Proposal - Bangkit 2022 Company-based Capstone

Company : IOH
Problem Code : [C22-HY] Indosat Ooredoo Hutchinson - Hydroponic Monitoring & Digitalization

Team Member:

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Why is this problem/project interesting for your team?

The hydroponic system is suitable for pairing a smart system using IOT and machine learning.

What's your group's initial idea to work on this project?
The application that we created is expected to help people who do hydroponics by creating a system that can manage their plantation system remotely. To help planters determine the amount of nutrient requirement for each plant, we will create a machine learning system that can detect the needs of each plant. This entire system can be used as a business package, including hydroponic equipment that has been installed by IOT devices and applications.

Does your team have unique solutions to be proposed?
In addition to determining the needs of each type of plant, the system that we created is also expected to be able to detect the presence of a disease in plants by using object detection in machine learning. Our system also has a recommendation feature for what types of plants can be planted in specific areas based on the intensity of sunlight, altitude, and so on.

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Based on your knowledge, what tools/IDE/Library will your team use to solve the problem?

Tools	IDE	Text Editor	Library		
			Python	Kotlin	C++
Figma	Arduino IDE	Visual Studio Code	Tensorflow	Performance Monitoring	
Google Colab	Android Studio		Sklearn		
Sensor (Humidity, Ph, ultrasonic, EC meter)			CV2		
Camera			Pythorch		
Arduino Mega / Uno					

Based on your knowledge and explorations, what will your team need support for?

- Arduino Mega / Arduino Uno
- Humidity Sensor, pH Sensor, Ultrasonic Sensor and EC Meter Sensor
- Camera
- Plant dataset containing the needs of plants to live
- Plant dataset containing pictures of plant diseases
- Mentors

Any other notes/remarks we should consider on your team's application

We will digitize hydroponics with IoT and Machine Learning. The application that we make will provide many benefits for people who do hydroponics. With this application, we can monitor plantations remotely. Such as :

1. Detects all the needs of each plant. Such as water level, pH, sunlight needs, disease and others.
2. Provide recommendations for problems that occur, so that the owner can overcome them.
3. Detecting diseases in plants using machine learning.
4. Provide recommendations to users to determine suitable plants to be planted in their area.