Parshvanath Charitable Trust's
A. P. SHAH INSTITUTE OF TECHNOLOGY, THANE
(All Programs Accredited by NBA)
Department of Information Technology

e-Fresh: Computer Vision and IOT based system for food industry

Group No: 10

Akshata Gawas 18104039
Krishita Tolia 18104021
Siddhesh Gaikwad 18104069

Guided by
Prof. Kiran Deshpande
Co Guide
Prof. Sonal Jain

Contents

1. Introduction

- Problem Identified:

Detection of defected fruits and the classification of fresh and rotten fruits represent one of the major challenges in the agricultural fields. Rotten fruits may cause damage to the other fresh fruits if not classified properly. Traditionally this classification is done by men, which was labour-intensive, time taking, and not efficient procedure. Thus, factories need human intervention for segregation of fruits

- Solution Proposed :

Hence, we need an automated system which can reduce the efforts of humans and time of production. Our system will automatically do that with help of CNN classification Algorithm. The proposed idea will create a segregation model which would need no human intervention for classifying and segregating fruits.

2. Objectives

- To create a model to classify fresh and rotten fruits.
- To preprocess images before sending them to the model.
- To achieve efficient model considering the cost.
- To train a model with high accuracy.
- To develop a hardware system considering the Industry 4.0 standards.
- To program NodeMCU for collecting and sending images to server.
- To program NodeMCU for segregation.
- To host data analysis dashboard on AWS cloud.

3. Problem Definition

To accurately classify fruits using Deep Learning algorithm i.e. CNN, segregate them with the help of required hardware considering the Industry 4.0 standards and hosting a dashboard displaying the data visualization.

4. Technology Stack

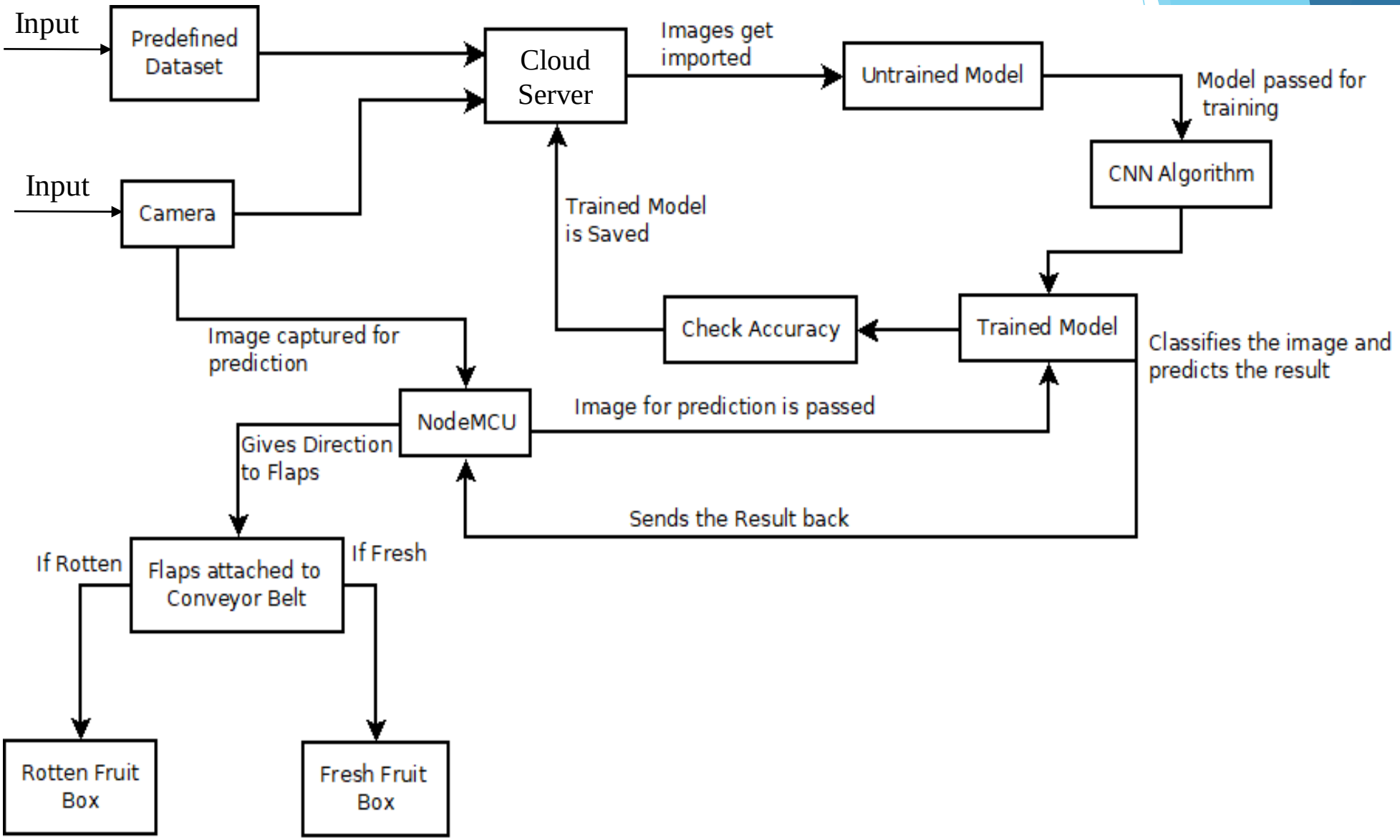
Hardware Requirements:

- NodeMCU ESP8266
- Cameras: 3
- Motor/ Rotator(for conveyor belt)
- Wi-Fi module
- Flaps
- Servo-motor
- Alcohol Sensor(MQ3), Methane Sensor(MQ4)

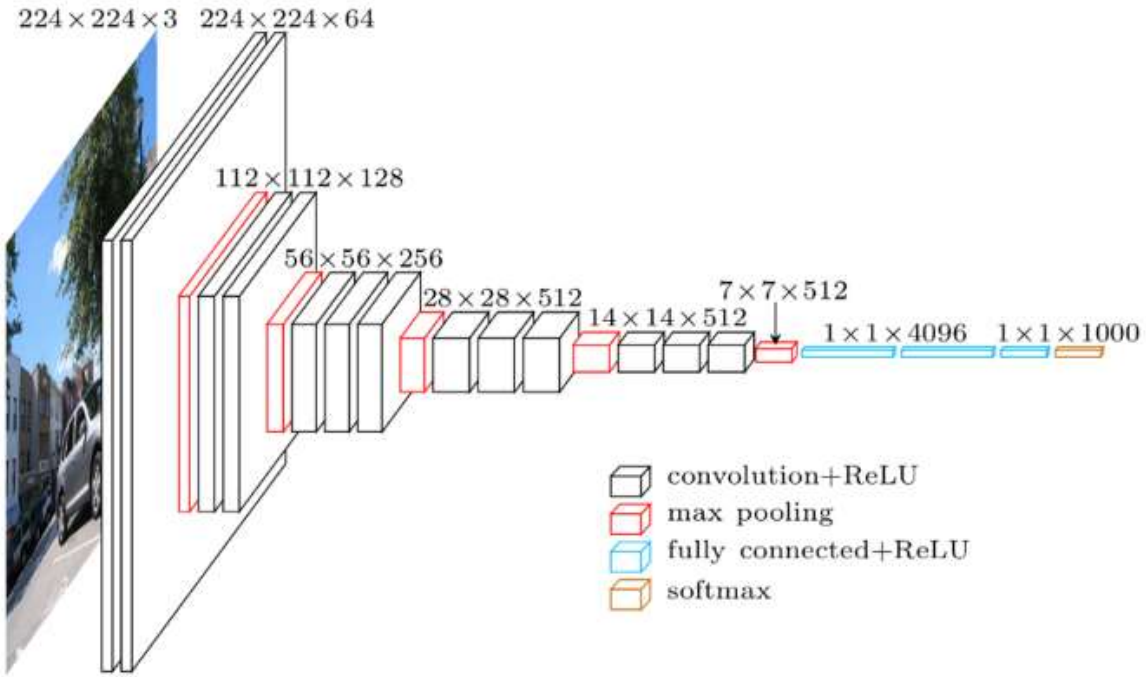
Software Requirements:

- Google Colab
- Tensorflow, Keras, Pandas, Numpy.
- AWS Cloud.

5. Block Diagram of Working

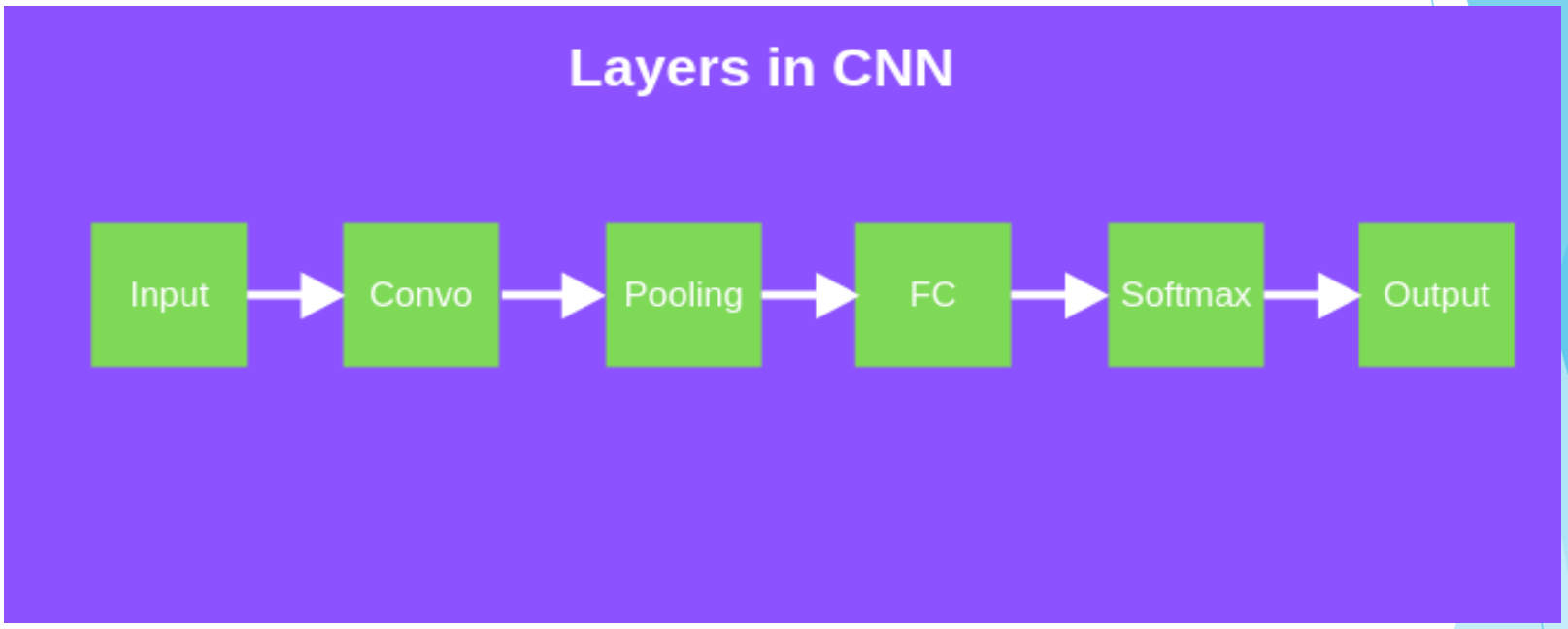


6. Classification Algorithm



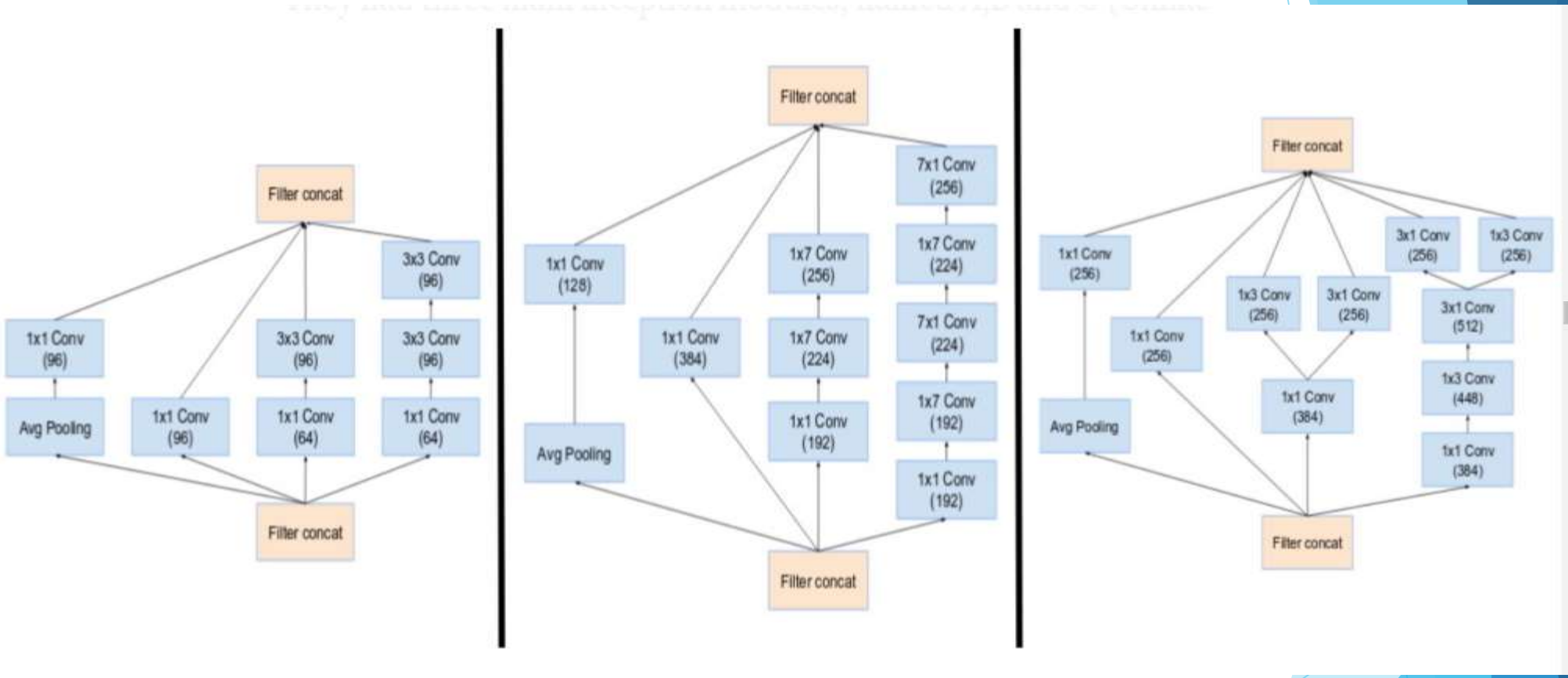
Convolution Neural Network

7. Layers of CNN



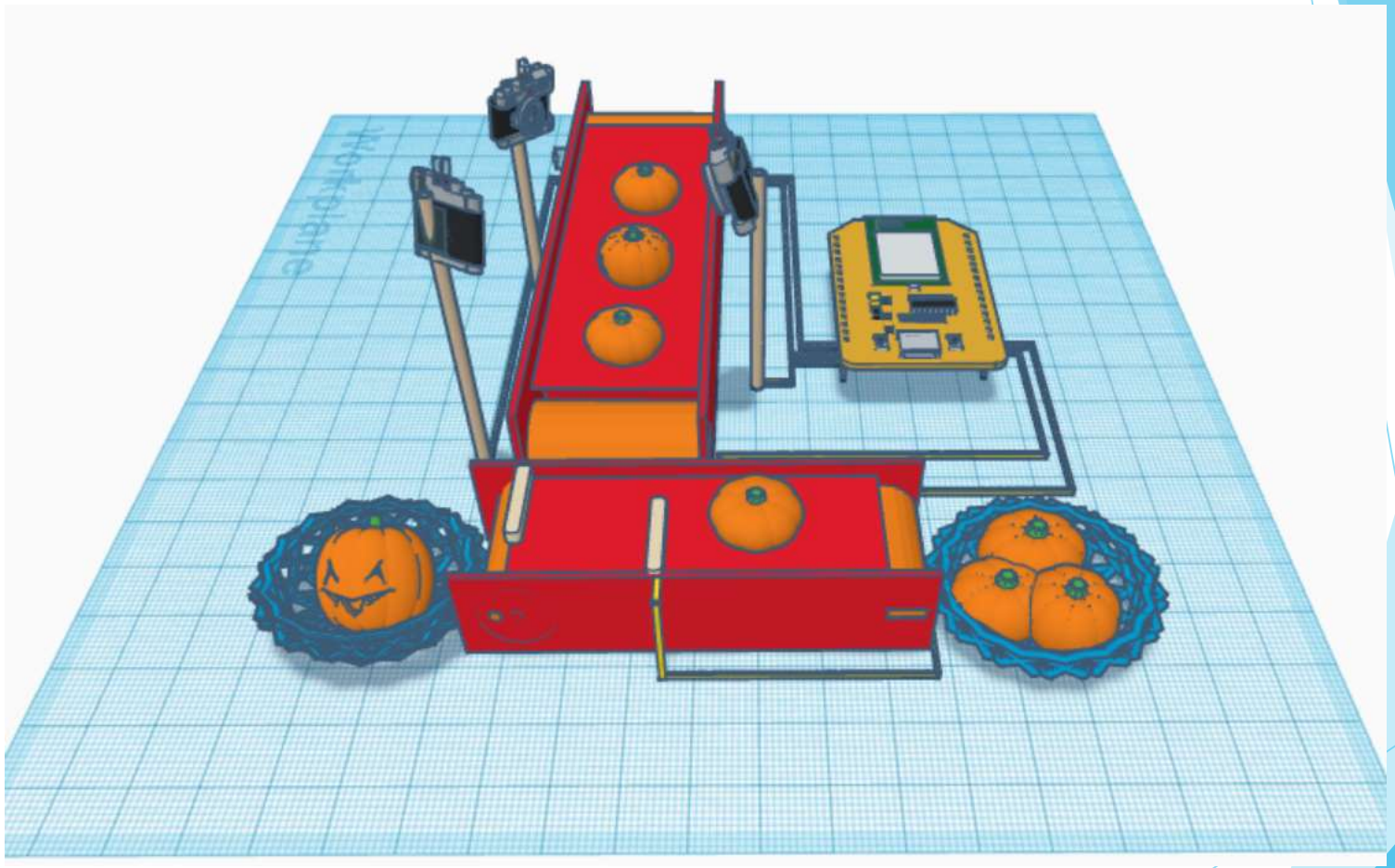
8. Architecture of CNN

9. InceptionV3



Block A Block B Block C

10. Demonstration Model



Parameters for Data Visualization

- Colour
- Size
- Ethanol level
- Methane level
- Vendor

11. Implementation Status

- Successfully implemented CNN model with Inception V3 architecture.
- Achieved accuracy of 98.5% .
- Finalized the architecture required but might need some changes ,since we are in testing phase.

12. Status of Paper Draft & Targeted Conference

Status of paper: Completed writing Abstract and Introduction. Listed all the necessary keywords.

Targeted Conference:

- IEEE 2021 Conference on Advances in Computing, Communication and Control - (20th September)
- International Conference On Big Data, Machine Learning and Applications - (25th September)

Thank You...!!