Dr. Plant

Team 082 Buffer Underflow

Team Buffer Underflow Members

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Introduction

Singapore has a bold plan call the **'30 by 30' goal**, which is to build up the nation's agri-food industry's **capability and capacity to produce 30% of the nutritional needs locally** and **sustainably by 2030**.

To complement this goal, NParks also launched the **'Gardening with Edibles' programme**, an initiative to **encourage the local community in gardening**.

Problem Statement

However, to help and encourage people into farming, they would need to have **sufficient information on optimal conditions** for their plants, which **most people lack the appropriate tools to understand** their plants.

"Too often, we get customers coming to us for advice after the plants that they bought elsewhere <mark>died in a matter of days or weeks</mark>. This happens because <mark>they lack the proper knowledge</mark> to determine whether the plant is <mark>suitable for their environment</mark>"

Singapore is becoming a nation of urban gardeners – but is it all that sustainable? - CNA, 2 Mar 2020

Our Idea

Hence, we want to leverage on AI to provide people with more understanding of their plants and allow them the opportunity to make remedies on improving their plant conditions, towards fulfilling the '30 by 30' goal.

Target Audience

Novice gardeners in Singapore

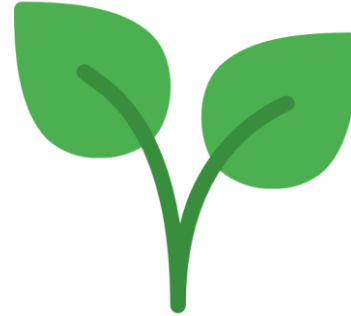# Our Solution

Revolutionising urban farming using AI

How does **Dr. Plant** helps?
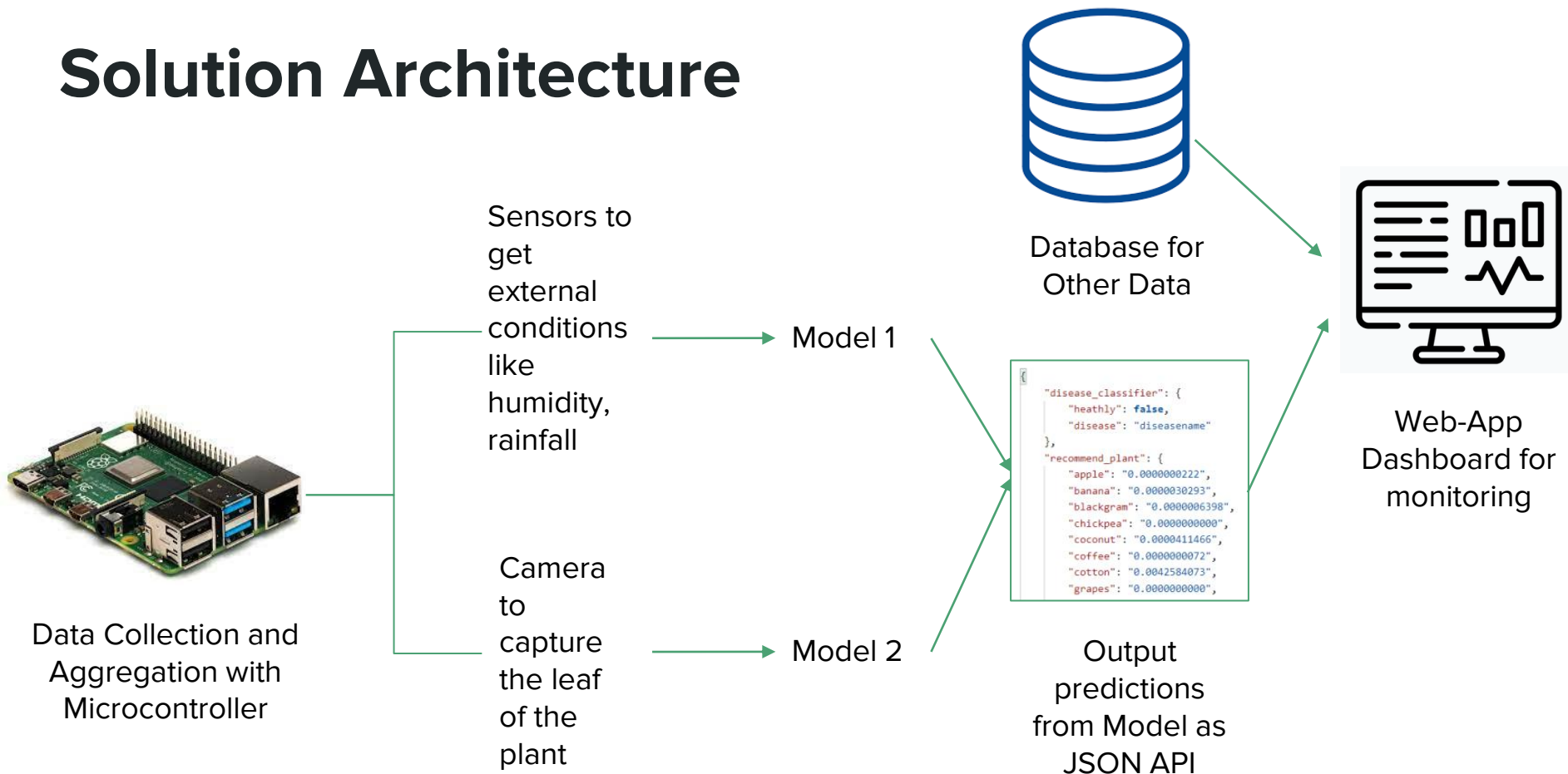
Assessing plant's external conditions

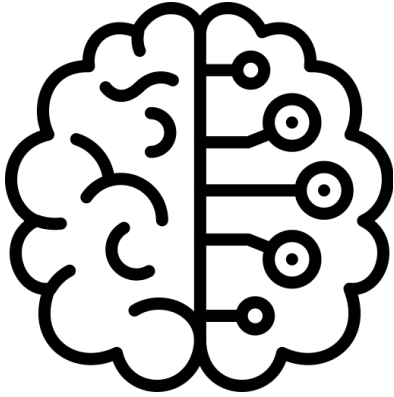- Temperature
- pH Levels of Soils
- Nitrogen/Oxygen Levels

Monitoring plant's health

- Monitor plant's leaves
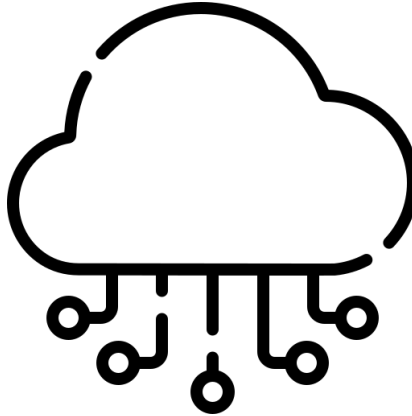- Detect symptoms where the plant is not growing healthily

Solution Architecture

Data Collection and Aggregation with Microcontroller

Sensors to get external conditions like humidity, rainfall

Camera to capture the leaf of the plant

Model 1

Model 2

Database for Other Data

```
{
  "disease_classifier": {
      "heathly": false,
      "disease": "diseasename"
  },
  "recommend_plant": {
      "apple": "0.0000000222",
      "banana": "0.0000030293",
      "blackgram": "0.0000006398",
      "chickpea": "0.0000000000",
      "coconut": "0.0000411466",
      "coffee": "0.0000000072",
      "cotton": "0.0042584073",
      "grapes": "0.0000000000",
```

Output predictions from Model as JSON API

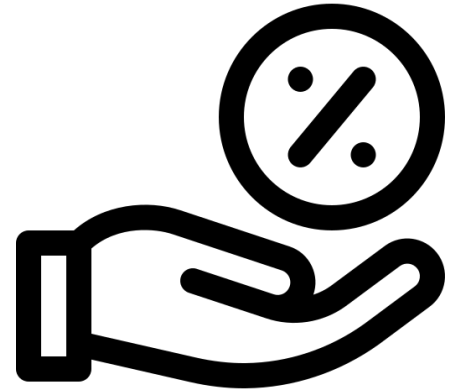Web-App Dashboard for monitoring

Future Plans

Machine Learning
Lifecycle

Cloud-Based Technologies
such as AWS

Commissions from the
users

Conclusion

- As Singapore aims for the '30 by 30' goal, and with more people going towards gardening, they will need the necessary tools and understanding on the conditions of their plants.
- We want to help people with gardening through understanding their plants by leveraging on AI, towards the overall contribution to the '30 by 30' goal.

Thank You!