Smart Farm

Abd elrahman Mohamed Adel

Table of contents

1 Introduction

Egypt faces many challenges that threaten its stability and slows its path towards development. They include:

1- Increasing the food supply to suffice with the population growth.

2- Improving the scientific and technological environment for all.

3- Increasing the industrial and agricultural bases of Egypt.

- Plant diseases spread in a fast rate causing damage to crops and decrease in the crop yield.

- These diseases could damage up to 40% of the crop yield. The fast population growth in Egypt makes dealing with this problem inevitable.

Proposed Solution

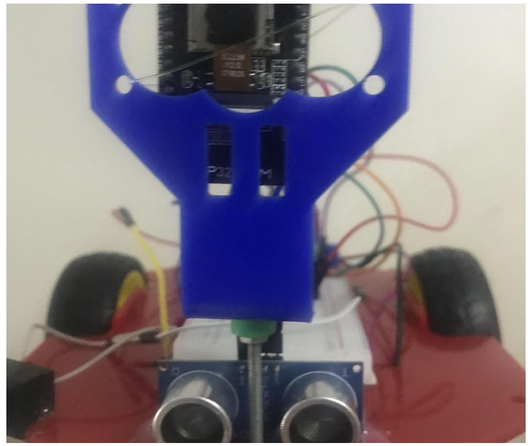
01 An Artificial intelligence model that could detect infected plants to be treated rapidly or separated from other plants.

02 A vehicle will be responsible for the collection of images to be classified.

2 Methods

METHODS

AI model



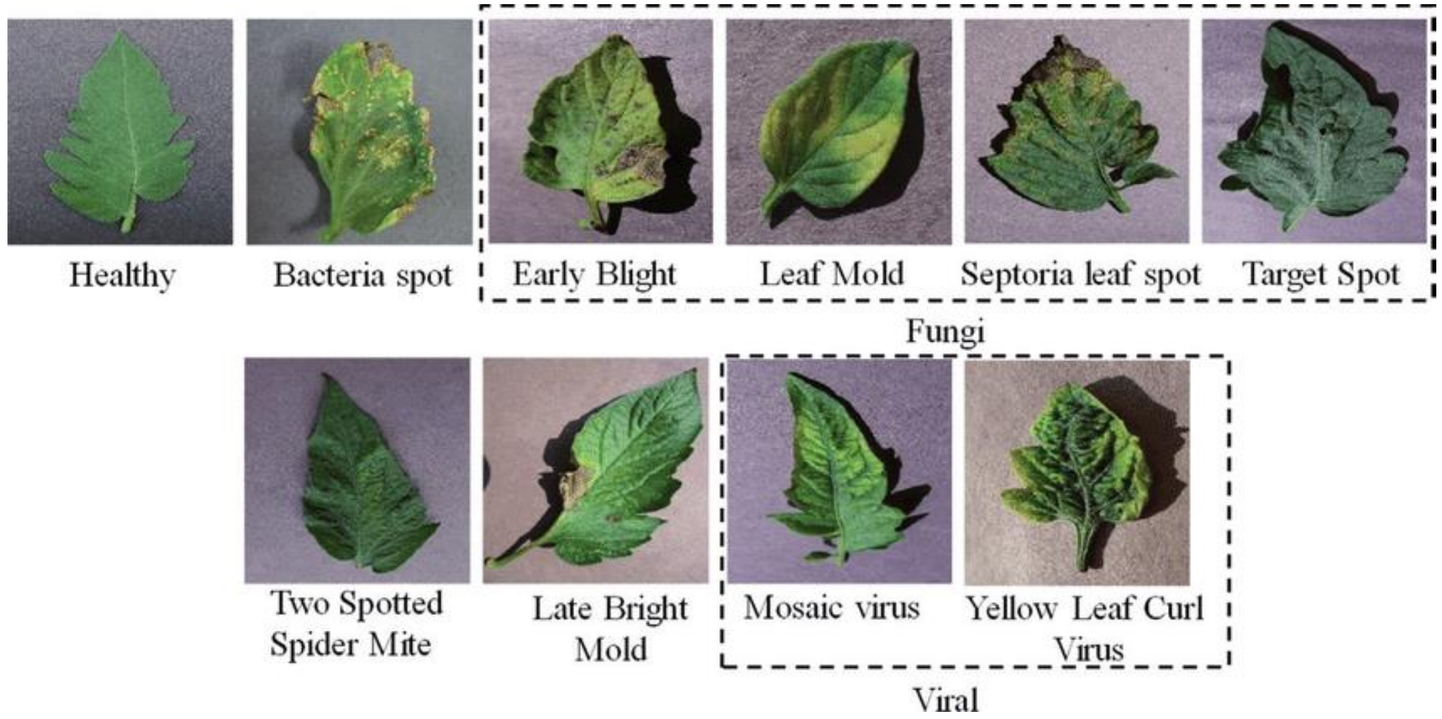
Hardware set up

Connection between them

AI model training

AI model structure

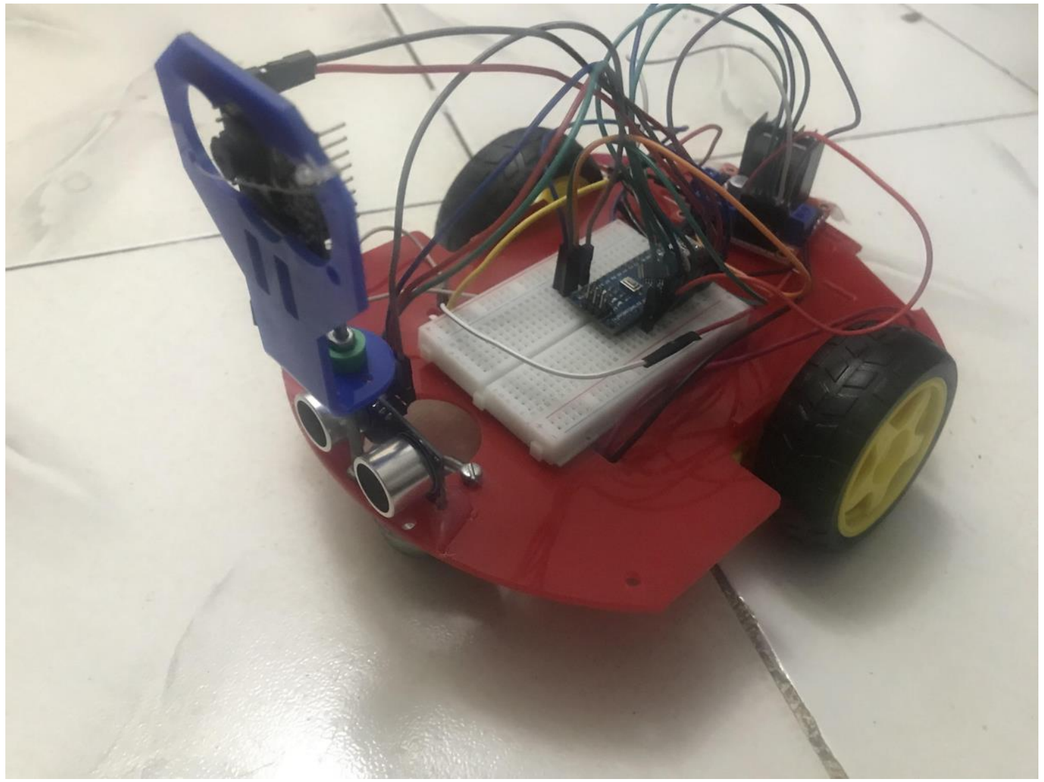
- Three CNNs
- Three fully connected layers
- The AI model classifies the plants to 11 classes



Hardware set up

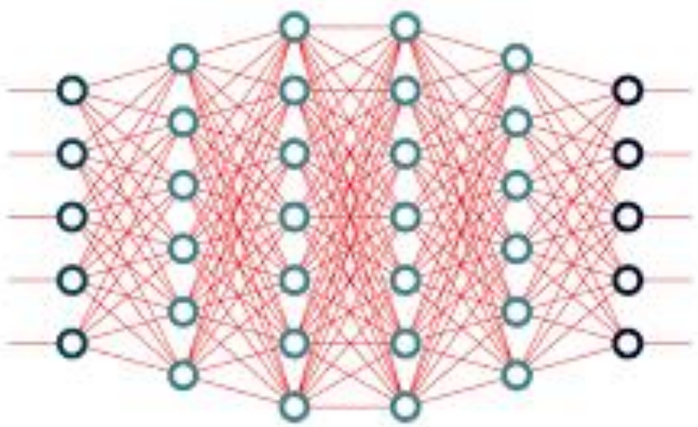
ESP 32 cam for collecting images

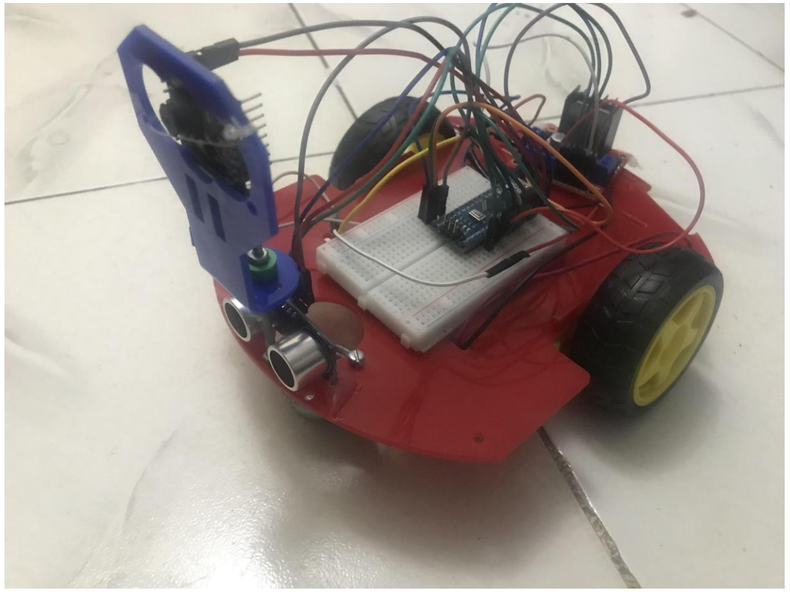
Adruino nano for movement



3 Results

- The AI model has manged to classify the plants with an accuracy of 92%.
- The hardware set up manged to send live images of the plants.



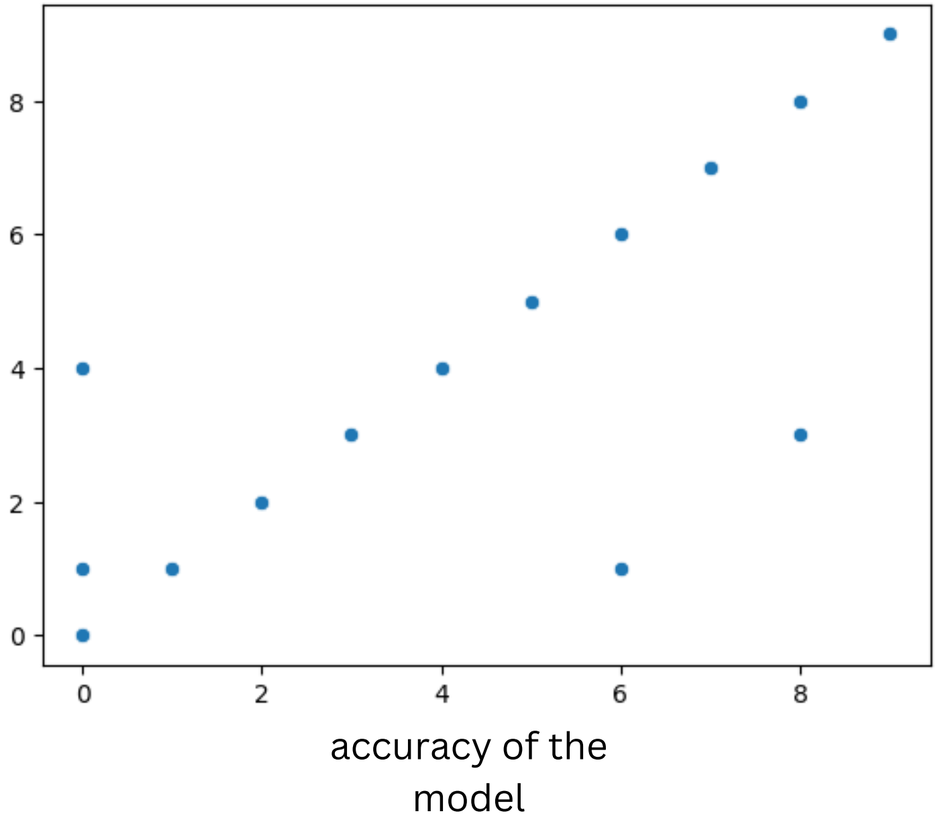


4 Analysis

Strengths and Weaknesses

- The AI model has the ability to differentiate between healthy and infected plants.
- The hardware setup can take live images of the plants and send them through Wi-Fi to the computer.

- Sending images is a bit slow.
- The camera should focus on finding plants and take images of them.



5 Conclusions

- Artificial intelligence offers a promising solution to increase crop yield.

- Comparison between AI technologies and naked eye in detection of plant diseases.

6 Recommendations

01

Using edge detection technology to increase accuracy of disease detection.

02

Pre-processing images using AI on board instead of on the computer.

03

Using better cameras to increase images quality to make diseases detection more accurate.

Thank You