DOCUMENTATION OF SMART WEATHER STATION (NON MECHANICAL RAINGUAGE AND NON MECHANICAL WIND SENSOR) USING EDGE ANALYTICS

Components required for the project

1. Arduino nano BLE sense
2. Groove loudness sensor
3. Groove sound sensor
4. Ultrasonic sensor
5. SD card Adapter
6. RTC Module
7. 500 mAh 9V Battery
8. Regulator

Libraries/Software needed for the project

for Arduino

- <RTClib.h>
- <SPI.h>
- <SD.h>
- <Wire.h>
- <TimeLib.h>
- <DS1307RTC.h>

for ML model Creation
Software: Edge Impulse

Procedure

Sensor Connectivity

- Check each sensor module's functionality first.
- Combine each sensor codes and display the values in serial monitor

Data Collection

1. Hardware setup:-Sensor Connectivity
2. Recording /Save data :-

- upload the sensor connectivity code to the hardware module
- connect serially through python code and save the datas to csv file.
- Recorded data via SD card adapter.

Machine Learning Model creation

Using Edge Impulse Software.
Training Data
- Timestamp data with 60000 ms time interval raw sensor data upload as csv file.

Impulse Design
- frequency 0.1667Hz data with input attributes sensors and output data as desired classes.

- Using Keras classification
  Model creation
- no:of epochs:30
- learning rate:0.005
- validation set:20% of data

Deployment on Arduino board

- Inferencing on Arduino BLE Sense Board.