VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

A PROJECT REPORT ON

"DETECTION OF ADULTERATION IN FRUITS USING MACHINE LEARNING"

Submitted in partial fulfillment for the award of Degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE & ENGINEERING

By

CHINMAYEE S	4AL18CS018
GIRISH M K	4AL19CS037
JAYANTH G	4AL19CS040

Under the Guidance of

Mrs. Babitha Poojary

Assistant Professor

ALVA'S
Education Foundation

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

MOODBIDRI-574225, KARNATAKA

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ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

MIJAR, MOODBIDRI D.K. -574225, KARNATAKA

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CERTIFICATE

This is to certify that the project entitled **"DETECTION OF ADULTERATION IN FRUITS USING MACHINE LEARNING"** has been successfully completed by

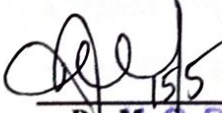|	
CHINMAYEE S	**4AL18CS018**
GIRISH M K	**4AL19CS037**
JAYANTH G	**4AL19CS040**

the bonafide students of **DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING, ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY** ofthe **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2022–23. It is certified that all corrections/suggestions indicated for Internal Assessmenthave been incorporated in the report deposited in the departmental library. The project reporthas been approved as it satisfies the academic requirements in respect of Project work prescribedfor the Bachelor of Engineering Degree.

Mrs. Babitha Poojary
Project Guide

Dr. Manjunath Kotari
Head Of the Department
Dept. Of Computer Science & Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

External Viva

Dr. Peter Fernandes
Principal PRINCIPAL
Alva's Institute of Engg. & Technology,
Mijar. MOODBIDRI - 574 225. D.K

Name of the Examiners

1.

2.

Signature with Date

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

MIJAR, MOODBIDRI D.K. -574225, KARNATAKA

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

DECLARATION

We,

CHINMAYEE S

GIRISH M K

JAYANTH G

hereby declare that the dissertation entitled **"DETECTION OF ADULTERATION IN FRUITS USING MACHINE LEARNING"** is completed and written by us under the supervision of our guide **Mrs. Babitha Poojary**, Assistant Professor, Department of Computer Science and Engineering, Alva's Institute of Engineering and Technology, Moodbidri, in partial fulfillment of requirements for the award of the degree **BACHELOR OF ENGINEERING** in DEPARTMENT OF COMPUTER AND ENGINEERING of the VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAVI during the **academic** year 2022- 23. The dissertation report is original and it has not been submitted for any other degree in any university.

CHINMAYEE S	**4AL18CS018**
GIRISH M K	**4AL19CS037**
JAYANTH G	**4AL19CS040**

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ABSTRACT

Fruits are essential for healthy life. The fruits we take should be pure, nutritious and free from any type of adulteration for proper maintenance of human health. Formalin is used as a preservative by the traders to improve the appearance of fruits and vegetables and to sustain for longer periods. Formalin is a colorless, aqueous solution of formaldehyde to preserve biological specimens. Not every case of adulteration will result in serious adverse health effects. But the chemical is highly toxic and a 30 ml of formalin containing 37 percent of formaldehyde can kill an adult. Many of the methods for detection of food adulteration require elaborate steps of sample preparation and prior analysis involving high-end technologies which makes the whole process difficult to perform and time consuming. Visual Geometry Group 16 (CNN) architecture has been incorporated in our system to accurately predict the correct concentration of formalin. The main aim of this system is to replace the manual inspection system. This helps to speed up the process, improve accuracy and efficiency. This system captures the image of the fruit and then image processing is done to get required features of fruits such as color and size. Adulterated fruit is detected based on image pixels. Sorting is done based on color and size.