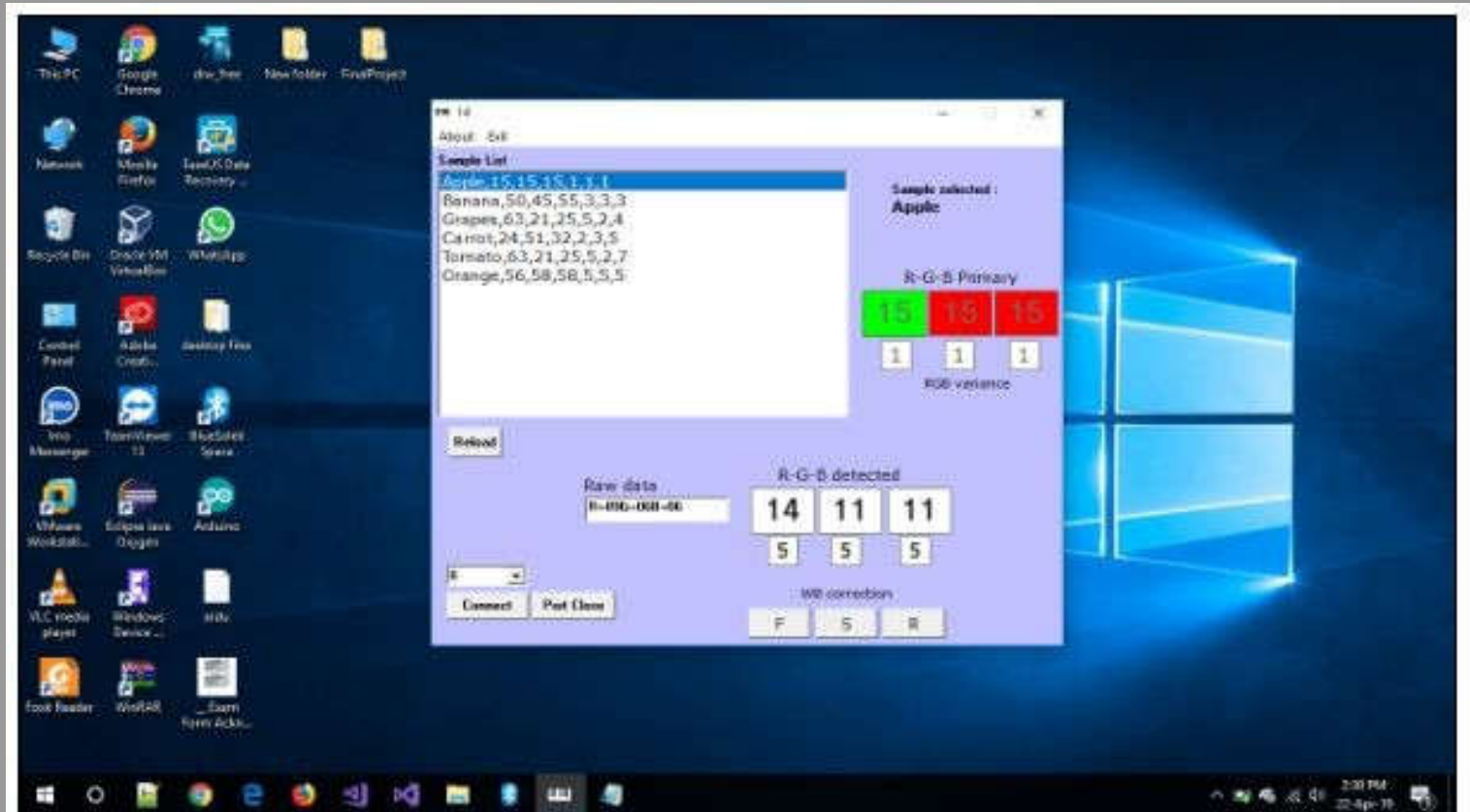
RESULT

GOODAPPLE QUALITY DETECTION



RESULT

BAD APPLE QUALITY DETECTION





PROJECT PLAN

Task Name	AUG/WEEK1	SEPT/WEEK2	OCT/WEEK3	NOV/WEEK4	DEC/WEEK5	JAN/WEEK6	FEB/WEEK7	MAR/WEEK8	APR/WEEK9
SEARCHING FOR PROJECT. SELECTION OF PROJECT DOMAIN AND TECHNOLOGY TO BE USED									
COLLECTION OF INFORMATION RELATED TO THE PROJECT AND UNDERSTANDING THE INFORMATION									
PREPARING FOR SEMINAR AND REPORT AND OTHER DOCUMENTATION AS REQUIRED FOR INITIATING THE PROJECT									
PURCHASING OF COMPONENTS AND OTHER HARDWARE USED FOR PROJECT. IN CASE COMPONENTS ARE NOT AVAILABLE, THEN SELECTING ALTERNATIVE COMPONENT.									
DESIGN OF EMBEDDED SOFTWARE/HARDWARE SYSTEMS									
UNDERSTANDING THE CIRCUIT DIAGRAM AND / OR MAKING OF CIRCUIT DIAGRAM & PCB LAYOUT									
IMPLEMENTATION OF HARDWARE AND OTHER CIRCUIT REQUIRED FOR THE FULFILLMENT OF THE PROJECT OBJECTIVES.									
TESTING OF PROJECT AND OTHER FAULT FINDING.									
FINAL TESTING OF PROJECT AND ITS EVALUATION.									



CONCLUSION

In this research we built a proposed model of a fruit quality detection system including both: the hardware and the software. The hardware includes the arduino , color sensor , bluetooth arduino model .

The software system analyzes the still frame extraction, preprocessing of fruits, features extraction and finally gradation. Proposed system takes data from the color sensor and then process that data and give output in the GUI .

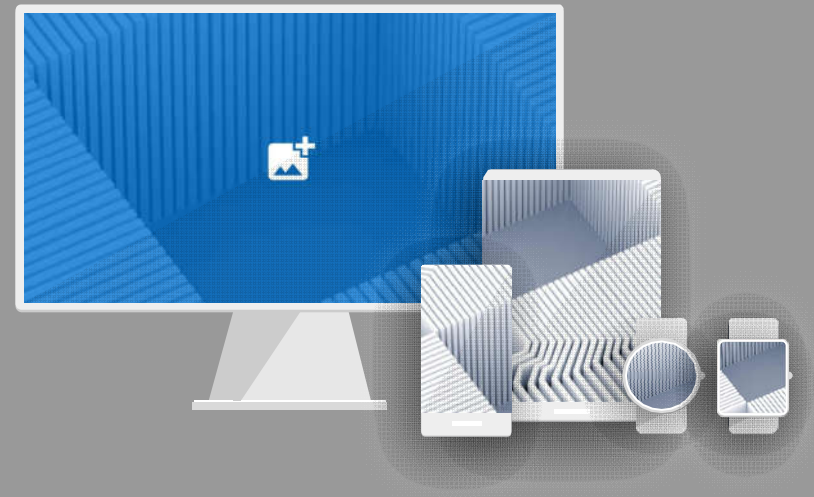
Processing they given output with standard ranges we can classify the quality of the quality . This system help to reduce man power and save money . We have successfully developed this system which is more efficient then manpower processing .

Limitation of our project is that it doesn't give accurate results always .



PROJECT FUTURE PLAN

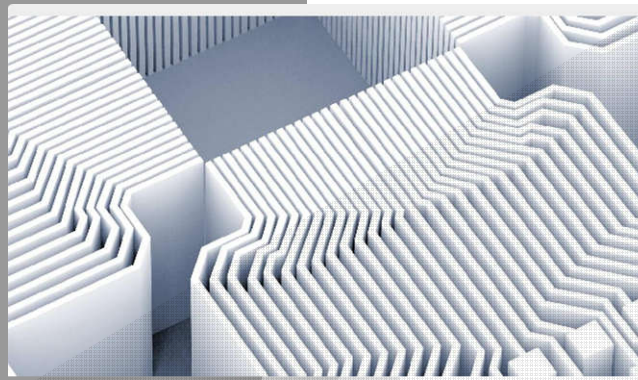
1. Artificial Object.
2. Vegetables.
3. Cloud Based Analysis Using AI.
4. Quality detection using tensorflow.



REFERENCES

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2. Color Based Fruit Analysis Using Raspberry Pi using image Processing. Ms. P. R. Chavan 2018 International Conference on Communication and Signal Processing (ICCSP)



3. Fruit Quality Inspection System using RGB image. Manali R. S. 2017 International Conference on Communication and Signal Processing (ICCSP)

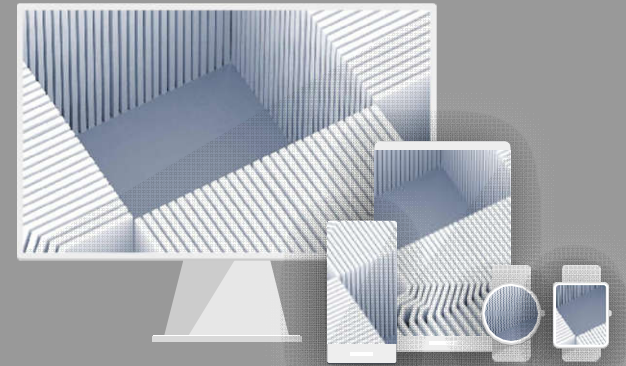
4. zhi-chun huang, patrick p. k. chan, wing w. y. ng, daniel s. yeung, content-based image retrieval using color moment and gabor texture feature, Proceedings of the Ninth International Conference on Machine Learning and Cybernetics, Qingdao, 11-14 July 2010 IEEE

5. Shiv Ram Dubey, Anand Singh Jalal, Detection and classification of Apple Fruit Diseases Using Complete Local Binary Patterns, 978-0-7695-4872-2/12 IEEE 2012.



THANK YOU!

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