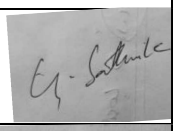
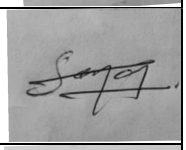
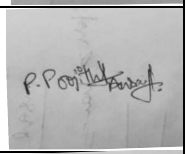
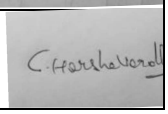
INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad-500 043

Project Based Learning
(Prototype / Design Building)

External Evaluation Report

Title of your Idea : ***AGRICULTURE SORTER MACHINE***
Thrust Area / Sector : **Machine learning**
Branch : **Computer Science and Engineering**
Year / Semester : **Third Year – 5th Semester**

S. No	Name of the Student	Roll Number	Mobile Number	Signature
1	M.SATHVIK KUMAR	19951A05G2	6303228298	
2	V.SANJAY BHARDWAJ	19951A05F8	9059464359	
3	P. POOJITH ANAND SAI	19951A05C9	6301064872	
4	G. HARSHA VARDHAN	19951A05G6	7995540942	

Team Members (Max. 4) :

1. Background of the Idea (Min. 500 words):

Multiple Fruit and Vegetable Fruit Sorting System using Machine Vision is presented in this paper. The grading systems were developed for easing the labor-intensive work and create consistency in the quality of the product. The current grading systems involved in the fruit sorting cater to only one type of fruit. So, by adding more features like fruit and vegetable identification under variable background condition can enhance the quality of the agricultural produce. This paper proposes a technique to achieve multiple fruit and vegetable sorting using fuzzy logic and K-Means clustering method by using a low-cost image capturing device.

2. **Problem Statement (Min 100 words):**

- *As for farmers it is not easy to make crop to harvest after all that hard work, when the crop gets spoiled by just mixing up of raw and ripen and again when the crop is not categorized into different ripen and raw (raw and ripen have colour difference) by manual work of grading is done incorrectly.*

- *So, we have designed a project that is user friendly, which can sort and grade any type of fruits according to their colour.*

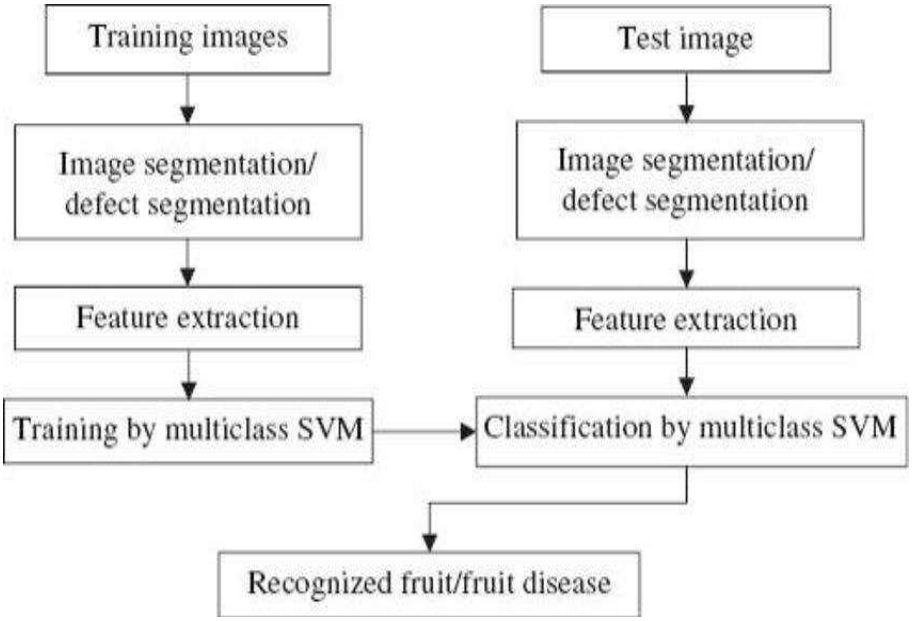
3. **Proposed Solution (Min 100 words):**

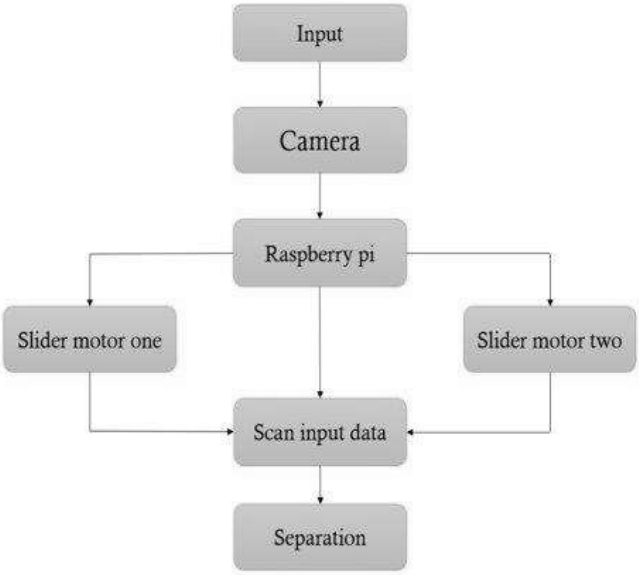
- *Agriculture needs a lot of man work. It consumes a lot of time for the farmers for manual sorting and examining of fruits from harvest till its growth period. Manual sorting doesn't give adequate results every time, so it needs an efficient smart farming techniques which can used to get better yield and growth with less human efforts.*
- *We need to prepare an automated sorting machine based on the colour of the fruit, so there should not be any manual sorting for farmers for betterment in their work.*

4. **Technology concept formulation:**

MACHINE LEARNING USING PYTHON;
RASBERRY PI;
SERVO MOTAR;
JUMBER WIRES
RASBERRY PI CAMERA

5. Prototype of proposed system (UI screens / block diagrams / circuits / designs):

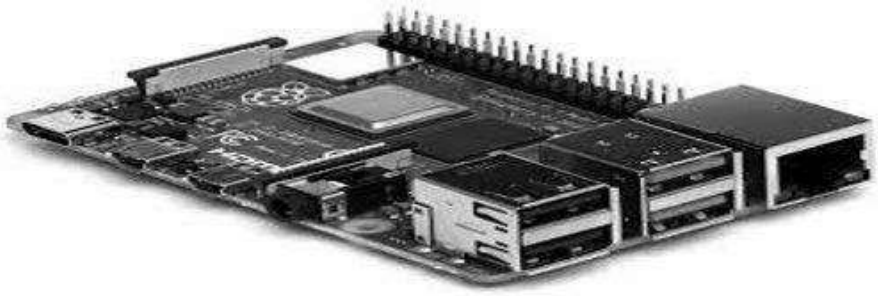


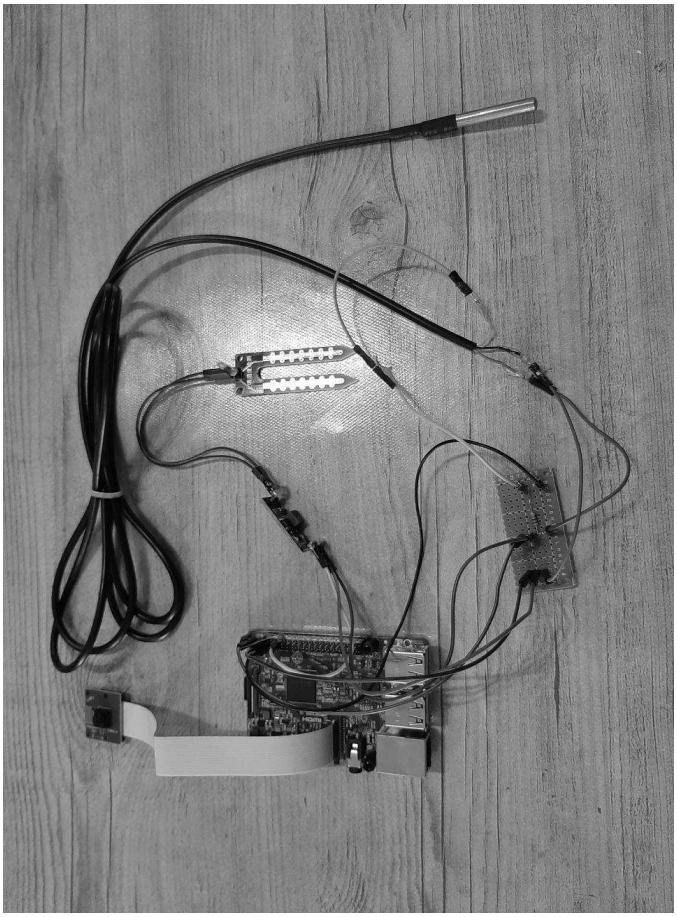


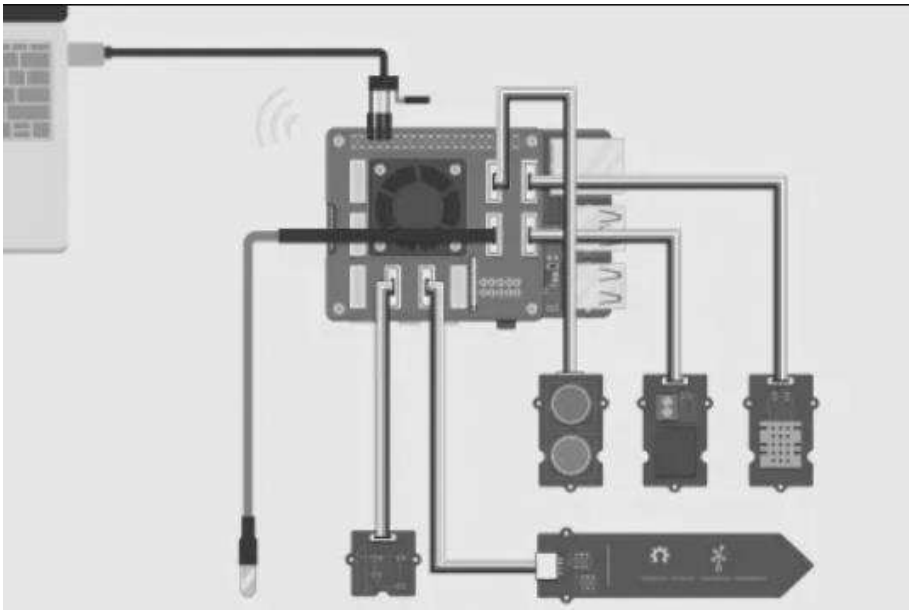
6. Detailed description of prototype / product / project (Min 1000 words):

- *Harvesting and packing is the major portion of the effort and cost by farmers producing fresh fruits and vegetables to market. However, the processing and manufacturing areas require product detection and grading for commercial and production purposes.*
- *Manual sorting and grading are based up on traditional visual quality inspection done by human operators, which is time-consuming, slow and non-consistent. There is continuous growth in the development of mechanical harvesting system, so that the losses during harvesting, production and marketing can be minimized.*
- *A cost effective, consistent, high speed and accurate sorting can be achieved with machine vision sorting and grading. Computer application plays a major role in agriculture and food industries in the areas of sorting, grading of fresh products, and detection of defects such as cracks, dark spots and seeds.*
- *Separation of fruits is performed primarily by visual inspection using colour as a especial quality attribute. Many industries with capability of large-scale buying and selling of fruits & vegetables, are using image processing technology for sorting motive. But the image processing system of sorting requires very highly developed technology of image capturing and processing which is very costly and not right for small traders.*
- *The proposed sorting system in this offers an economical solution for such grade of automated fruit sorting practices. By dealing with an automated material handling system, it results in dividing the fruits by color. There by the prosy work done by human is eliminated, acquiring accuracy and speed in the work. This sorting method presents a precise, safe, consistent and quantitative sorting technique for sorting based on color. Automated sorting system not only speeds up the time of the process but also decrease fault.*

7. **Final version of prototype / product (only images):**







8. Any other information:

- *This project aims to reduce the manual work while sorting and grading so that work can be done simply and precisely by which farmers can reduce the damage while sorting.*
- *The main objective is to design an automated machine which help the farmers in sorting the fruits or vegetables this increase the rate of sorting*
- *This system can be used in food industry*
- *It is also for agriculture use in small as well as lager scale*
- *It can be used for different agriculture products like lemon, tomato, orange, apple, mandarin.*

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