AGRITECH/PRECISION AGRICULTURE

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IDEA OF PROJECT

- Rice cultivation support system for rice field utilizing field servers using mobile battery or small solar panel, with camera and sensors and use local networks. And water level sensor system which work directly with the field servers.
- We need to collect the data and process it display in human readable format for the user.

CONFIGURATION OF THE SYSTEM

- **Child device subsystem** - This is placed in field for data collection -air temp and moisture and soil temp and moisture and images of field.
- **Parent device subsystem** - This receives the data sent from child device and upload to cloud server.
- **Repeater subsystem** - This is for prolonged communication over distances. i.e it is not possible to communicate
- **Cloud subsystem** - Saves the sensor data and the image data of the fields and perform analysis. The analysis results are converted to homepage display format automatically. Easy to check the result from any location
- **Water level sensor subsystem** - Measuring the water level and transmitting the value to the field server. This system has many subsystem it calculate avg water level by using these subsystems.

PARAMETERS FOR MEASURING

- **Present plan for measuring**
- Soil Temperature
- Soil moisture content
- Air temperature
- Air Moisture content
- **Can add these parameter if required**
- Water level
- Camera for Photo analysis of Nutrient contents in crop
- Soil pH level
- Nutrients measurement will be done through the reflection characteristics of the NPK based on Lambert-Beers Law using Light sensor

FUTURE DEVELOPEMENT

- Can make it Automated or semi automated
- In Automated it should compute the sensor values and do th action accordingly. In semi automated the user should check the values and if possible using previous data we can suggest what steps to follow
- For further development of the project we can use datamining and ml algorithms to suggest best crop on soil, weather conditions, and place at which the crop is present.

COMPARISION B/W ESP32 AND ARDUINO

- What should we go with esp32 or Arduino?
- Esp32 is less cost and more features than Arduino
- Esp32 has inbuild WIFI module, Bluetooth module, RTC timer.
- Esp32 has many power saving modes - modem sleep mode, deep sleep mode, Hibernation mode.
- WIFI range is up to 1km and Bluetooth range is up to 2 - 3 meters
- We have Esp32 CAM - low cost development board with Camera Wifi.
- Where as for Arduino we need separate transmitter module like lora and rtc module for power saving.