

CLBSCSD2611_ST20284589_FINAL_PRES.pptx

by Walpitage Sahan Dinuka

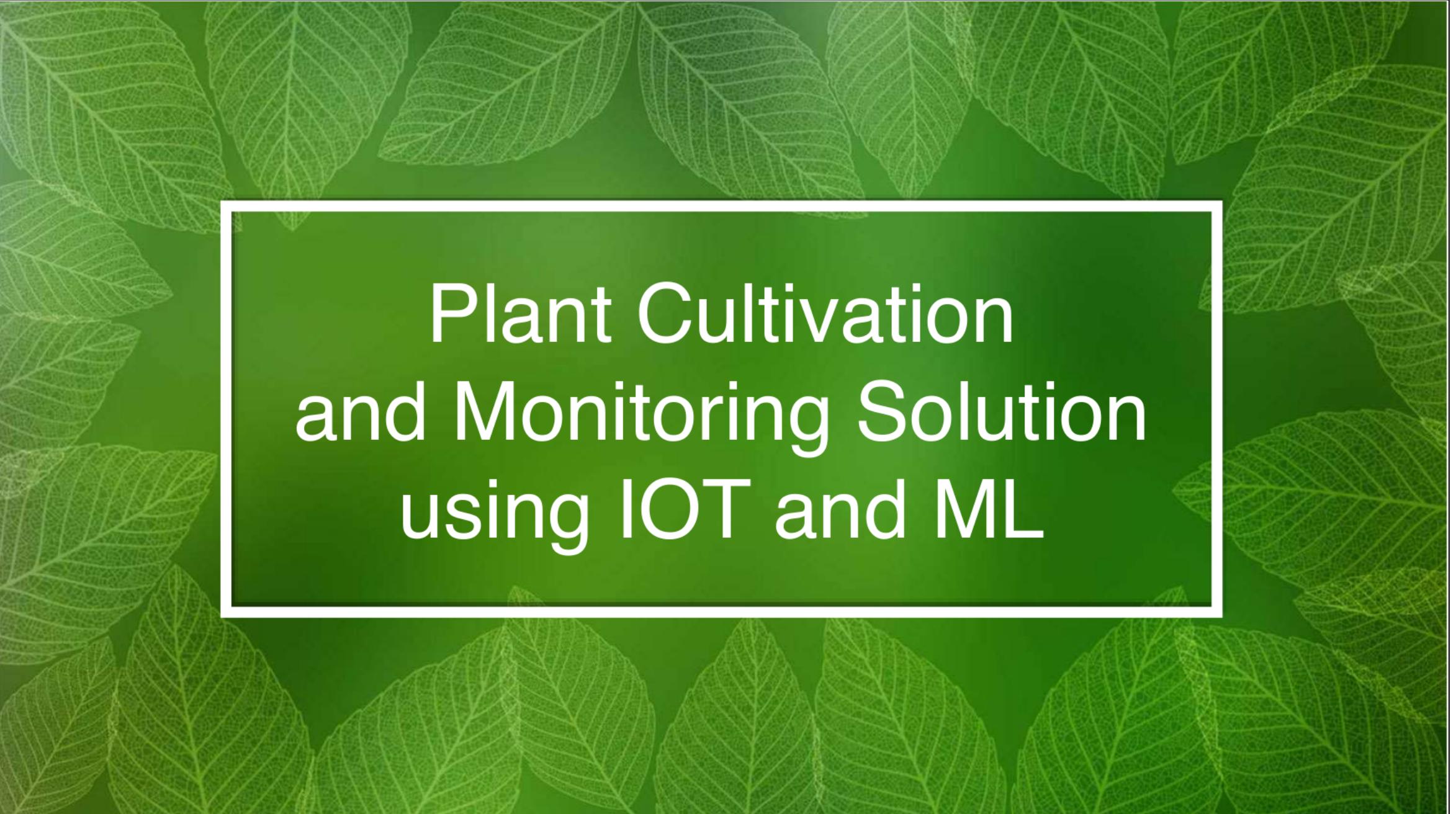
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Plant Cultivation and Monitoring Solution using IOT and ML

PROBLEM STATEMENT

Sri Lanka's agricultural sector has seen limited progress since independence, lagging notably behind other nations that have embraced modern technologies like the Internet of Things (IoT) and Machine Learning (ML). While these advancements have revolutionized farming globally, increasing production and efficiency, their adoption in Sri Lanka remains minimal.

Technological Gap



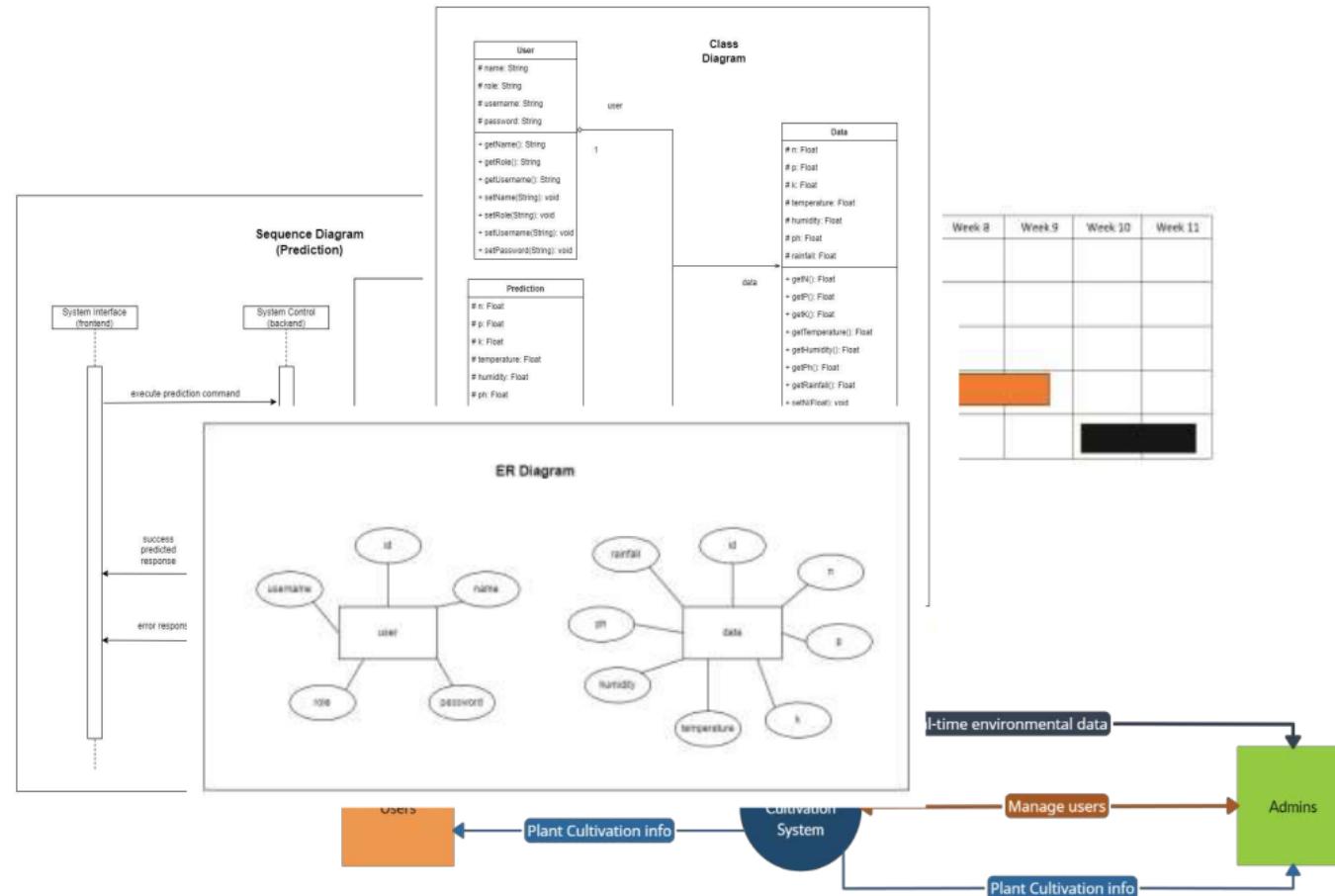
There's a significant absence of advanced technologies such as IoT and ML in the local agricultural practices.

Geographical and Climatic Diversity

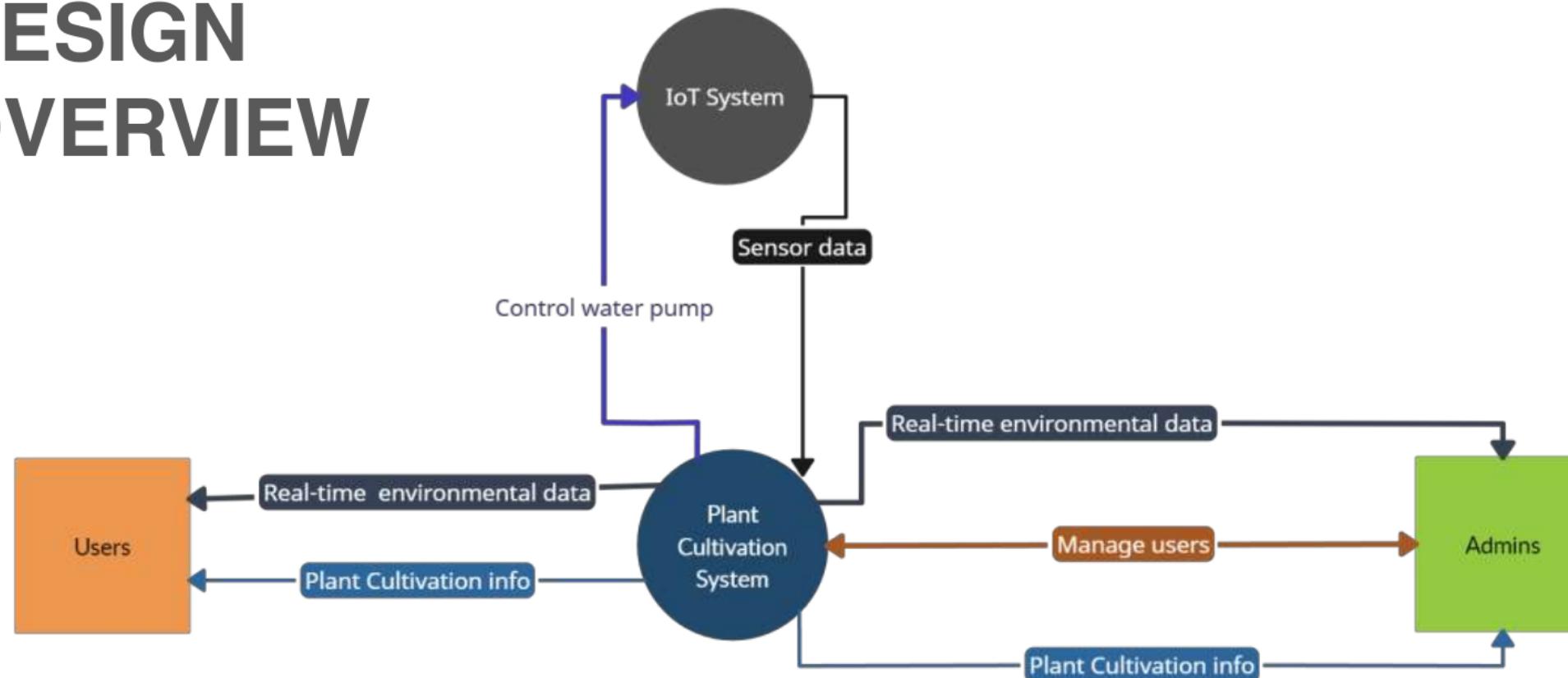


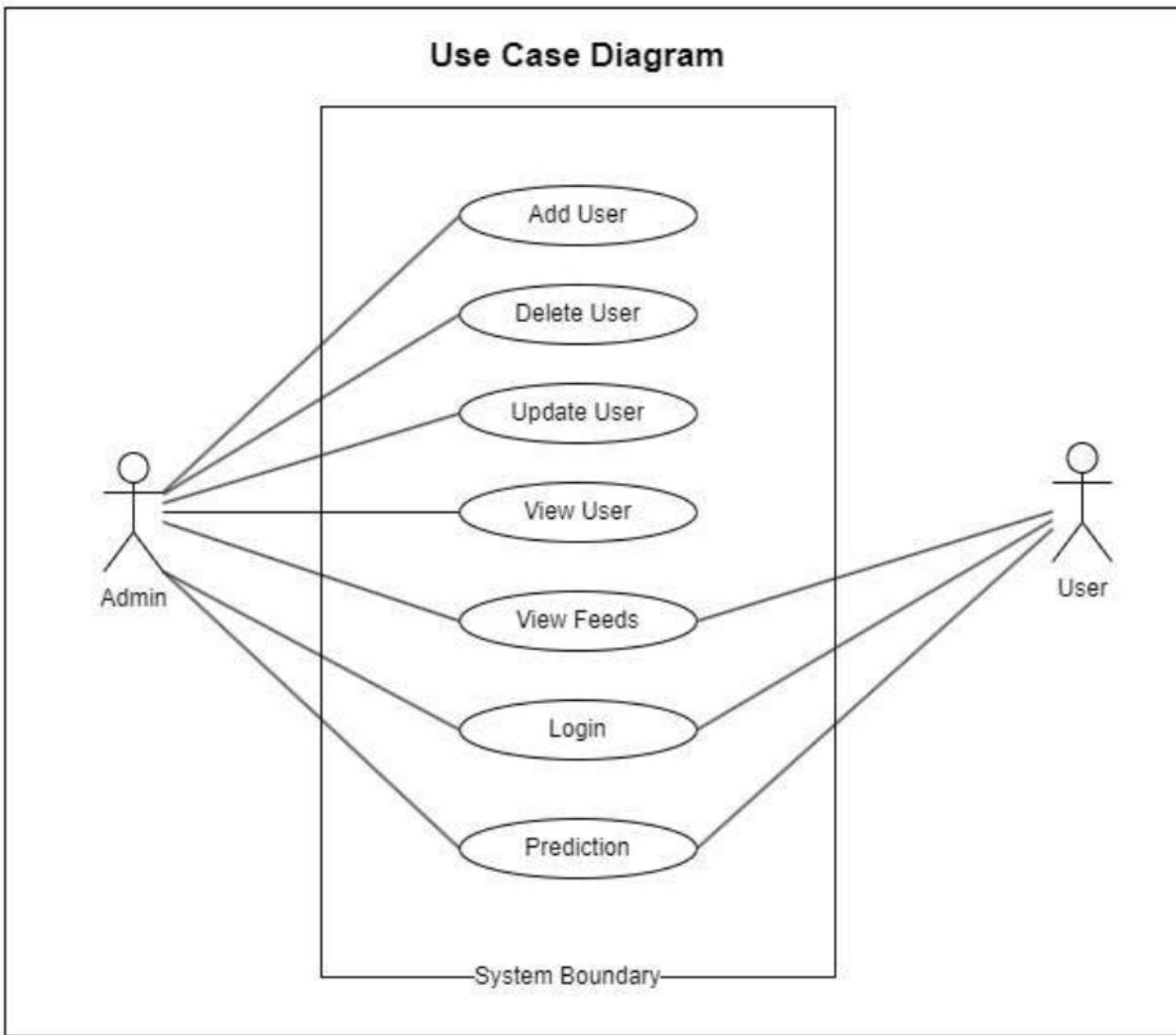
Sri Lanka's diverse agricultural landscape, varying widely across different regions in climate and geography, poses a unique challenge. The Central Province and the North Central Province, for example, differ greatly in temperature and precipitation, affecting what crops can feasibly be cultivated.

SYSTEM DIAGRAMS



DESIGN OVERVIEW

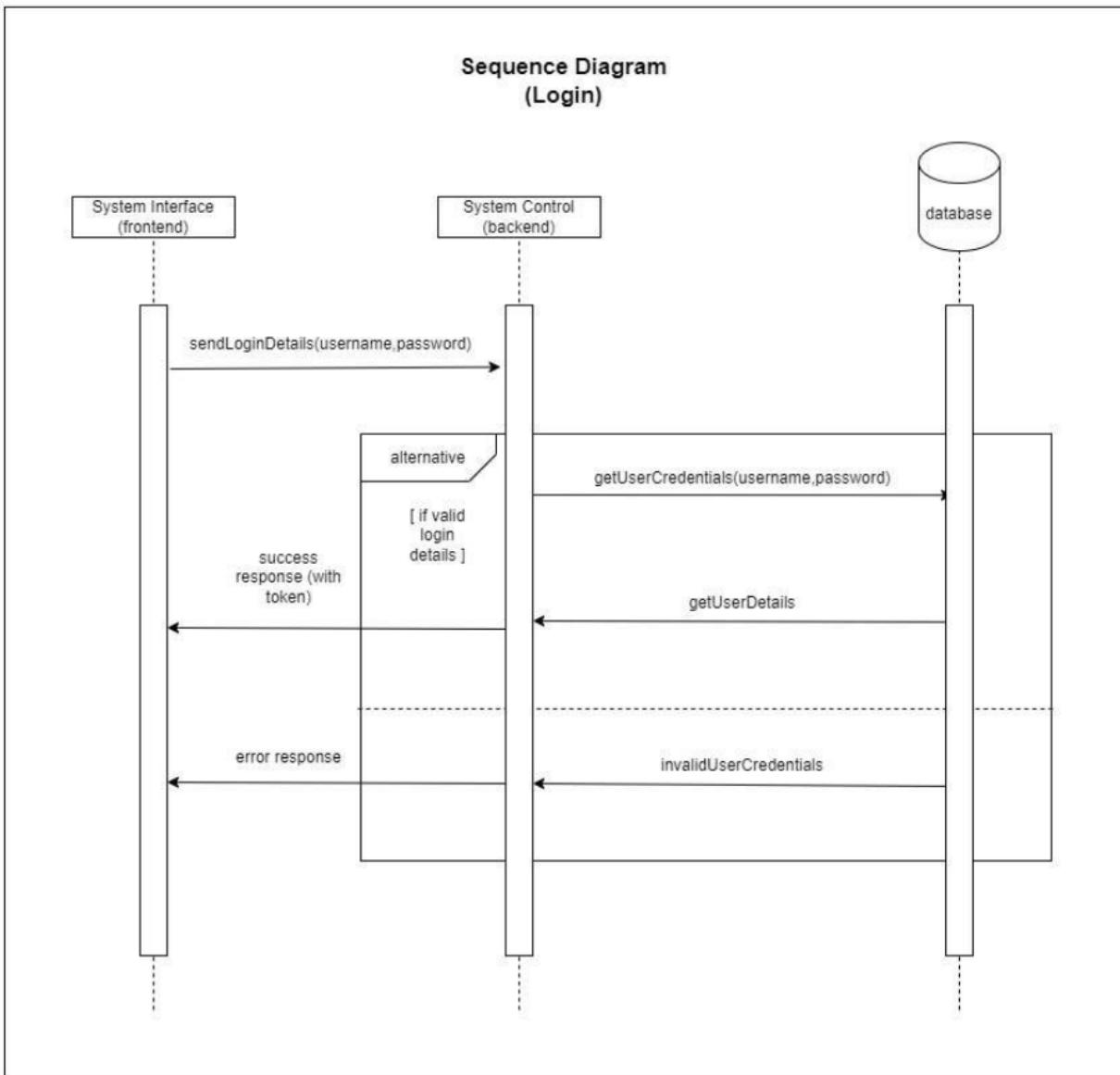


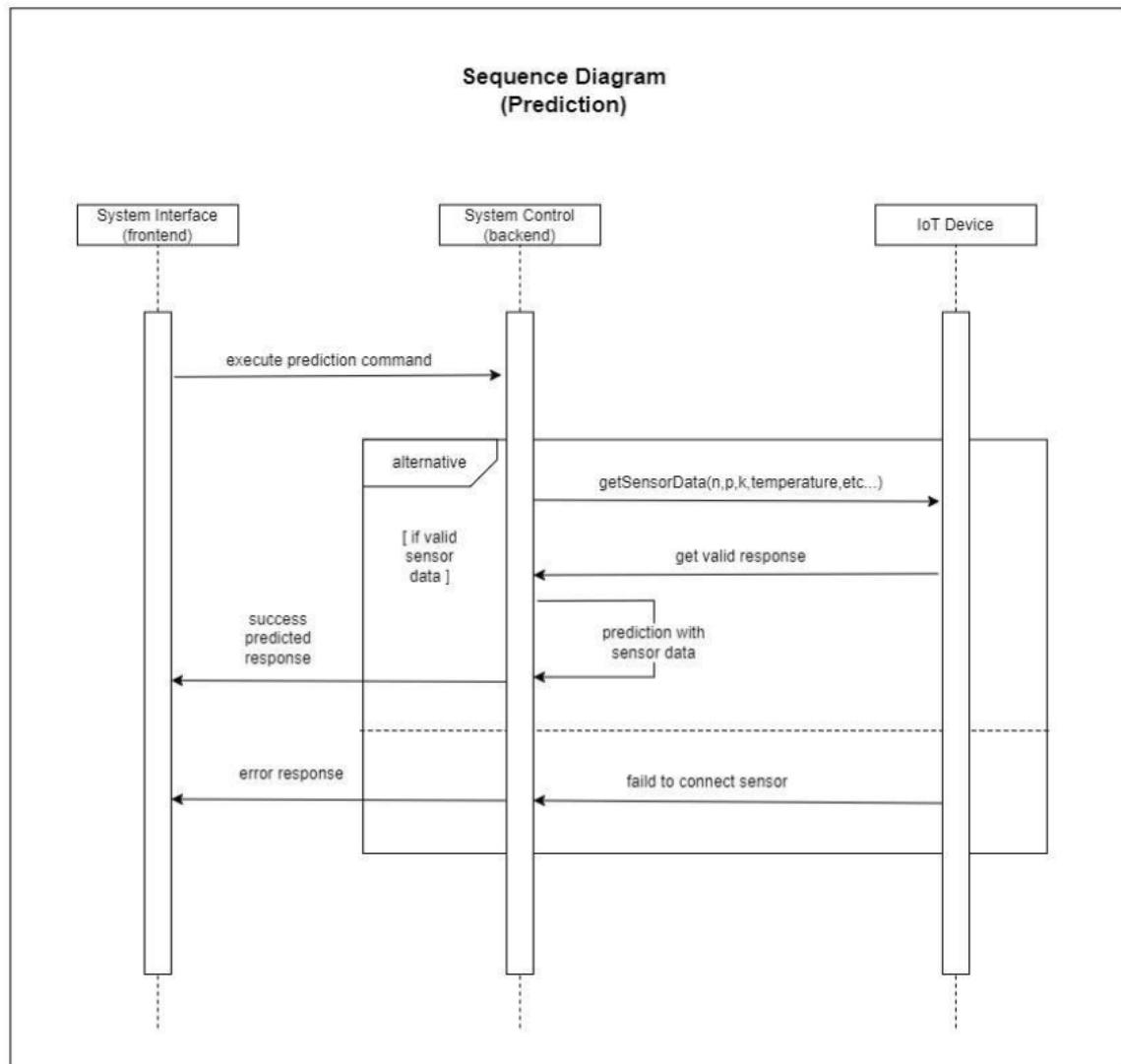


3

USE CASE DIAGRAM

SEQUENCE DIAGRAM (Login)

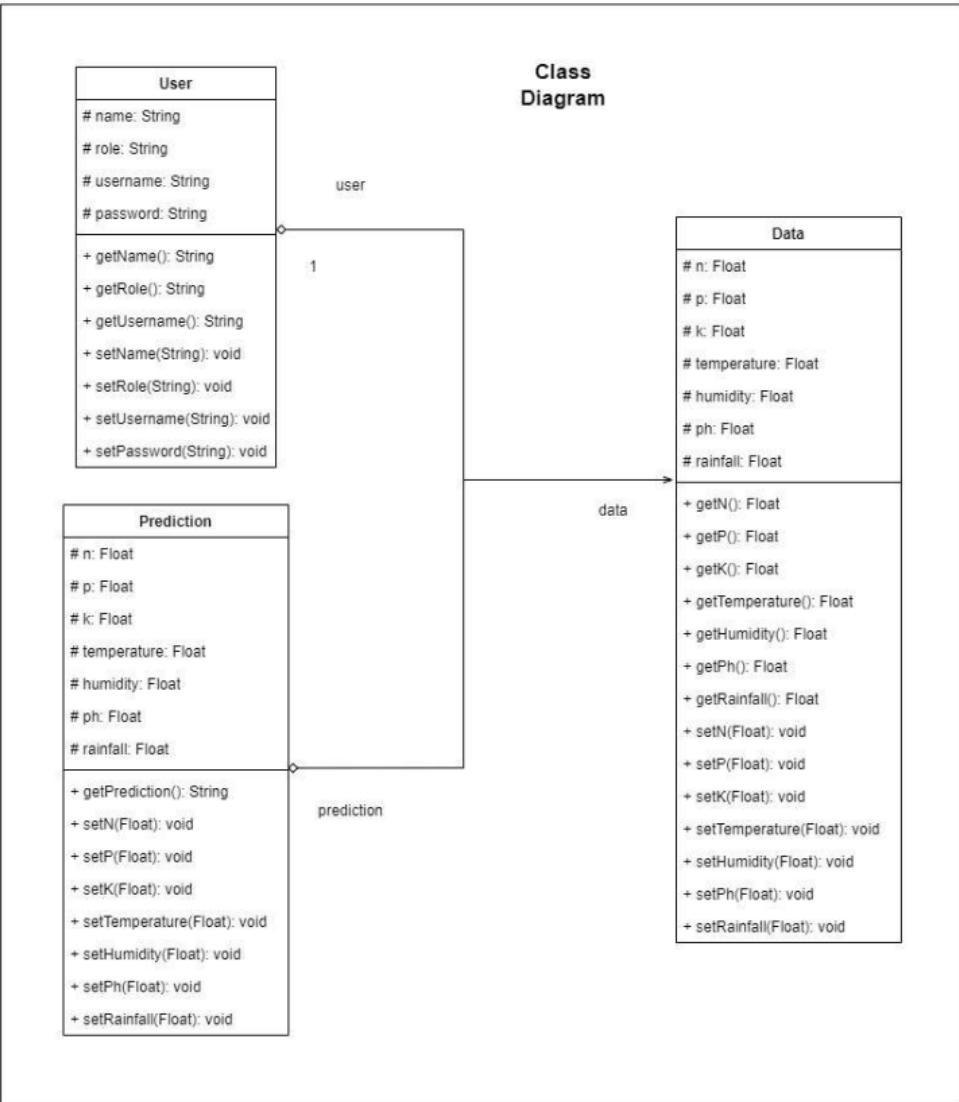




SEQUENCE DIAGRAM

(Prediction)

CLASS DIAGRAM



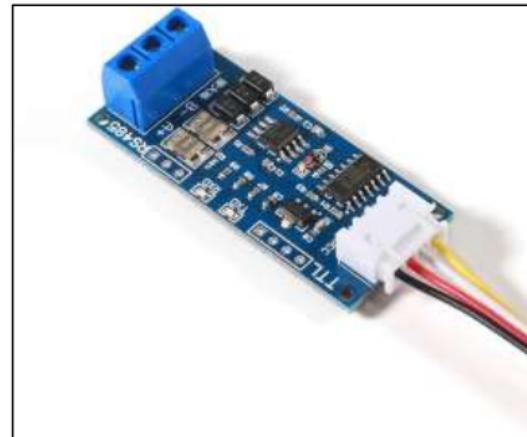
IOT DEVICE COMPONENTS



NodeMCU V3 Wi-Fi
Development Board



Soil Moisture, Temperature,
Humidity, PH, NPK Sensor



TTL to RS485 Adapter

LITERATURE REVIEW



literature review delves into the current state of IoT and Machine Learning applications within the agricultural sector. It compiles insights from various studies that demonstrate how these technologies have revolutionized farming worldwide. This includes enhancements in predictive analytics for crop yields, optimized resource management, and advanced environmental monitoring. Also explore the specific barriers and breakthroughs in technology adoption across different agricultural settings, focusing on how these innovations can be tailored to Sri Lanka's unique agricultural conditions. This comprehensive analysis establishes a robust foundation for understanding how IoT and ML can significantly contribute to advancing agricultural practices, supporting the innovative approaches proposed in the project.

LITERATURE REVIEW

Dependent Variable

Best Plant (label)



Independent Variable

Soil Moisture (NPK)

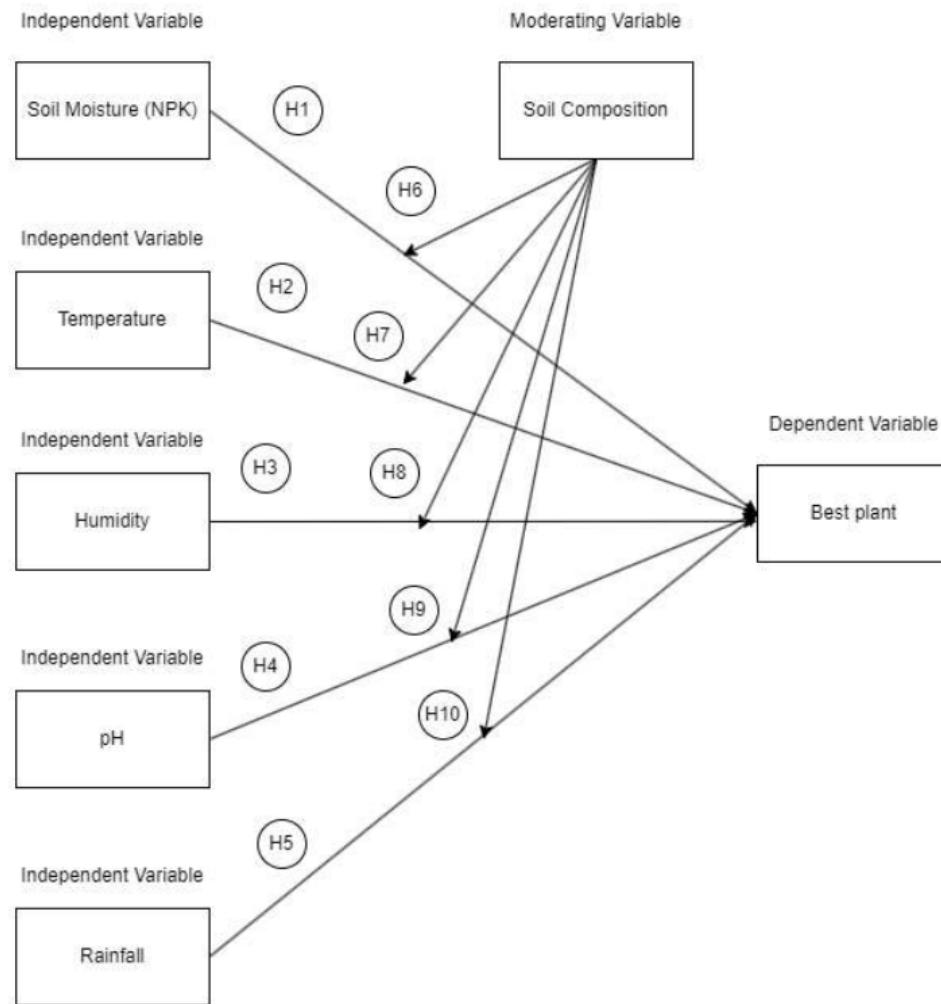
Temperature

Humidity

pH

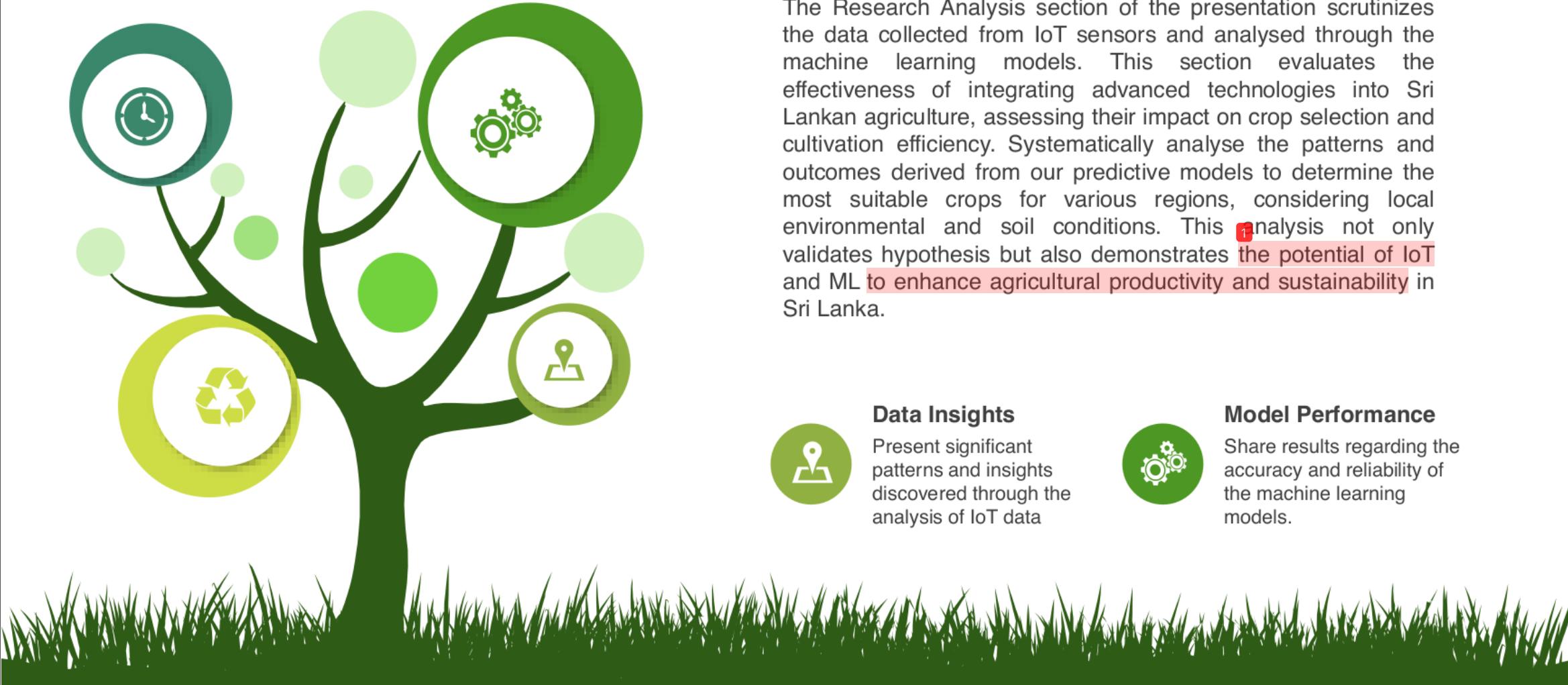
Rainfall

CONCEPTUAL DIAGRAM

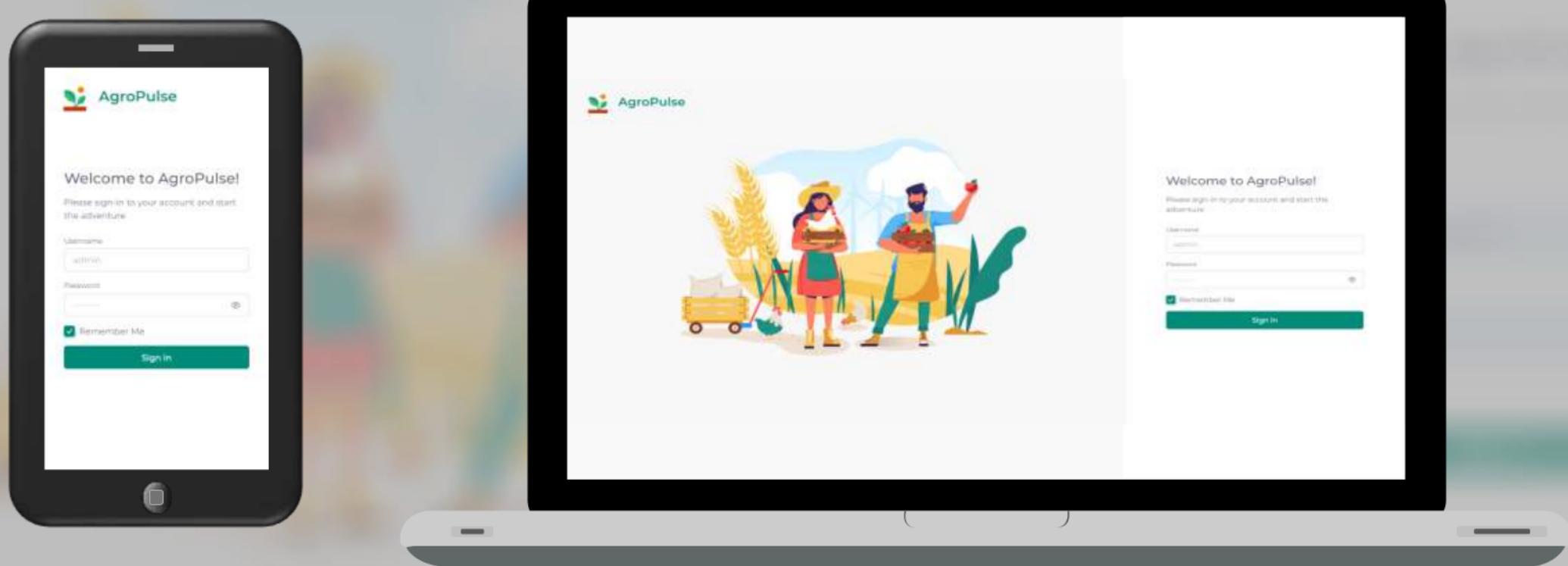


This conceptual diagram illustrates a framework for leveraging advanced technologies in agriculture. It begins with environmental and soil data as inputs, gathered via IoT sensors, which are then processed through our machine learning system. The outcome is precise predictions of optimal crop choices, tailored to the specific climatic and geographical characteristics of different regions in Sri Lanka, aiming to enhance agricultural efficiency and diversity.

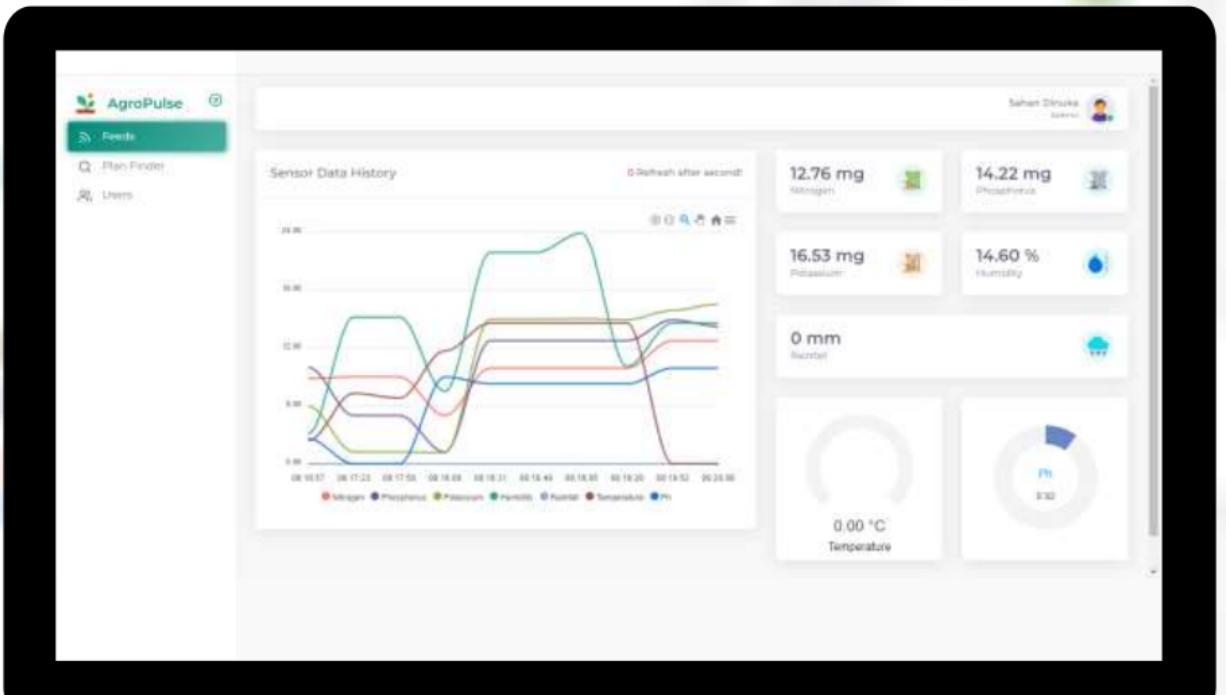
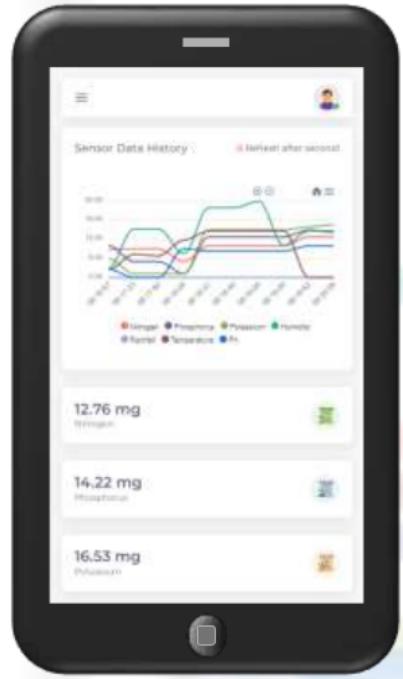
RESEARCH ANALYSIS



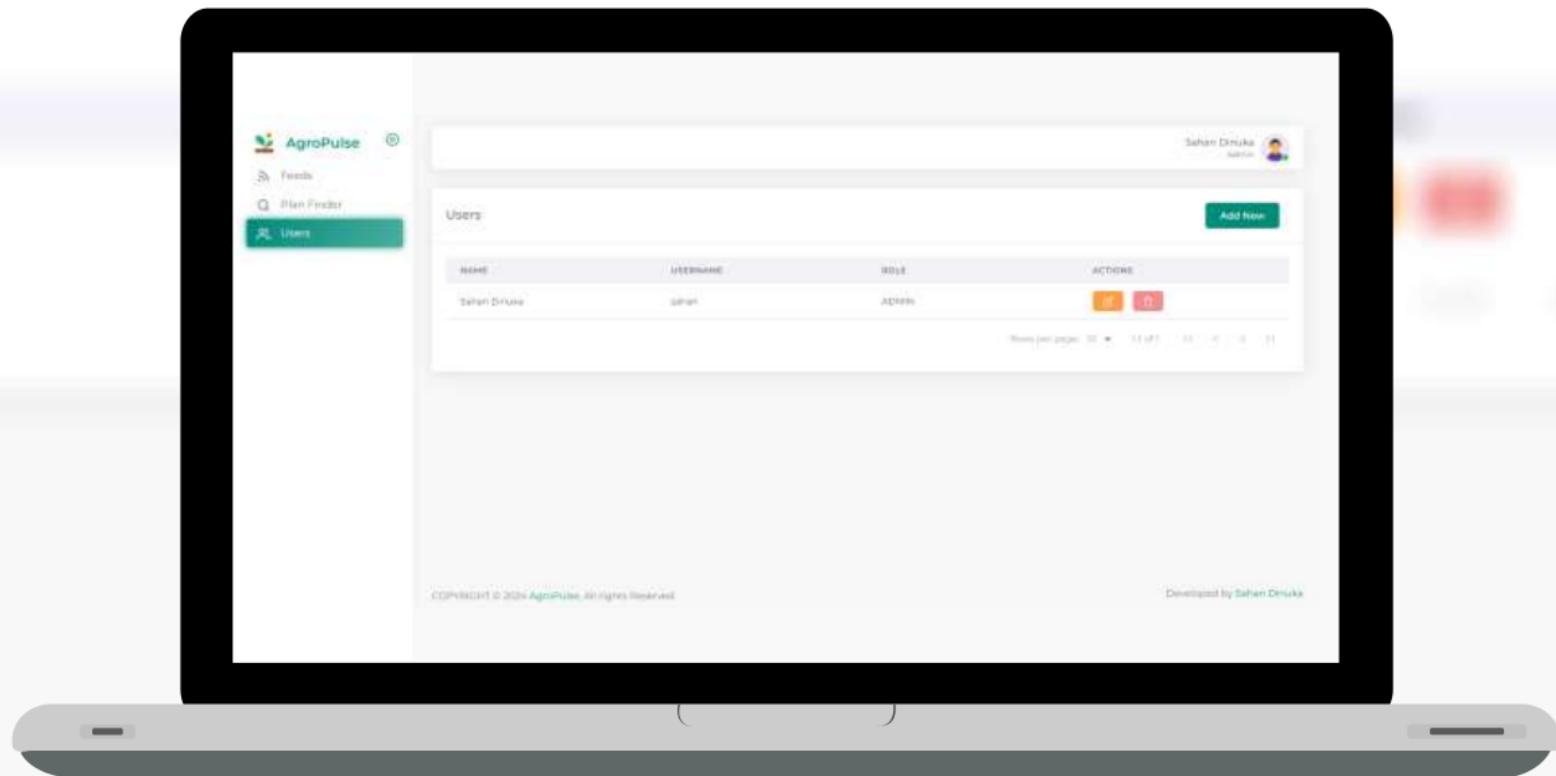
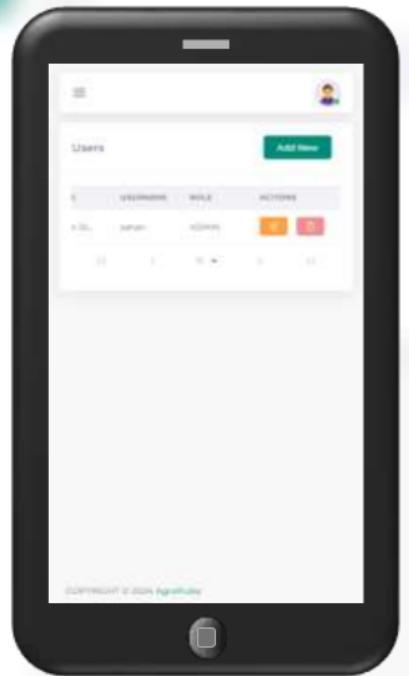
DESIGN (Login)



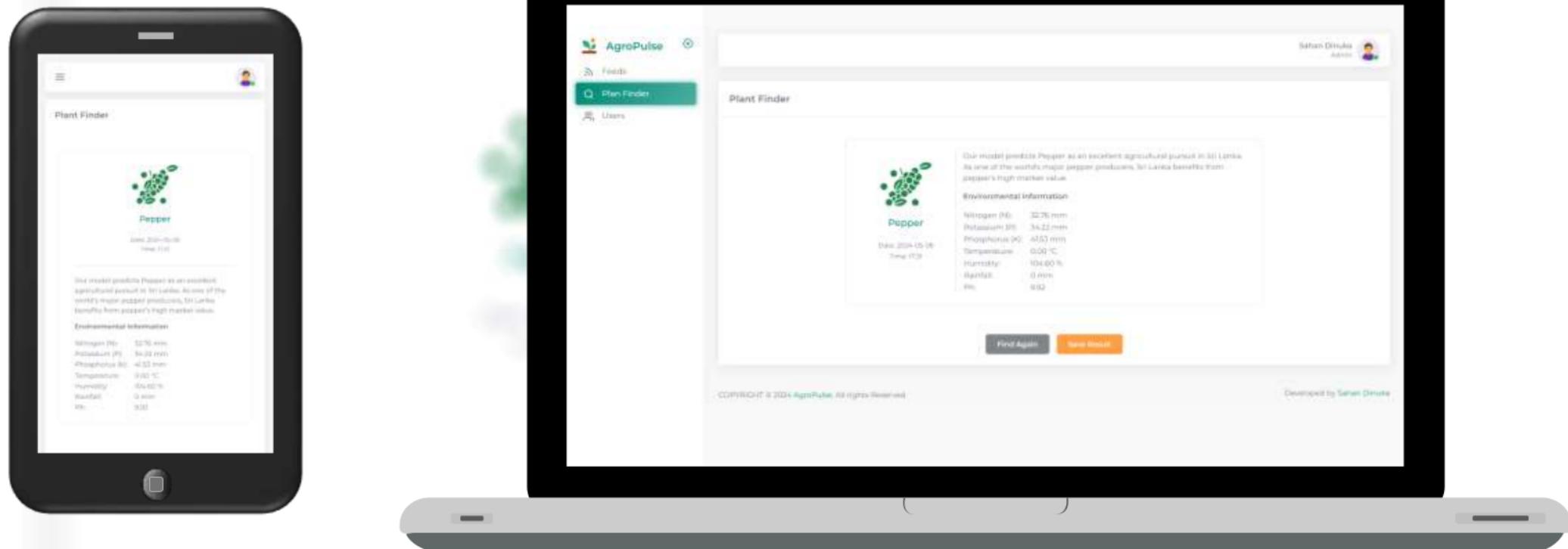
DESIGN (Dashboard)



DESIGN (Users)



DESIGN (Prediction)



GITH ACTION TEST RESULTS

node.js.yml #20

Re-run

build
succeeded 4 days ago in 31s

Beta Give feedback Search logs

Set up job

- 1 Current runner version: '2.315.0'
- 2 ► Operating System
- 3 ► Runner Image
- 4 ► Runner Image Provisioner
- 5 ► GITHUB_TOKEN Permissions
- 6 Secret source: Actions
- 7 Prepare workflow directory
- 8 Prepare all required actions
- 9 Getting action download info
- 10 Download action repository 'actions/checkout@v3' (SHA:f43ae8e5ff2bd294895638e18266ca9a3d1956744)
- 11 Download action repository 'mirromutth/mysql-action@v1.1' (SHA:de1fbab03f90cc8db80f663a7043be3cf3231248)
- 12 Download action repository 'actions/setup-node@v3' (SHA:1a4442cacd436585916729262731d5b162bc6ec7)
- 13 Complete job name: build

Build mirromutth/mysql-action@v1.1

- 1 ► Build container for action use: '/home/runners/work/_actions/mirromutth/mysql-action/v1.1/Dockerfile'.

Run actions/checkout@v3

- 1 ► Run actions/checkout@v3
- 2 Syncing repository: sahandinuka1995/IoT-Based-Plantation-System
- 3 ► Getting Git version info
- 4 Temporarily overriding HOME='/home/runners/work/_temp/e04381d9-c178-4f44-88d9-68897a344b3f' before making global git config changes

SONARLINT CODE QUALITY TEST

The screenshot shows an IDE interface with a SonarLint plugin. The project structure on the left includes a Python backend and a web-app folder containing components like auth, core, assets, config, consts, layouts, navigation, redux, router, services, utility, validations, and views. The current file is 'Home.js' under the 'views' folder.

The code editor displays a snippet of JavaScript:

```
import {Card, CardHeader,CardBody,CardTitle,Row,Col} from 'reactstrap'
import Chart from 'react-apexcharts'
import {useEffect, useState} from 'react'
import RealtimeStats from '../core/components/realtimeStats'
import icnNitrogen from 'src/assets/images/icons/icons8-nitrogen-64.png'
import icnPhosphorus from 'src/assets/images/icons/icons8-phosphorus-64.png'
import icnPotassium from 'src/assets/images/icons/icons8-potassium-64.png'
import icnHumidity from 'src/assets/images/icons/icons8-humidity-64.png'
import icnRainfall from 'src/assets/images/icons/icons8-rainfall-64.png'
import {getSensorDataCommon} from '../utility/Utils'
```

The code editor has a status bar at the bottom showing '8.74 - CR LF - UTF-8 - 4 spaces - development'.

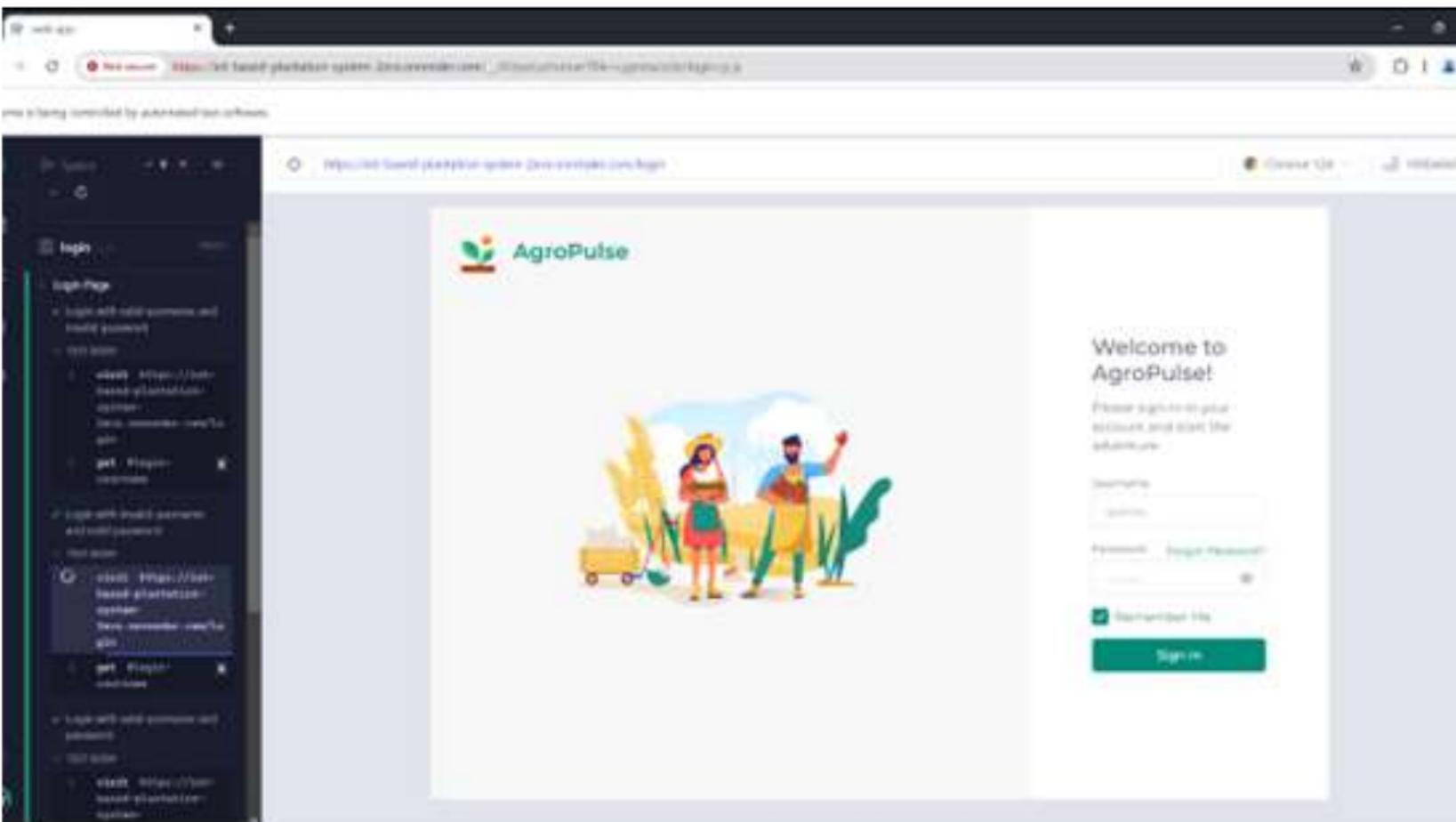
The SonarLint panel on the right shows analysis results for 'Home.js':

- Total issues: Found 5 issues in 1 file.
- Details: 5 issues in Home.js, including:
 - Remove this unused import of 'CardTest'
 - Remove this unused import of 'CardBody'
 - Remove this unused import of 'Label'
 - Remove this unused import of 'NoTemperature'
 - Remove this unused import of 'icnPp'
- Rule: Unnecessary imports should be removed.
- Intentionality: Intentional (Not clear)
- Maintainability: javascript:S1128
- Learn more: [javascript:S1128](#)
- Why is this an issue? More info
- Description: Unnecessary imports refer to importing modules, libraries, or dependencies that are not used or referenced anywhere in the code. These imports do not contribute to the functionality of the application and only add extra weight to the JavaScript bundle, leading to potential performance and maintainability issues.
- Code snippet:

```
import A from '...'; // An unnecessary import. The imported symbol 'A' is not used
```
- Code snippet:

```
import { B1 } from 'B'
```

UI AUTOMATION TEST RESULT



UI AUTOMATION TEST RESULT

The screenshot displays a dual-pane interface for UI automation testing. On the left, a terminal window shows a Cypress test script for a 'plant-finder' component. The script includes steps for visiting the login page, entering credentials, and performing a POST request to log in. It then expects the URL to change to '/home'. A screenshot of the resulting 'Plant Finder' page is shown on the right, featuring a coffee bean icon and environmental information for coffee, such as Nitrogen (N) at 583.73.

```
web-app
Not secure https://iot-based-plantation-system-2evs.onrender.com/_/#/specs/unrunner?file=cypress/e2e/plant-finder.cy.js
Name is being controlled by automated test software.

Specs
plant-finder 0:20
  - Plant Finder Page
  ✓ Login
    - TEST BODY
      1 visit https://iot-based-plantation-system-2evs.onrender.com/login
      2 get #login-username
      3 -type sahan
      4 get #login-password
      5 -type 1234
      6 get .btn
      7 -click
        (sh) ● POST 200 https://iot-based-plantation-system-nodejs.onrender.com/api/v1/auth/login
      8 url
      9 -expected expected https://iot-based-plantation-system-2evs.onrender.com/home to include /home
        (page load) —page loaded—
        (new url) https://iot-based-plantation-system-2evs.onrender.com/home
      10 get .navbar-container
      11 -expected expected <div.navbar-container.d-flex.content> to be visible
```

https://iot-based-plantation-system-2evs.onrender.com/plant-finder

Chrome 124 1000x660 (93%)

Sahan Dinuka Admin

Plant Finder

Coffee

Our predictive model suggests that Coffee is an excellent crop choice for your agricultural project. Coffee is not only a beloved beverage worldwide but also a significant commodity in the global market, offering promising opportunities for farmers.

Environmental Information

Nitrogen (N):	583.73
Potassium (P):	2.59
Phosphorus (K):	35.85
Temperature:	2.20
Humidity:	4.10
Rainfall:	78.0
pH:	91.00

Date: 2024-04-25 Time: 17:04

Find Again Save Result

Summary Report										
<input type="text" value="Summary Report"/> Name: <input type="text" value="Summary Report"/>										
<input type="checkbox"/> Write results to file / Read from file <input type="text" value="C:\Users\Sahari\Documents\ICBT\IoT-Based Plantation System\jMeter\Plantation.jmx"/> Filename: <input type="button" value="Browse"/> <input type="checkbox"/> Log/Display Only <input type="checkbox"/> Errors <input type="checkbox"/> Successes <input type="button" value="Config"/>										
Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB/sec	Sent KB/sec	Avg. Byte
Get All Sensor D...	100	112774	99000	126458	6890.56	0.00%	47.3/sec	1.06	0.26	1
Get All Users	100	12736	1157	29205	9236.68	1.00%	2.0/sec	2.54	0.67	1
Add New User	100	320	275	605	51.74	0.00%	2.1/sec	0.63	0.87	1
Update User	100	332	274	645	54.47	0.00%	2.1/sec	0.64	0.71	1
Delete User	100	328	272	696	68.87	0.00%	2.1/sec	0.64	0.53	1
Get Prediction	100	11997	3958	19407	4378.58	4.00%	1.8/sec	2.57	0.62	1
TOTAL	600	23081	279	126458	40793.38	0.82%	1.7/sec	3.26	1.16	

Include group name in label Save Table Data Save Table Header

LOAD & PERFORMANCE TEST RESULT

CONCLUSION

This research demonstrated that the integration of Internet of Things (IoT) and Machine Learning (ML) technologies can significantly enhance crop selection processes and overall agricultural productivity in Sri Lanka.

The application of these technologies enabled precise monitoring and analysis of environmental and soil conditions, leading to more informed and effective farming decisions.

By adapting agriculture to technological advancements, Sri Lanka can improve food security, increase export opportunities, and bolster the national economy.

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THANK YOU



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ORIGINALITY REPORT



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