

CLBSCSD2611_ST20284589_FINAL_PRES.pptx

by Walpitage Sahan Dinuka

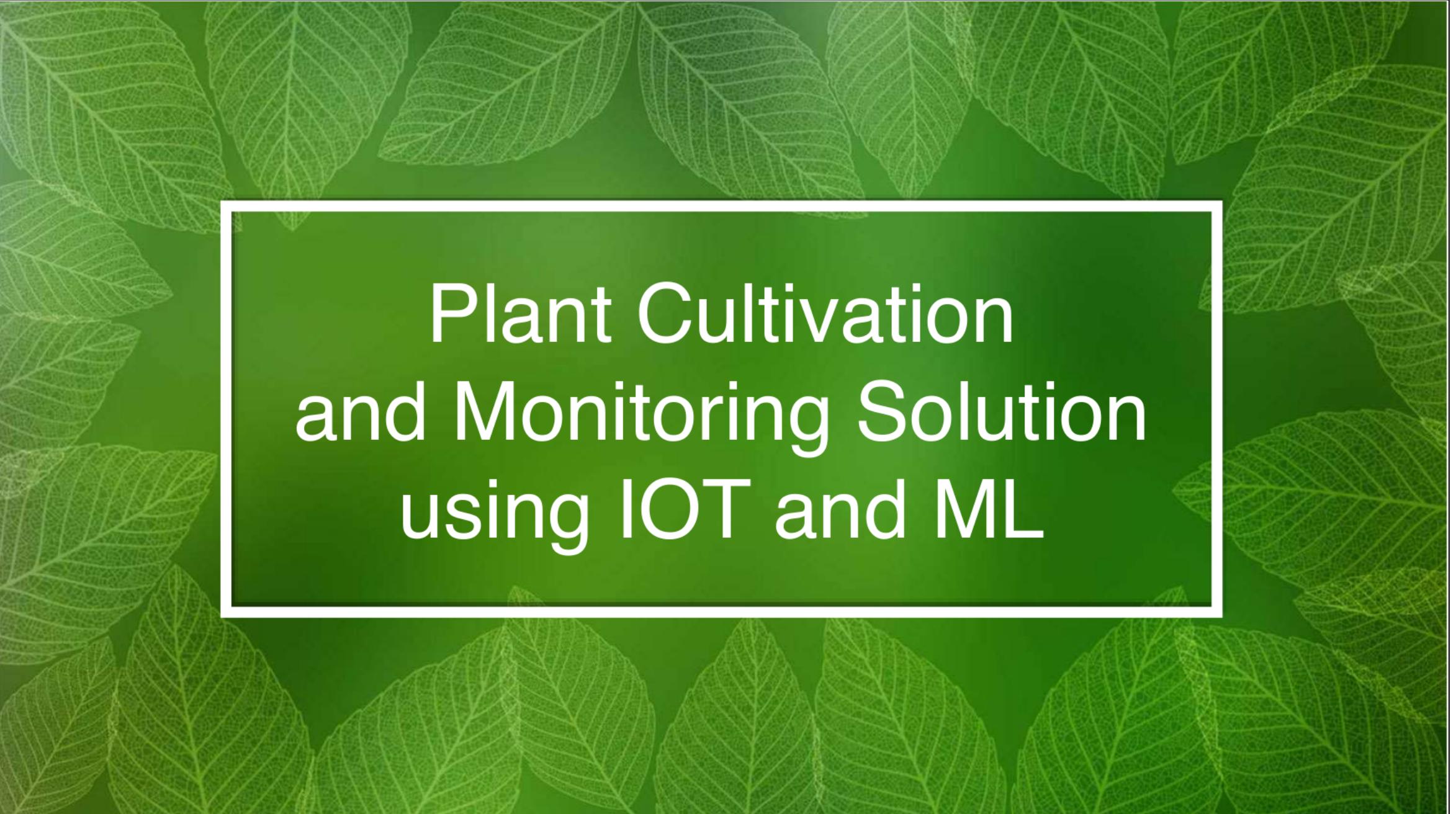
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Plant Cultivation and Monitoring Solution using IOT and ML

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



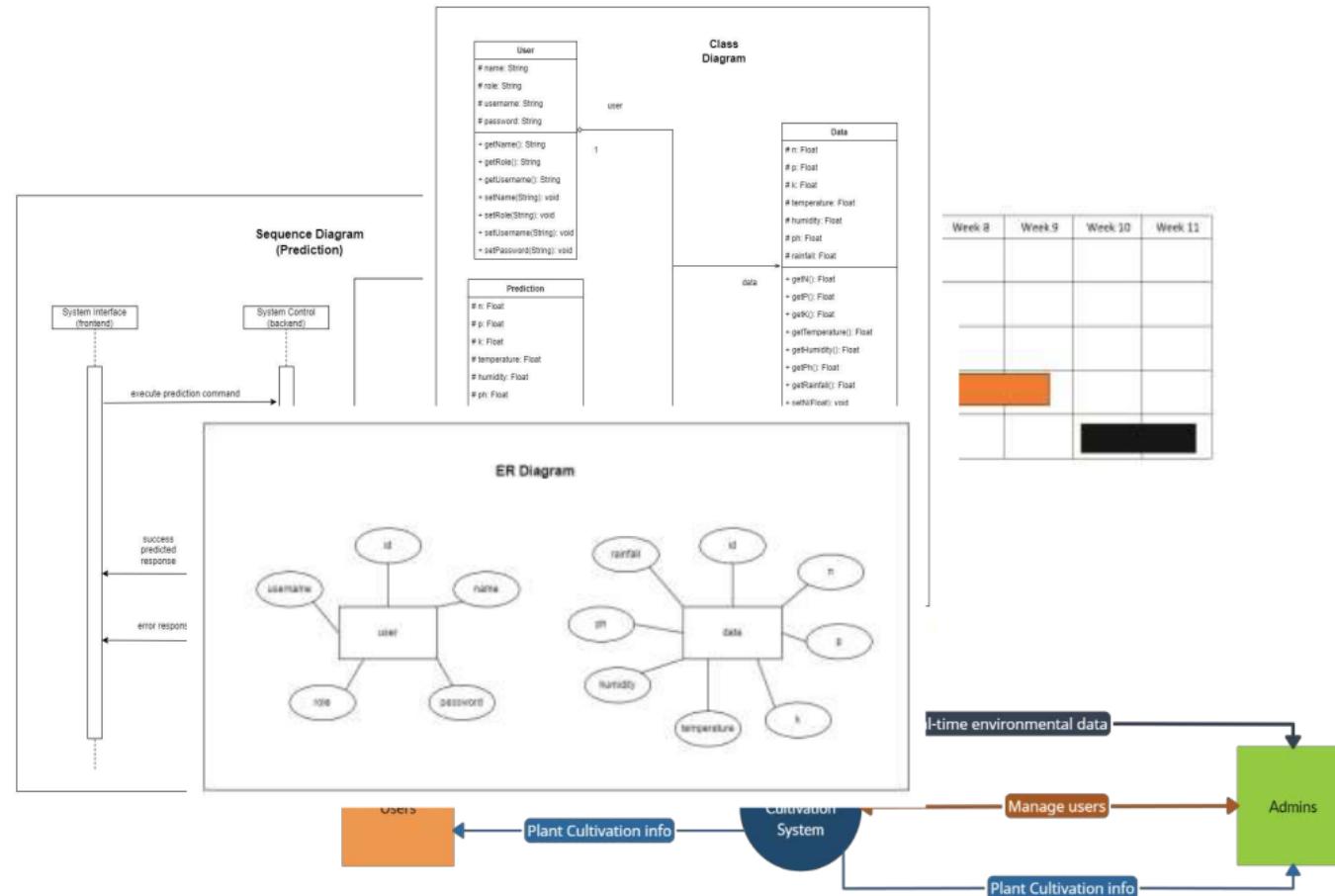
There's a significant absence of advanced technologies such as IoT and ML in the local agricultural practices.

Geographical and Climatic Diversity

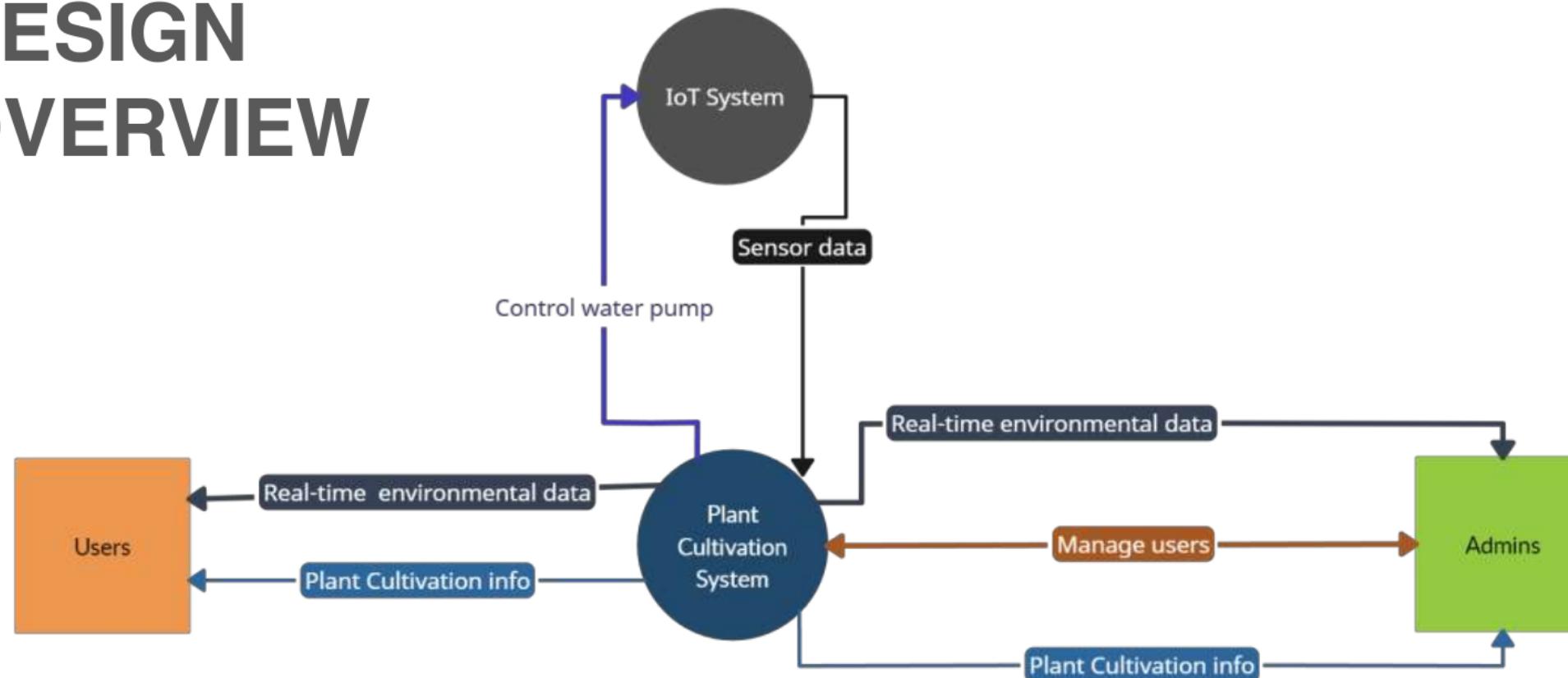


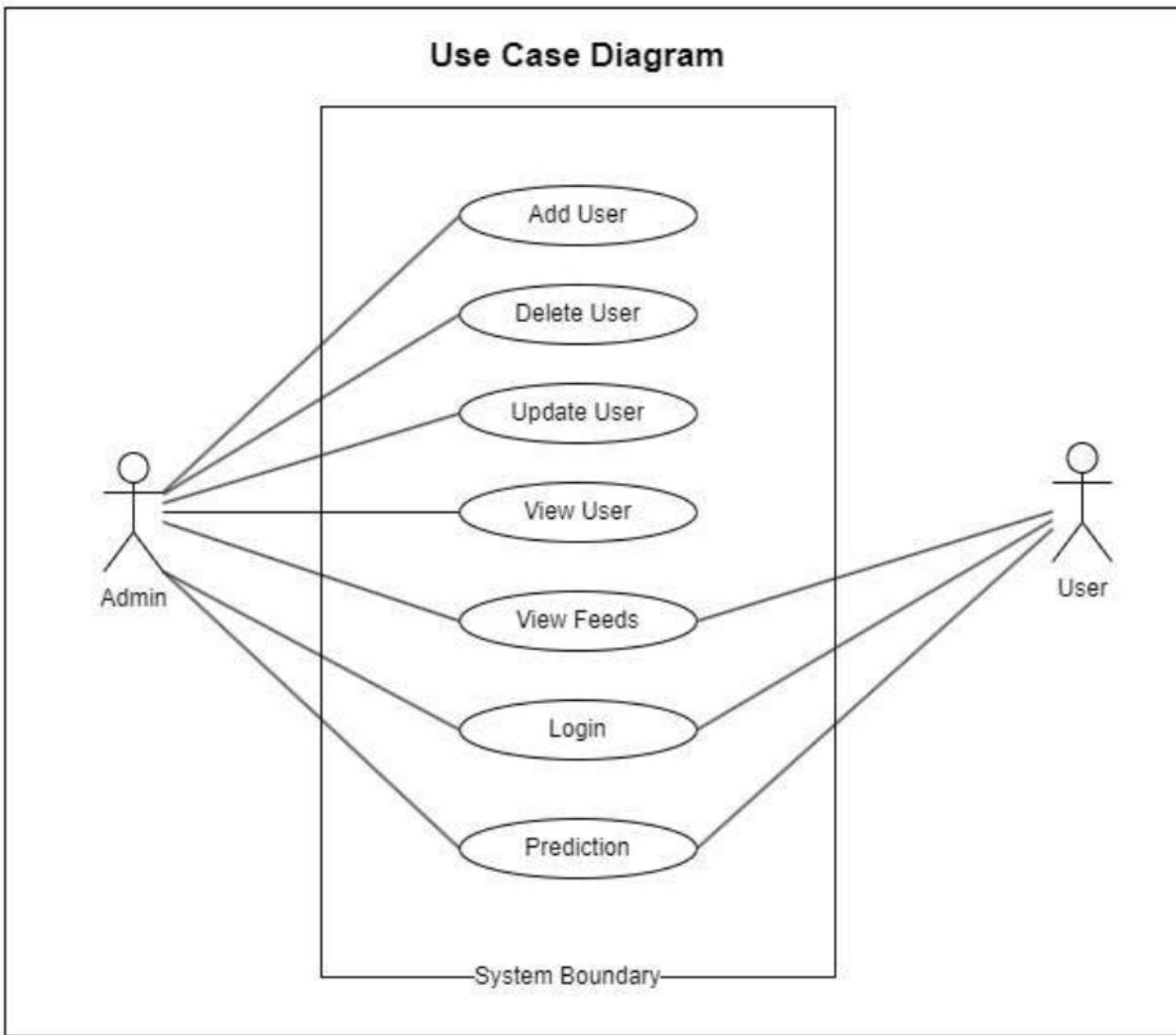
Sri Lanka's diverse agricultural landscape, varying widely across different regions in climate and geography, poses a unique challenge. The Central Province and the North Central Province, for example, differ greatly in temperature and precipitation, affecting what crops can feasibly be cultivated.

SYSTEM DIAGRAMS



DESIGN OVERVIEW

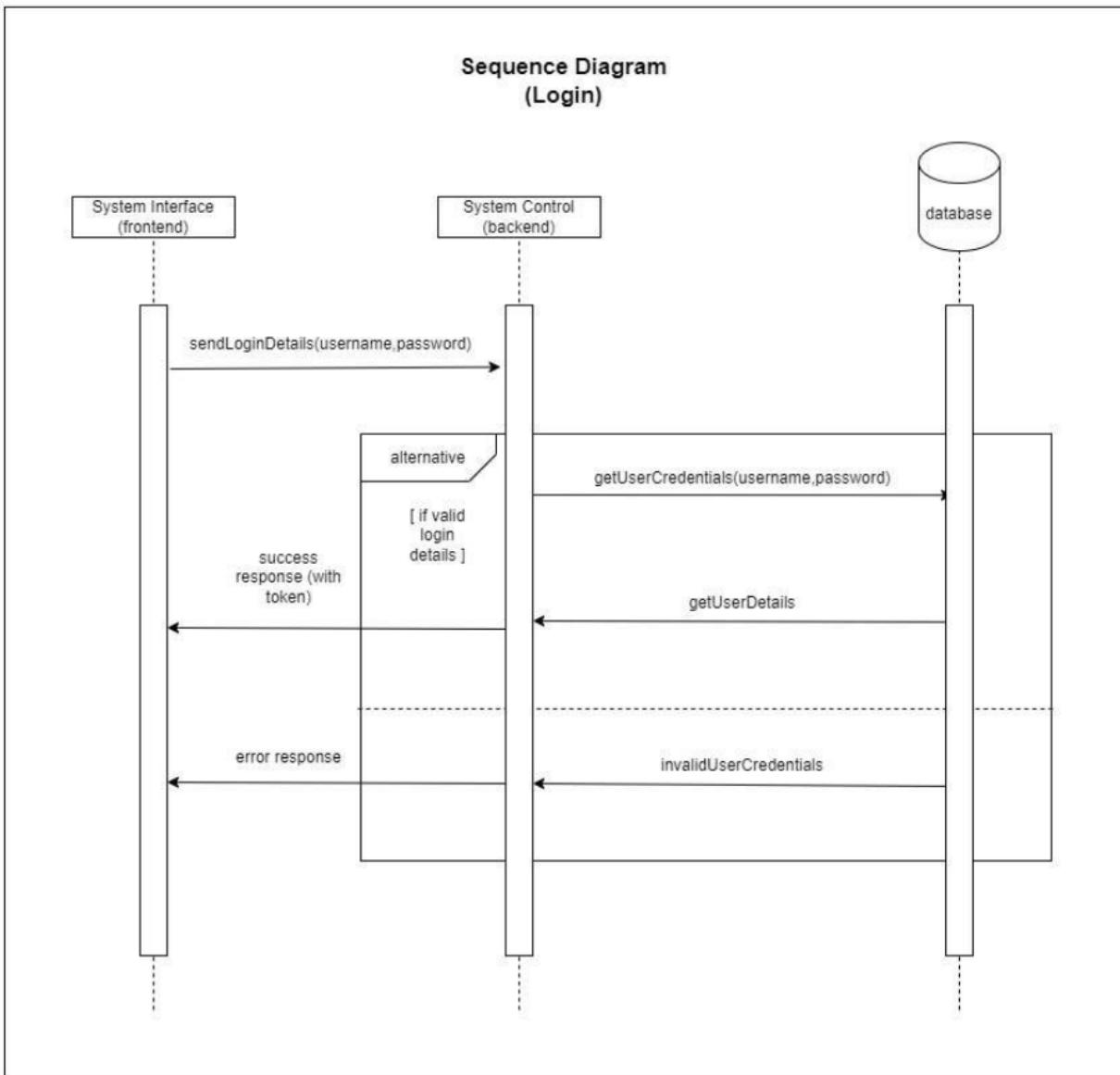


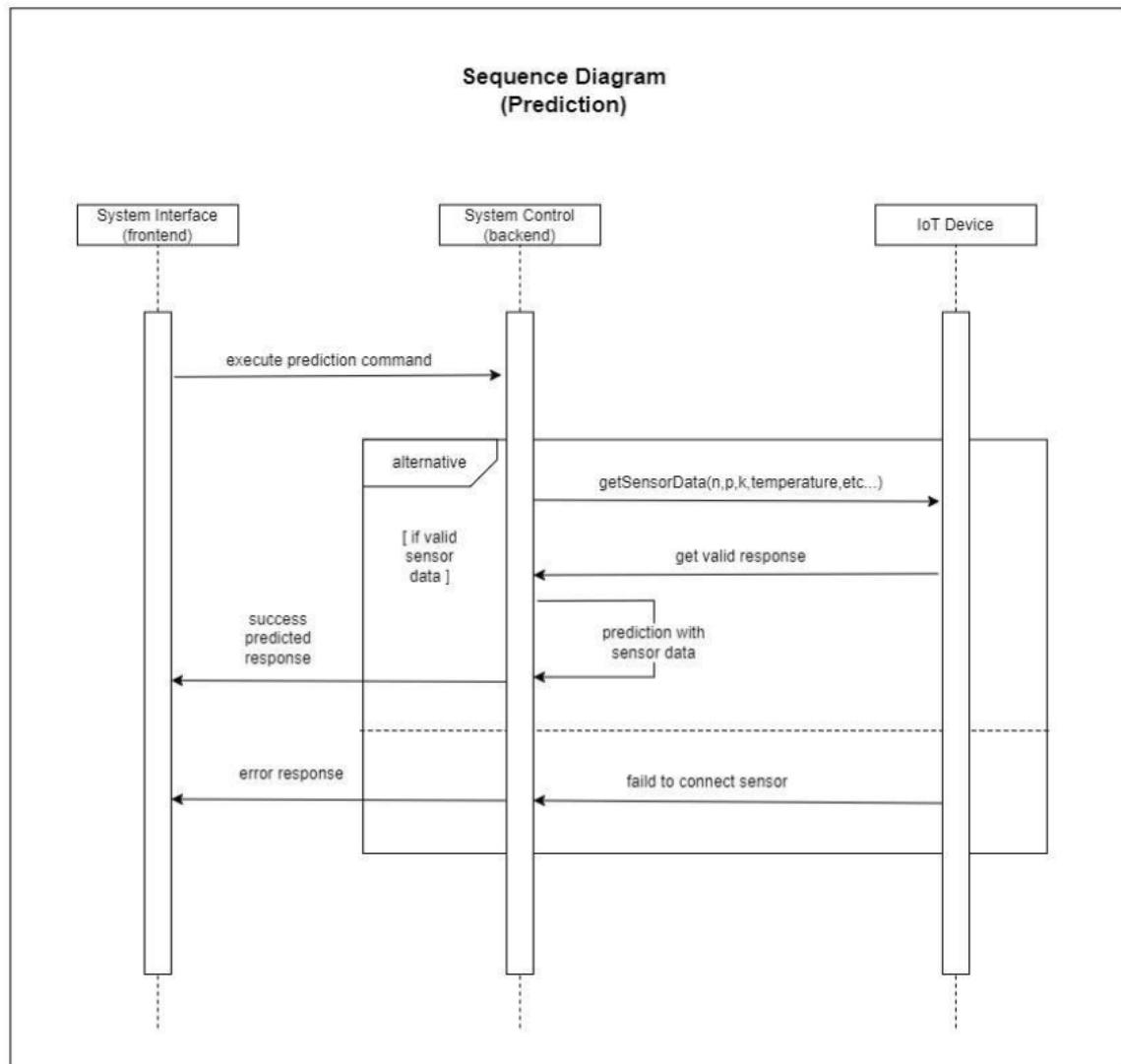


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USE CASE DIAGRAM

SEQUENCE DIAGRAM (Login)

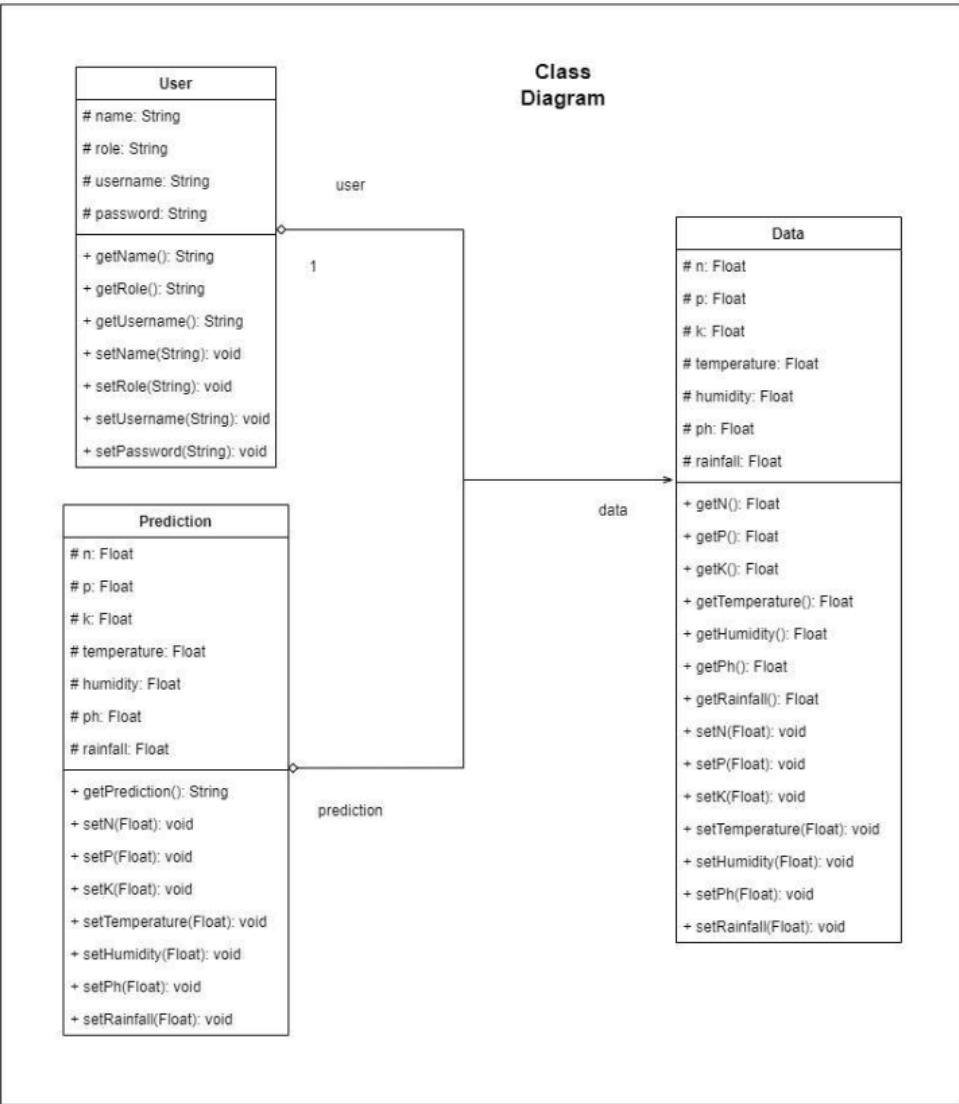




SEQUENCE DIAGRAM

(Prediction)

CLASS DIAGRAM



LITERATURE REVIEW



Our 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. We 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 our project."

LITERATURE REVIEW

Dependent Variable

Best Plant (label)



Independent Variable

Soil Moisture (NPK)

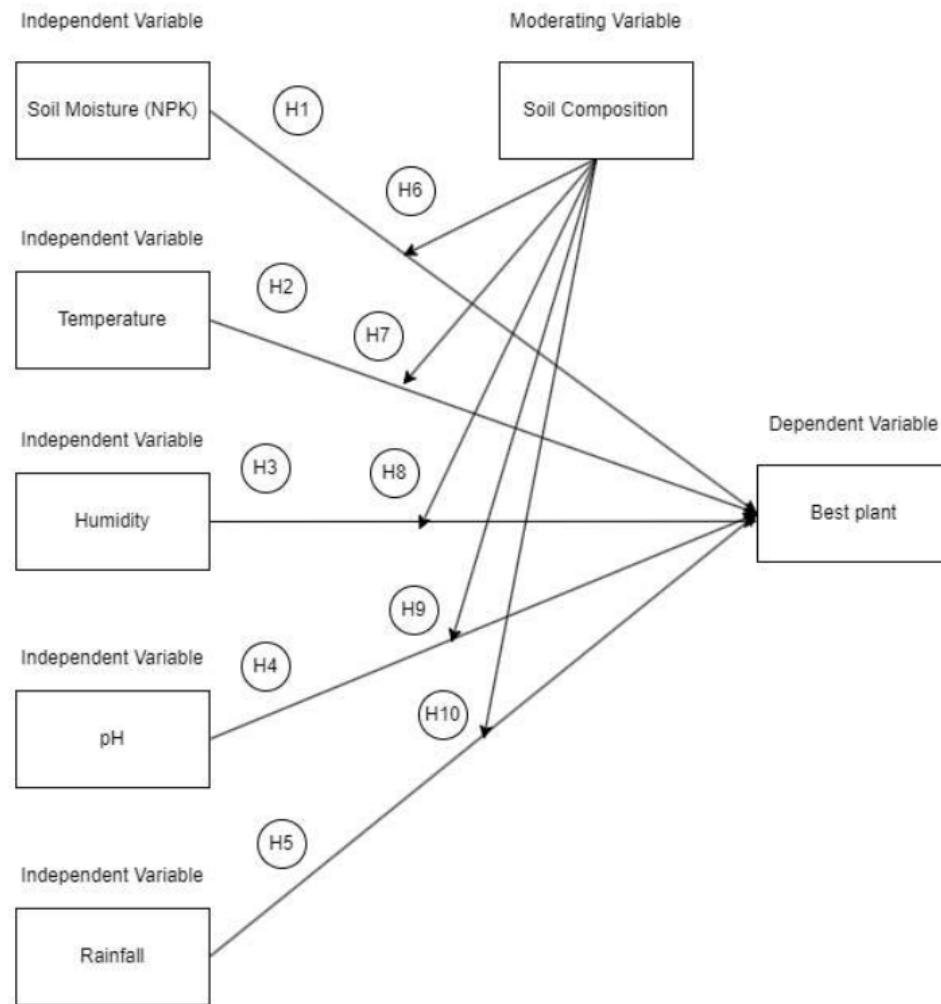
Temperature

Humidity

pH

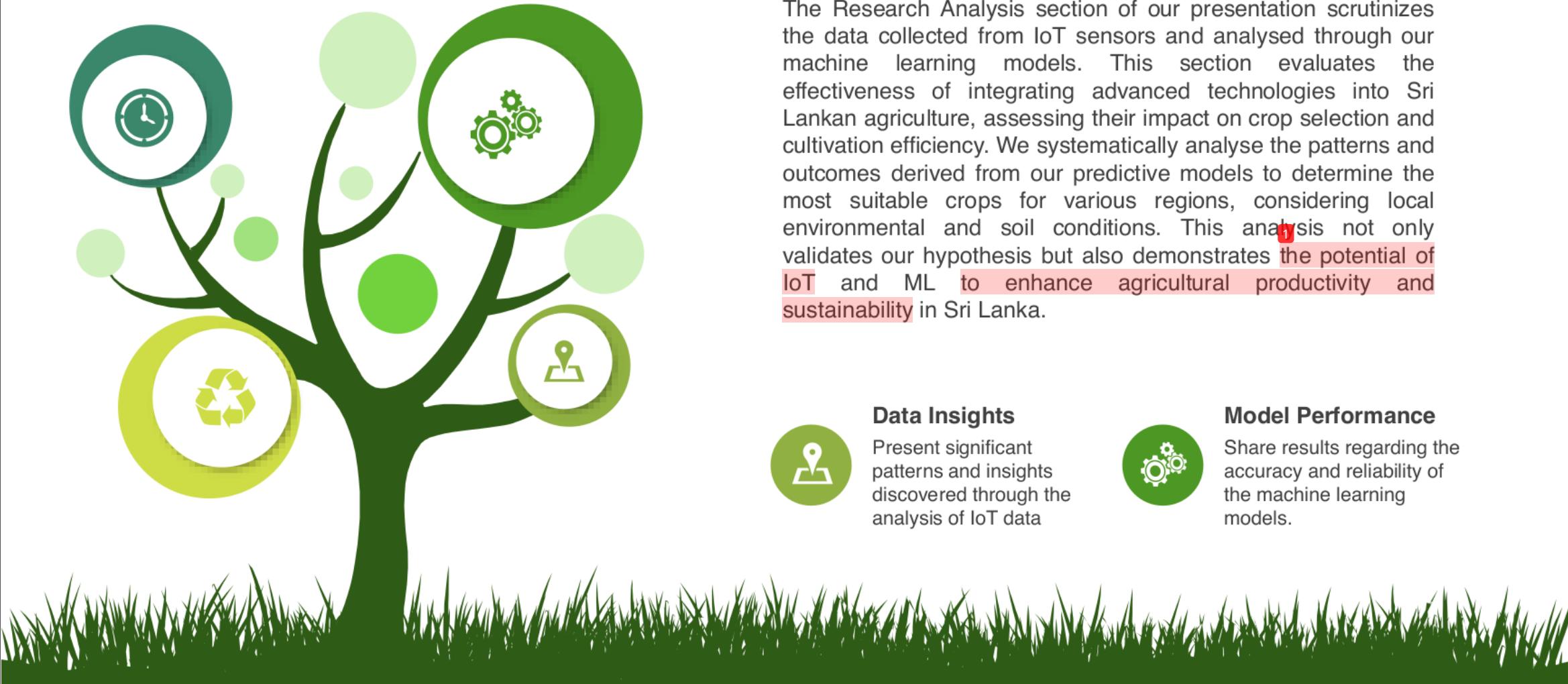
Rainfall

CONCEPTUAL DIAGRAM

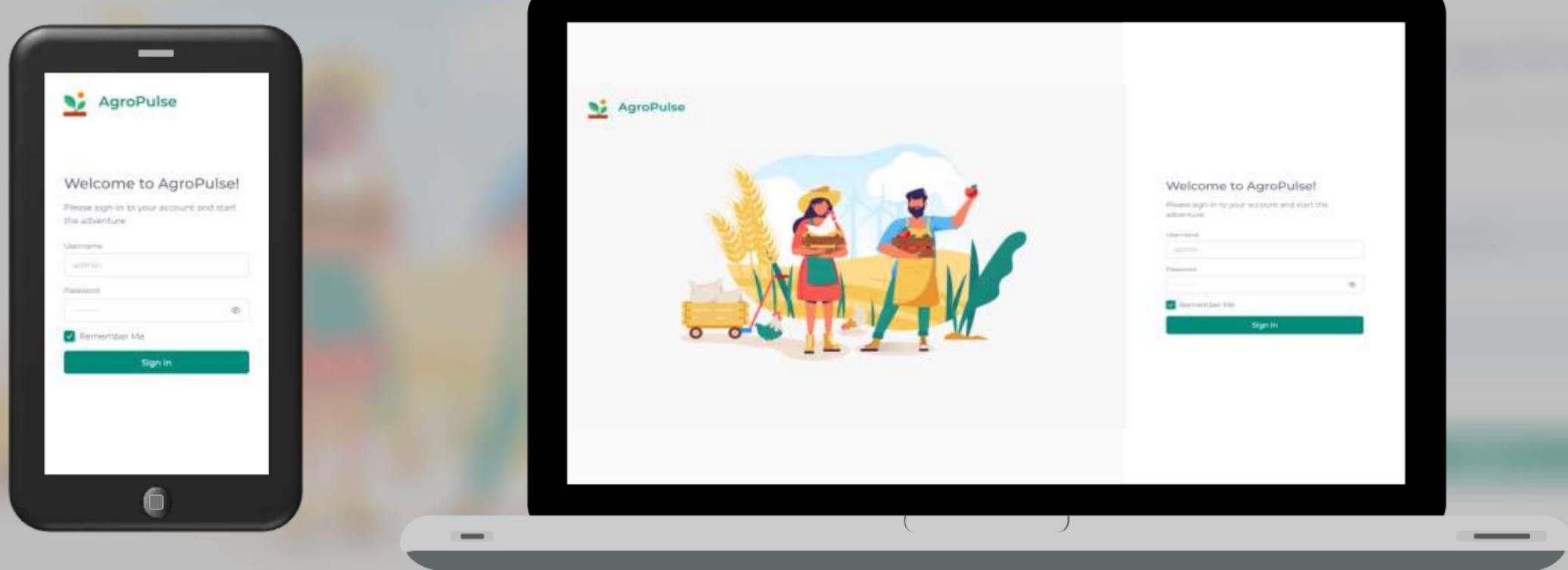


This conceptual diagram illustrates our framework for leveraging advanced technologies in agriculture. It begins with environmental and soil data as inputs, gathered via IoT sensors, which are then processed through our machine learning system. The outcome is precise predictions of optimal crop choices,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

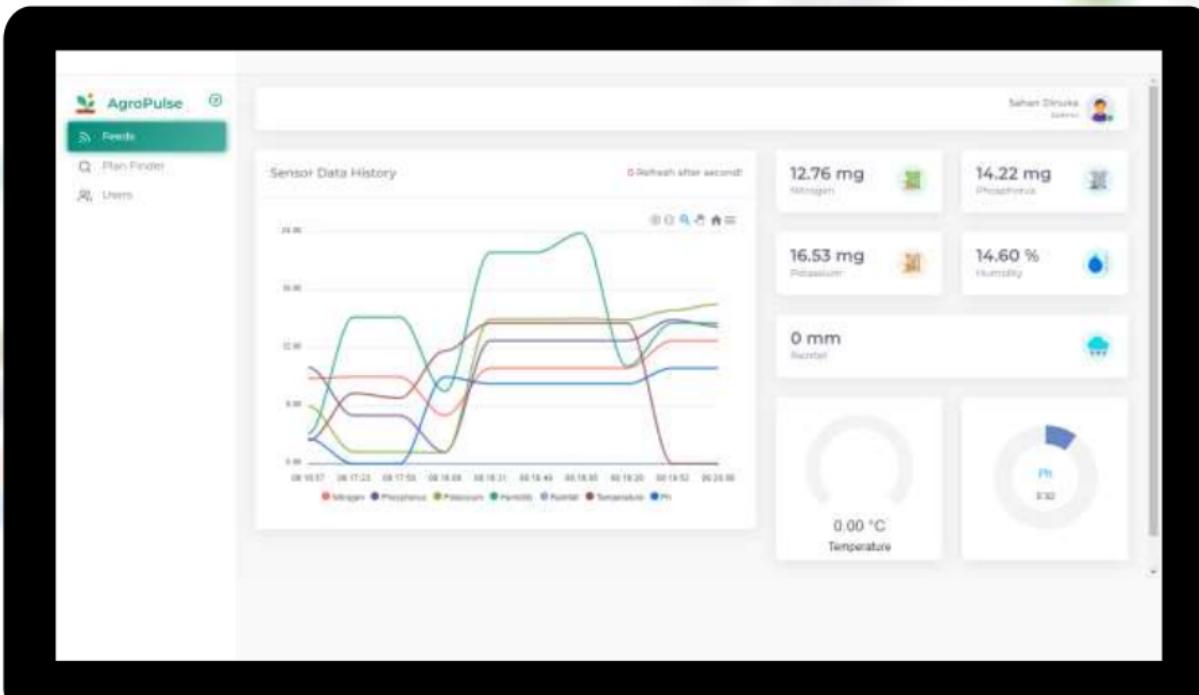
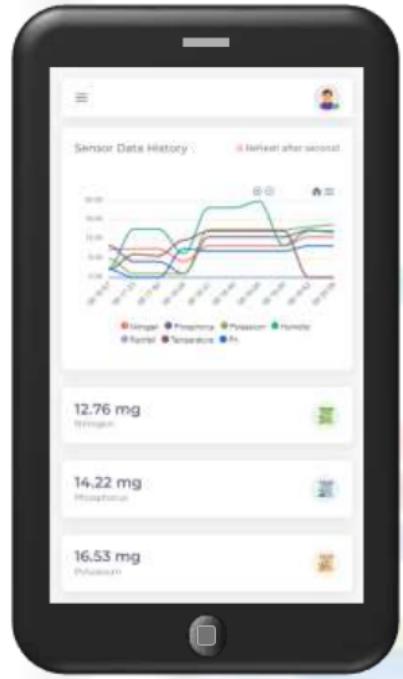
RESEARCH ANALYSIS



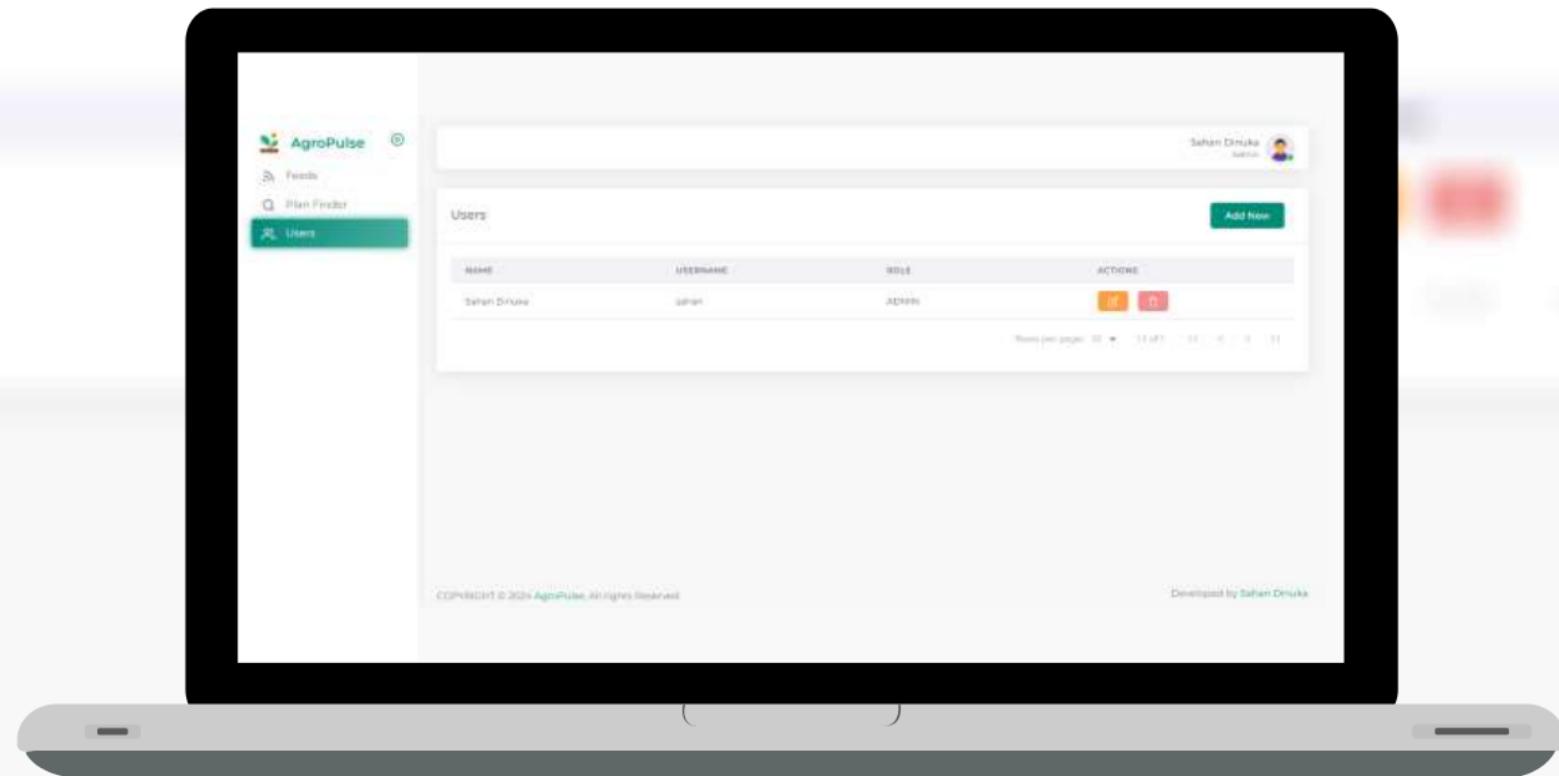
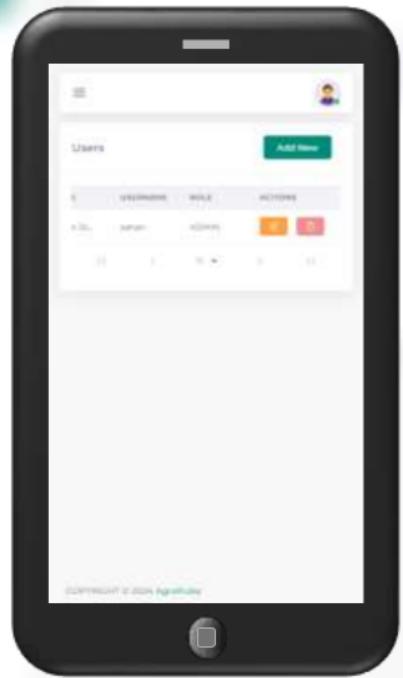
DESIGN (Login)



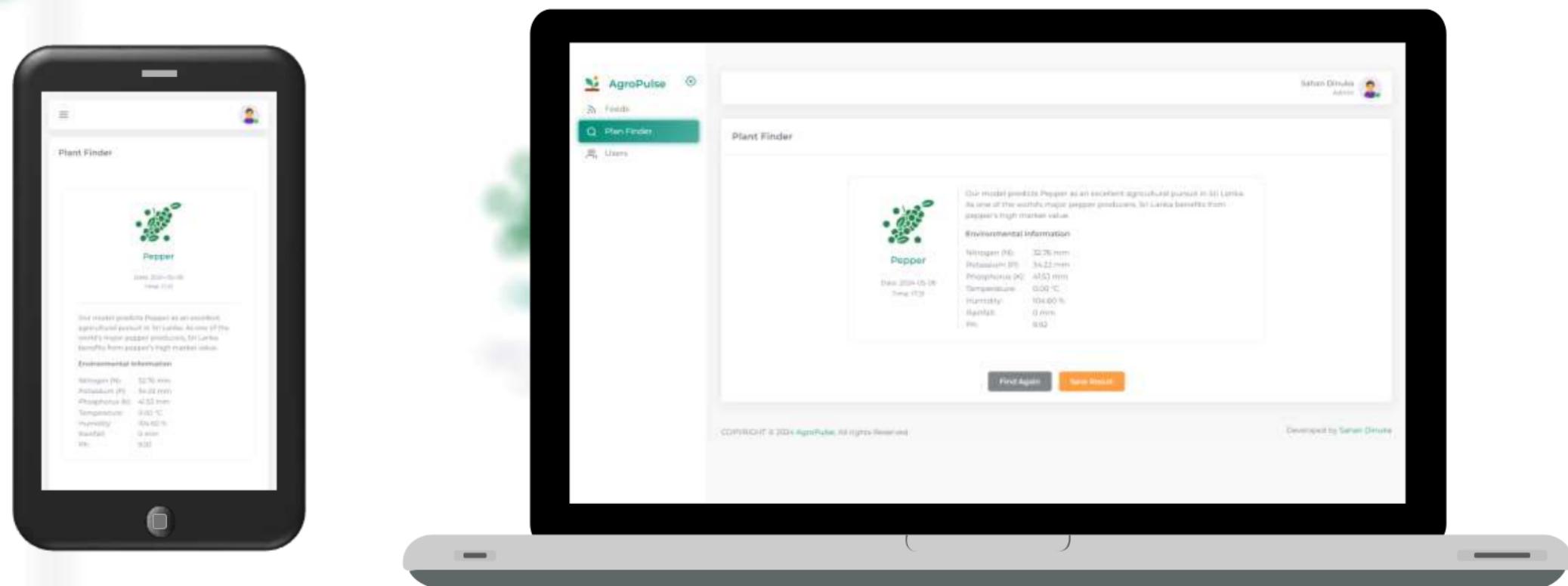
DESIGN (Dashboard)



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:de1fbab03f90cc8db80f663a704fbe3cf3231248)
- 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'.

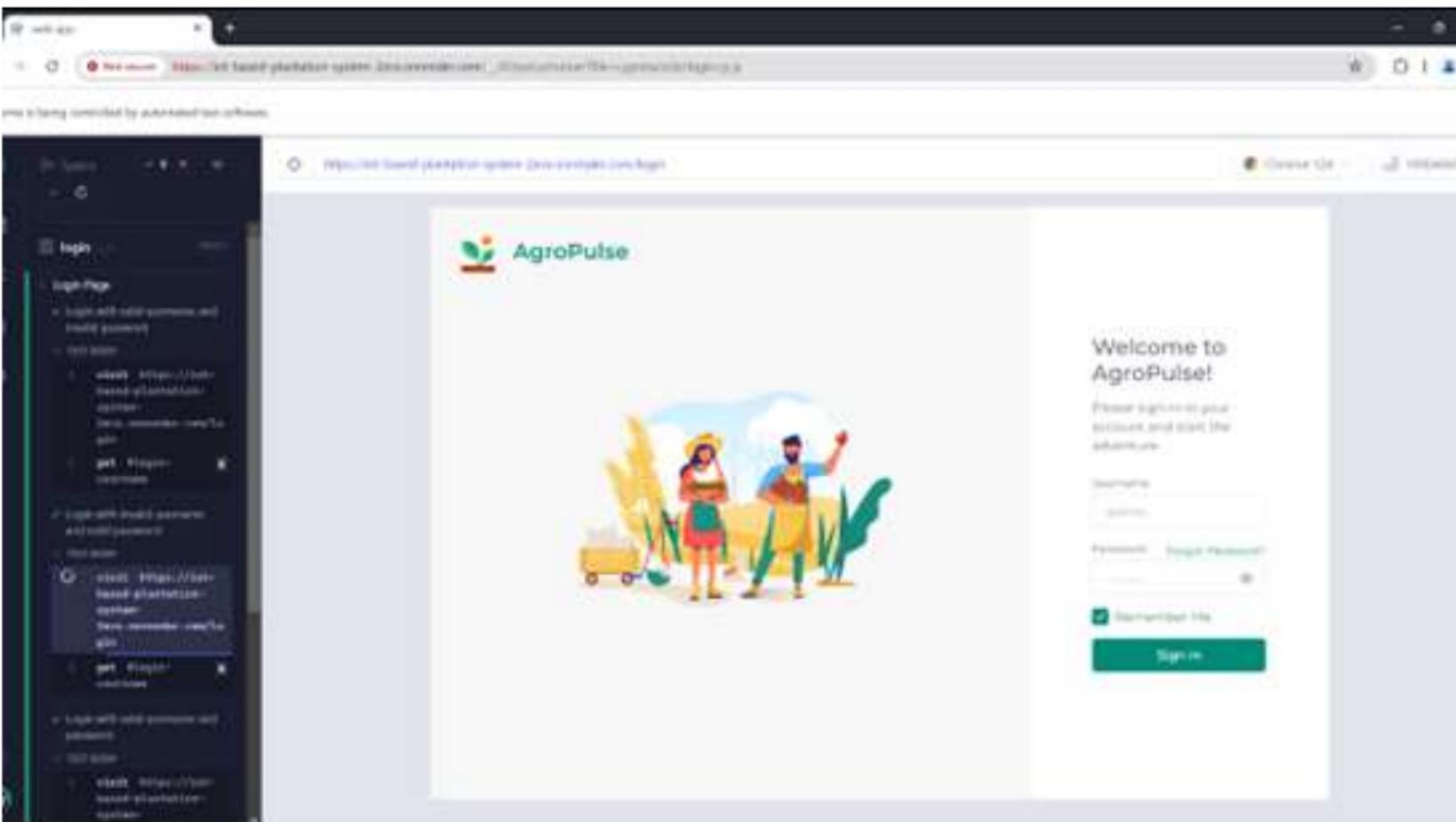
Run actions/checkout@v3

- 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 several imports from 'reactstrap' and 'react'. The bottom right corner of the code editor shows SonarLint analysis results: 'Unnecessary imports should be removed' (Intentionality issue | Not clear, Maintainability), with a 'javascript:S1128' code smell. A tooltip explains: '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.' Below the tooltip, there's a snippet of code: 'import A from 'a'; // An unnecessary import. The imported symbol 'A' isn't used.' At the bottom of the interface, there are tabs for 'Current File', 'Report', 'Security Hotspots', 'Taint Vulnerabilities', and 'Log'. The 'Report' tab is selected, showing 'Found 5 issues in 1 file' for 'Home.js'. The status bar at the bottom indicates 'Analysis of 1 file done few seconds ago'.

UI AUTOMATION TEST RESULT



UI AUTOMATION TEST RESULT

The screenshot displays a dual-pane interface for running UI tests. On the left, the Cypress Test Runner shows a test file structure and the current test being run, "Login". The test code includes steps for visiting the login page, entering credentials, and performing a POST request to log in. A red error message highlights a failing expectation where the URL expected to include "/home" did not. On the right, the "Plant Finder" web application is shown in a browser window. The user profile "Sahan Dinuka Admin" is visible at the top. The main content area displays a coffee bean icon and a prediction message: "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." Below this, environmental information is listed:

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

At the bottom of the application interface are two buttons: "Find Again" and "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\View Results Tree.jmx"/> Filename: <input type="button" value="Browse"/> <input type="button" value="Log/Display Only"/> <input type="button" value="Errors"/> <input type="button" value="Successes"/> <input type="button" value="Config"/>										
Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB/sec	Sent KB/sec	Avg. Bytes
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	272	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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