INTEGRATED DESIGN PROJECT (IDP II)

CSE-460

AUTOMATED FRESHNESS AND DEFECTION DETECTOR

SYSTEM DEVELOPMENT DOCUMENT

Submitted by

GROUP - FOXTROT A

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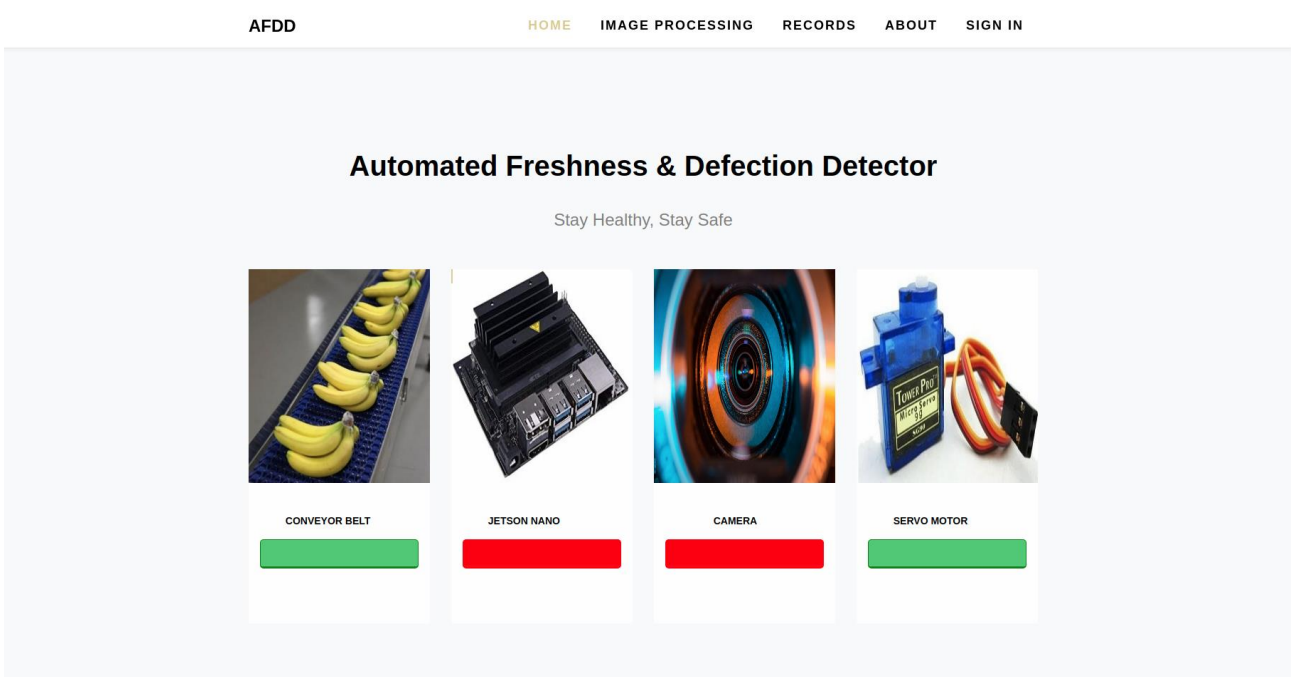
Required Platforms

MySQL 	MySQL is an open-source relational database management system. We used it for our database. (Backend)
Bootstrap 	Bootstrap is a free and open-source CSS framework. It contains CSS- and JavaScript-based design templates for typography, forms, buttons, navigation, and other interface components. We used it for UI design. (Frontend)
Anaconda 	Anaconda is a distribution of the Python and R programming languages for scientific computing, that aims to simplify package management and deployment. We used it for our implementing image processing.
GitHub 	GitHub and GitHub are used for collaborating the whole project so the team can work remotely then merge it centrally.
Arduino 	It's an IDE for microcontrollers. We used Arduino mega to control various hardware component like motors etc.
Ubuntu 	Ubuntu is a Linux distribution based on Debian and composed mostly of free and open-source software. Our main controlling system Jetson Nano runs on Ubuntu.

UI Snapshots

Homepage

Hardware control section



About Page

Automated Freshness & Defection Detector

Stay Healthy, Stay Safe

Defining quality in food production is, arguably, one of the most widespread and complicated issues to solve when new products are released in the market. In short, food quality can be defined as the characteristics of food that are between certain limits of acceptance in every step of manufacturing, from the raw materials to the acceptance of consumers. Usage of computer science in terms of grading raw materials in our country is still not that popular in industrial levels. Our project aims to create a detector of freshness and defection for grading general raw fruits or vegetables for industrial use.

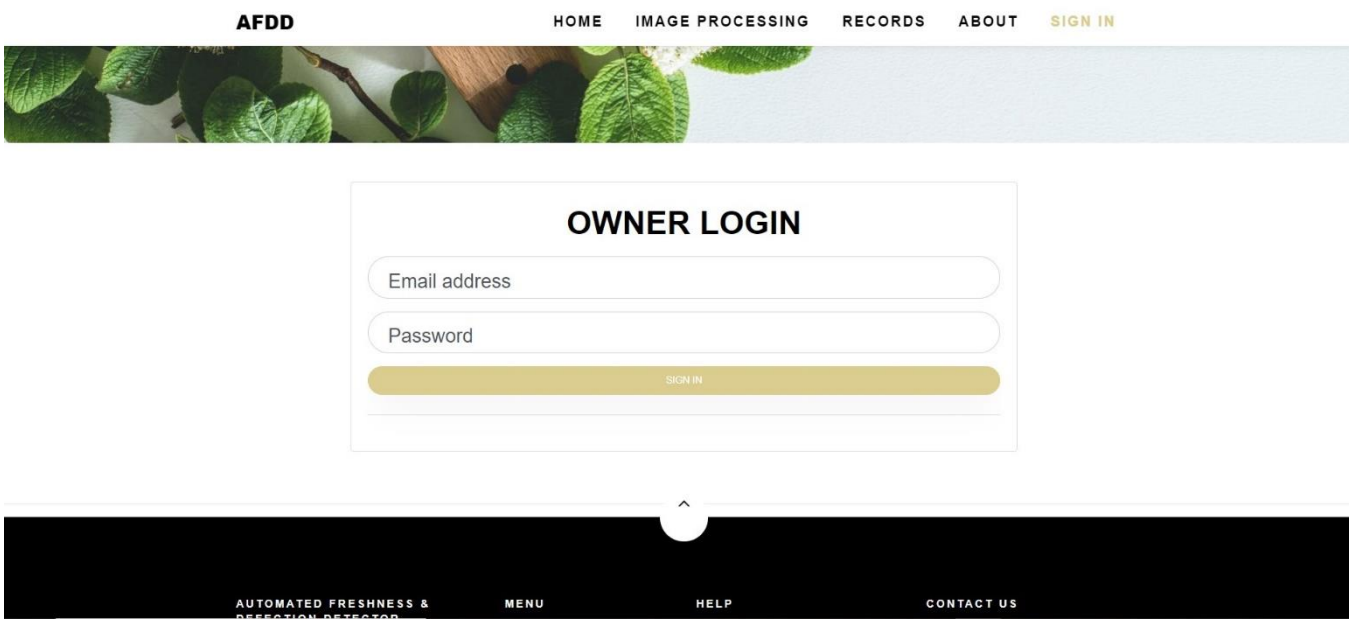
Fruit freshness grading via computer vision technology exploits on the fruit texture, colour and shape for visual feature evaluation. The whole system will work on identifying the raw and stale elements and separate them from the fresh ones. This project will work using some specific fruits (Apple, Banana, Orange). All system information will be maintained in a database. The system is designed to use as few people as possible and get higher production rate and product quality.

Live feed of fruits passing on conveyor belt

Incoming fruits through conveyor belt

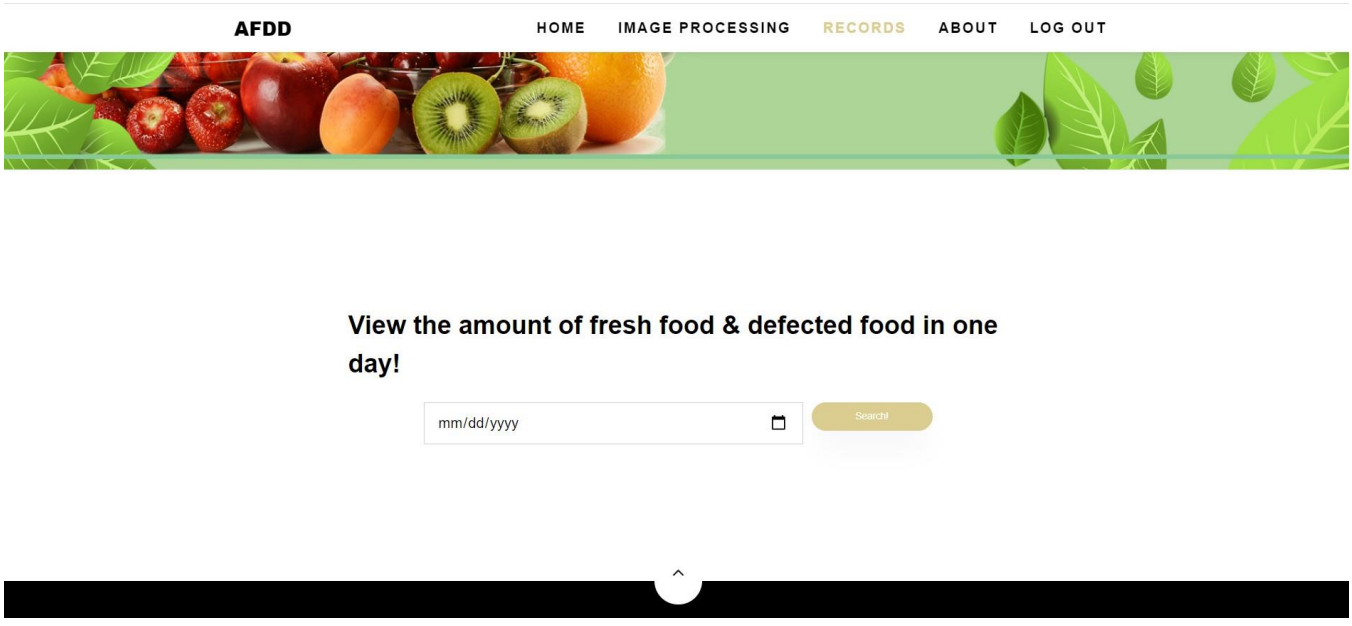
Snap

Login page

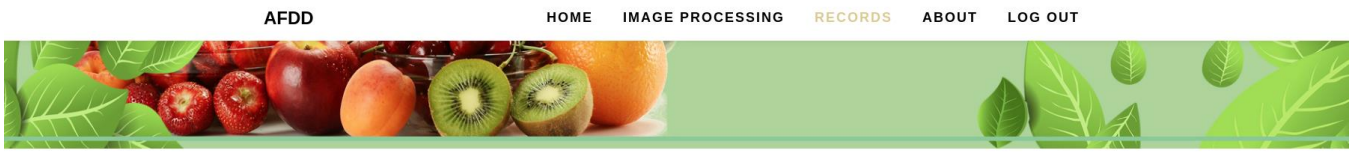


Accessing Records

Before:



After:

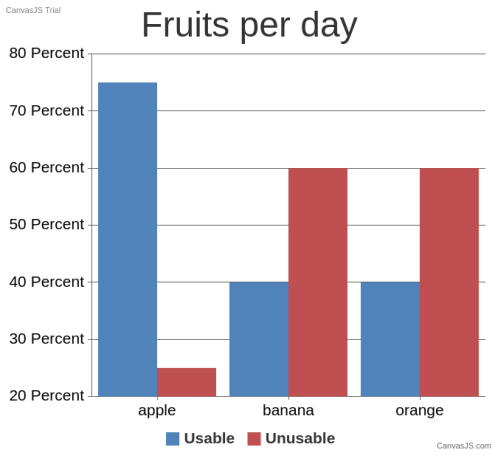


View the amount of fresh food & defected food in one day!

mm/dd/yyyy

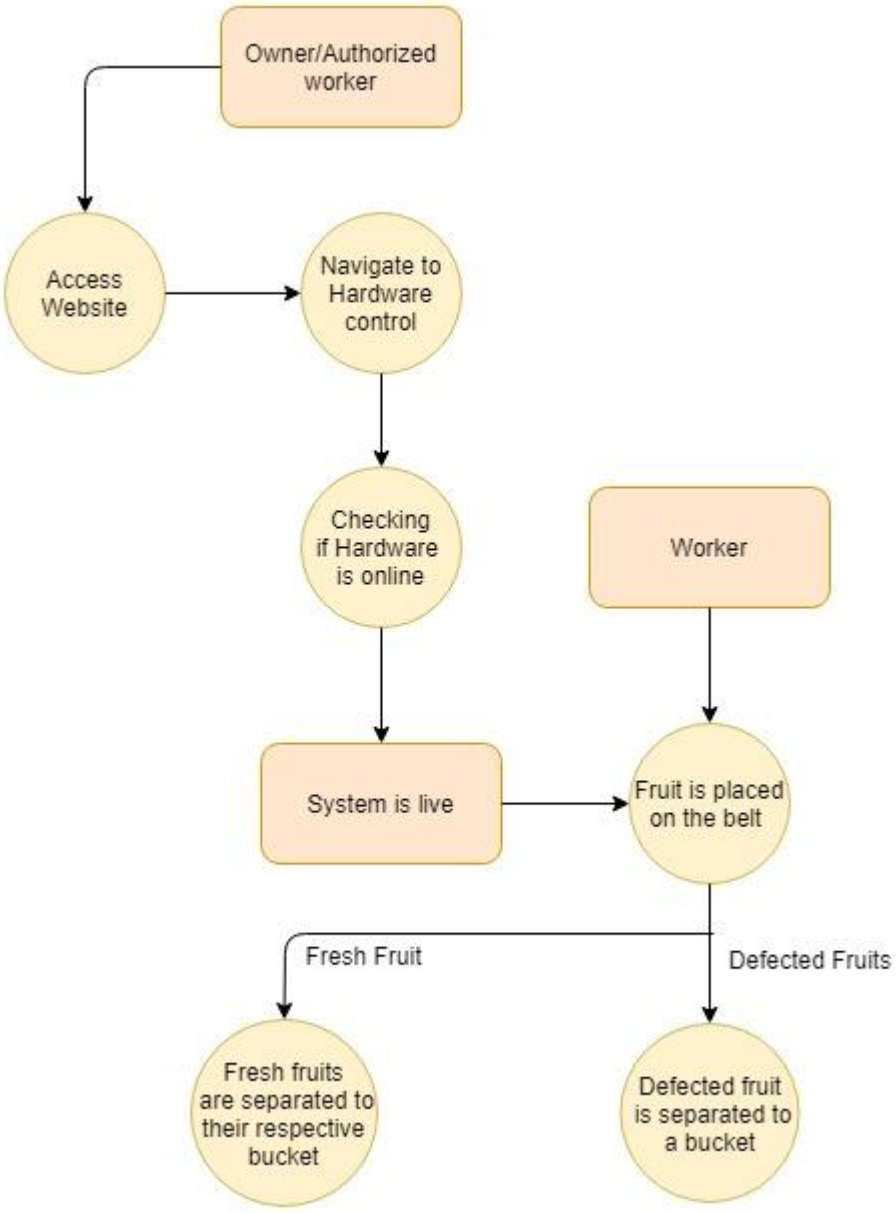
Search!

Batch NO	Fruit Name	Total Fruits	Usable	Unusable	Date of Processing
1	Banana	5	2	3	2021-06-18
2	Apple	12	9	3	2021-06-18
3	Orange	5	2	3	2021-06-18



Scenario 1

Owner/Authorized worker accesses the website. Navigate to hardware control section. Enables conveyor belt, camera, and servo motor. Then workers started to place fruit in the belt for separation process.



Scenario 2

Owner logins to the website. Go to the statistic page. Enter the date of which he wants to view the total amount of fresh/defected food. The query shows the result of all the fresh/defected food of that day.