Phase-2
Predicting Enviromental Monitoring Using machince learning
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ENVIRONMENTAL MONITORING
Some Techniques of Environmental Scanning & Monitoring

Here are some notable innovations in environmental monitoring:

- IoT Sensors: The Internet of Things (IoT) has enabled the deployment of low-cost, connected sensors for real-time data collection. These sensors can measure various environmental parameters, including air quality (e.g., PM2.5, CO2 levels), water quality, temperature, humidity, and more. The data collected can be transmitted to centralized systems for analysis and decision-making.

- Remote Sensing: Satellite and aerial remote sensing technologies have improved our ability to monitor large-scale environmental changes. High-resolution imagery and data analysis techniques, such as machine learning, are used to track deforestation, land use changes, and monitor climate-related events like hurricanes and wildfires.

- Citizen Science: Engaging the public in environmental monitoring through citizen science initiatives has gained popularity. Mobile apps and online platforms allow citizens to collect and contribute environmental data, helping researchers and policymakers gather more extensive datasets.

- Big Data and Analytics: The processing and analysis of large datasets (big data) have become integral to environmental monitoring. Advanced analytics, including artificial intelligence and machine learning, are applied to make sense of the vast amounts of

data generated by sensors and satellites. These technologies can identify patterns, anomalies, and trends that might otherwise go unnoticed.

- Environmental DNA (eDNA): Environmental DNA is a cutting-edge technique that involves collecting and analyzing DNA from environmental samples (e.g., water, soil) to identify the presence of specific species. This method is particularly valuable for monitoring elusive or endangered species.

- Blockchain and Distributed Ledger Technology: Blockchain is being explored for transparent and secure tracking of environmental data. It can be used to ensure data integrity and traceability in environmental monitoring, especially for applications like tracking the origin of sustainable products or carbon credits.

- Drones and Autonomous Vehicles: Unmanned aerial vehicles (drones) and autonomous underwater vehicles (AUVs) are used for collecting environmental data in hard-to-reach or hazardous areas. They can capture images, collect samples, and monitor environmental conditions in remote locations.

- Predictive Modeling: Advanced modeling techniques allow scientists to predict future environmental changes. For example, climate models can project how ecosystems will be impacted by climate change, helping in proactive conservation and management strategies.

- These innovations are crucial for enhancing our understanding of the environment, addressing environmental challenges, and developing sustainable practices for the future. They enable more efficient data collection, analysis, and decision-making, ultimately contributing to better environmental stewardship.

Program

```
 pip install Adafruit_DHT
           import Adafruit_DHT
import time

# Set the sensor type (DHT22 or DHT11) and GPIO pin
sensor = Adafruit_DHT.DHT22
pin = 4  # GPIO pin where the sensor is connected

try:
    while True:
        humidity, temperature = Adafruit_DHT.read_retry(sensor, pin)

        if humidity is not None and temperature is not None:
            print(f'Temperature: {temperature:.2f}°C')
            print(f'Humidity: {humidity:.2f}%')
        else:
            print('Failed to retrieve data. Check the sensor and wiring.')

        time.sleep(2)  # Wait for a few seconds before taking another reading

except KeyboardInterrupt:
    print('Measurement stopped by the user.')

except Exception as e:
    print(f'An error occurred: {str(e)}')
```