NALAIYA THIRAN
WEEK 3 REPORT

Domain : Internet Of Things(IoT)
Project Title: IoT Based Smart Crop Protection System For Agriculture

Team ID: PNT2022TMID15746

GitHub ID: https://github.com/IBM-EPBL/IBM-Project-24229-1659940305

Mentor Name: P. Ilampiray

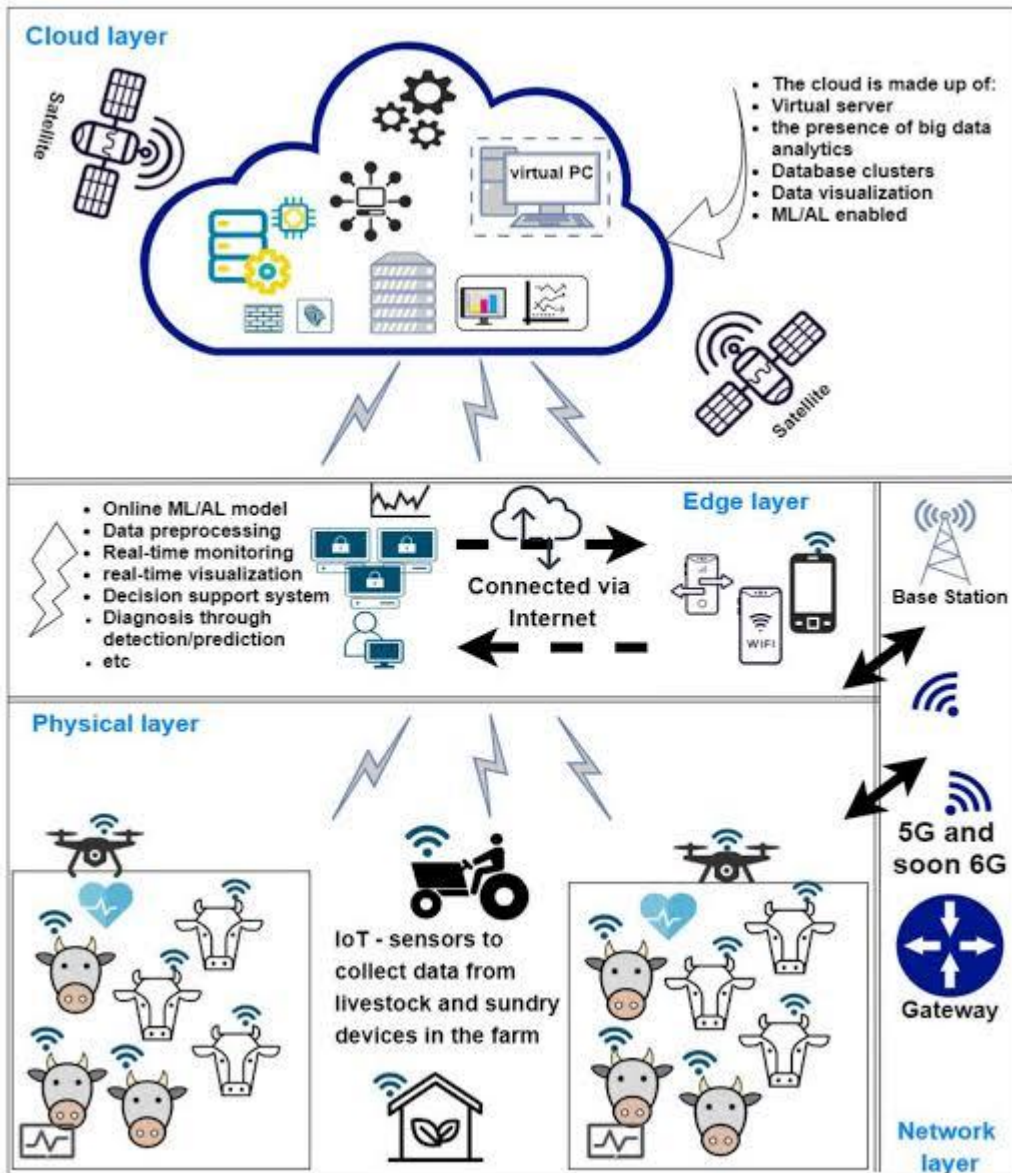**Team Members**: Madhushree K(Team Leader) – 111719104088
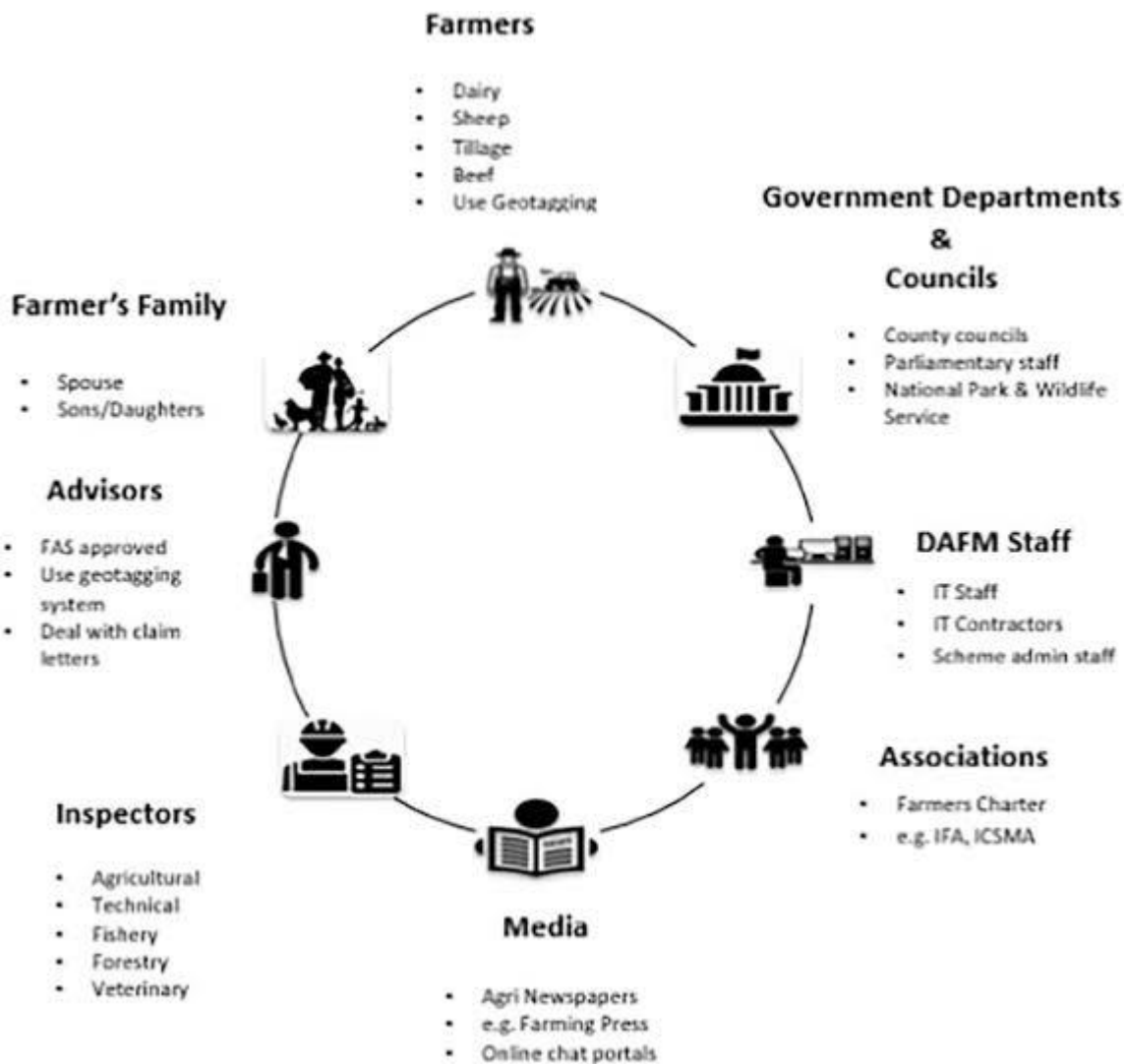Kosuru Harshitha – 111719104081
Kongara Deepika – 111719104080
Kaluva Vandana – 111719104069

Phase 2 Description: Ideation Phase (Literature Survey, Empathize, Defining Problem Statement, Ideation)

2.3 Prepare Empathy Map Canvas to capture the user Pains & Gains, Prepare list of problem statements

Cloud layer

Satellite

virtual PC

- The cloud is made up of:
- Virtual server
- the presence of big data analytics
- Database clusters
- Data visualization
- ML/AL enabled

Satellite

Edge layer

- Online ML/AL model
- Data preprocessing
- Real-time monitoring
- real-time visualization
- Decision support system
- Diagnosis through detection/prediction
- etc

Connected via Internet

WIFI

Base Station

Physical layer

IoT - sensors to collect data from livestock and sundry devices in the farm

5G and soon 6G

Gateway

Network layer

Farmers

- Dairy
- Sheep
- Tillage
- Beef
- Use Geotagging

Government Departments & Councils

- County councils
- Parliamentary staff
- National Park & Wildlife Service

Farmer's Family

- Spouse
- Sons/Daughters

Advisors

- FAS approved
- Use geotagging system
- Deal with claim letters

DAFM Staff

- IT Staff
- IT Contractors
- Scheme admin staff

Associations

- Farmers Charter
- e.g. IFA, ICSMA

Inspectors

- Agricultural
- Technical
- Fishery
- Forestry
- Veterinary

Media

- Agri Newspapers
- e.g. Farming Press
- Online chat portals

PROBLEM STATEMENTS:

Smart farming

Smart farming is the application of intelligent information and communication technology systems such as sensors, IoT, cloud-based processes, machine learning, artificial intelligence, networking to the farming system such as crop cultivation, livestock farming, aquatic, snail farming just to mention a few with the sole purpose of boosting the farm produce

Sensors used in smart farms

Sensors have been manufactured which are used to detect the water stress level within the leaf of plants, these sensors enable researchers to investigate the variation of the water stress level in leaves of plants, some of these sensors are embedded with the EM4325 UHF chip, this technic of detecting leaf water stress level is an added advantage in smart farming.

The impact of climate to smart farming

Comparing the soil heat storage, energy consumed during photosynthesis are factors that influence surface fluxes and advection of the soil [21]. It is observed from this research that higher surface heat fluxes are relative to a thinner, well-watered canopy with regular advection.

Challenges and issues of smart farming

Researchers have expressed their concerns in the communication protocol used for interaction within the smart farms, these protocols were effective for only short distance coverage areas.

Cloud-based IoT smart farming

ICT technologies can improve the level of interaction as stated by between the small-scale farmers and the farming expert tremendously.

2.4 Attended the technology trainings as per the training calendar

IoT-B4-4M6E (Morning Session)-Day-3 (08.09.2022)
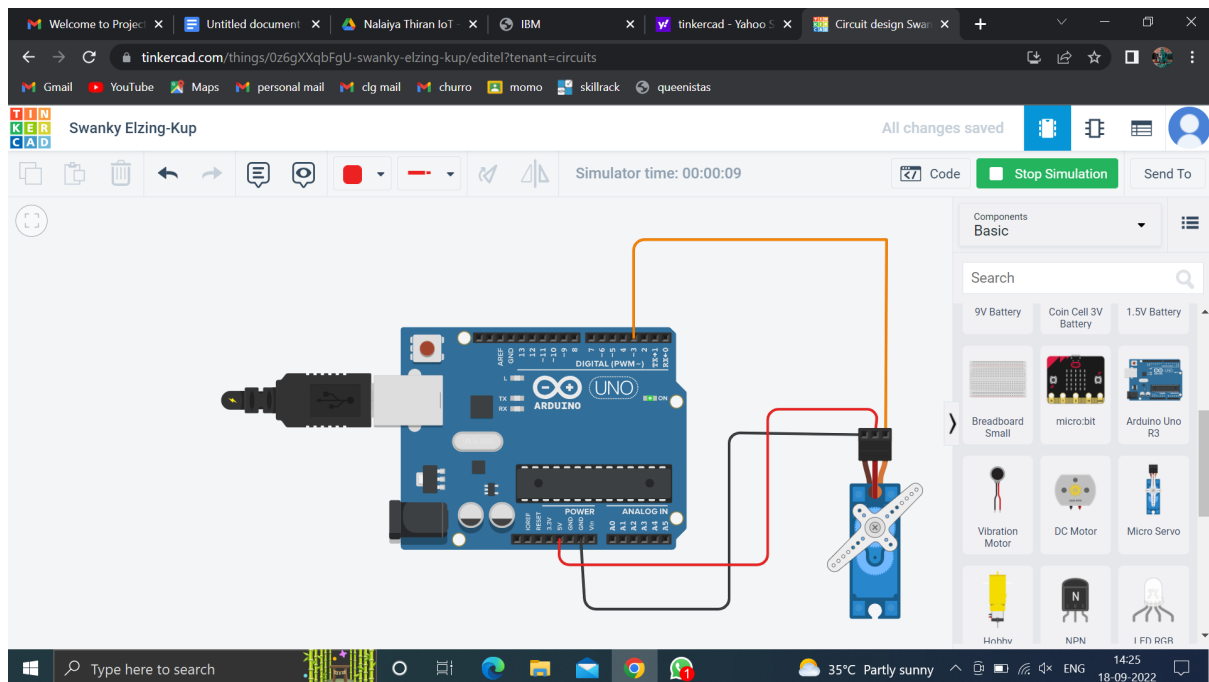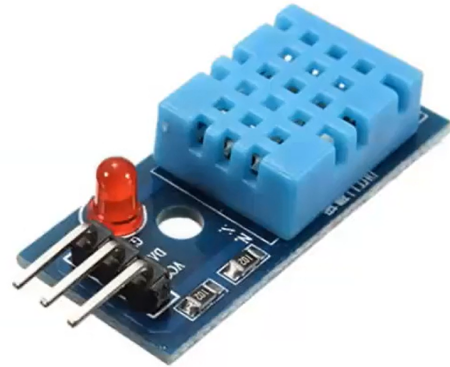
DHT11

Humidity

sensing component
- Two electrodes
- Substrate

As humidity changes substrate conductivity changes and the change is measured by ic

Thermistor

- Variable resistor

As the temperature changes the resistance value is changes and the result is measured

IoT-B4-4M6E (Evening Session)-Day-4 (10.09.2022)

Bluetooth Low Energy (BLE)

BLE is meant for situations where battery life is preferred over high data transfer speeds

Applications

- Mesh profiles
- Health care profiles
- Sports and fitness profiles
- Asset tracking
- Indoor navigation

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openweathermap.org/current
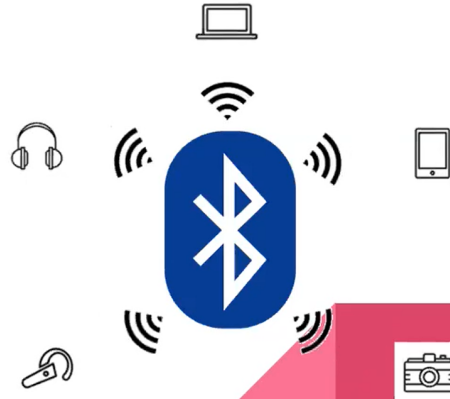
OpenWeather   Weather in your city   Guide   API   Dashboard   Marketplace   Pricing   Maps   Our Initiatives   Partners   Blog   For Business   Sign in   Support

Current weather data

Home / API / Current weather

Access current weather data for any location on Earth including over 200,000 cities! We collect and process weather data from different sources such as global and local weather models, satellites, radars and a vast network of weather stations. Data is available in JSON, XML, or HTML format.

Call current weather data

How to make an API call

API call

```
https://api.openweathermap.org/data/2.5/weather?lat={lat}&lon={lon}&appid={API key}
```

Call current weather data
    How to make an API call
Bulk downloading
Weather fields in API response
    JSON
    XML
    List of condition codes
    Min/max temperature in current weather
    API and forecast API
Other features
    Geocoding API
    Built-in geocoding
      Built-in API request by city name
      Built-in API request by city ID
      Built-in API request by ZIP code
    Format
    Units of measurement
    Multilingual support
    Call back function for JavaScript code