GANESH COLLEGE OF ENGINEERING

ENVIRONMENTAL Monitoring

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INTRODUCTION

- 1.Air monitoring
- 2.soil monitoring
- 3.IoT based environmental monitoring
- 4.Biodiversity environmental monitoring
- 5.waste fill level
- 6. program
- conclusion

Environmental monitoring

- Monitoring programs are published outlines within an organization that detail precisely which elements are being monitored, overall objectives, specific strategies, proposed sampling methods, projects within each strategy, and time frames.

- Environmental monitoring products and environmental monitoring software, such as Environmental Data Management Systems (EDMS), facilitate the implementation and monitoring of environmental monitoring and assessment programs, which includes a central data management hub, automated environmental monitoring alerts, compliance checking, validation, quality control, and generation of reports on dataset comparisons.

AIR MONITORING

- Environmental data gathered using specialized observation tools, such as sensor networks and Geographic Information System (GIS) models, from multiple different environmental networks and institutes is integrated into air dispersion models, which combine emissions, meteorological, and topographic data to detect and predict concentration of air pollutants.


Internet of Things
Waste Management
Smart Environment
Air Pollution
Smart Health
Smart Buildings
Smart Parking
Gas & Water Leak Detection
Open Data
Electromagnetic Emissions
Traffic Management
Smart Energy
Water Quality
Electric Vehicle Charging
Smart Street Lights
Intelligent Shopping
Education
Smart Home
Public Safety

SOIL MONITORING

- Grab sampling (individual samples) and composite sampling (multiple samples) .

- To monitor soil, set baselines, and detect threats such as acidification, biodiversity loss, compaction, contamination, erosion, organic material loss, salinization, and slope instability.

IOT BASED ENVIRONMENTAL Monitoring

- Environmental monitoring solutions have evolved over the years into Smart Environmental Monitoring (SEM) systems

- Machine Learning (ML) techniques, and the Internet of Things (IoT). Technologies such as IoT devices and wireless sensor networks have made advanced environmental monitoring using IoT a more streamlined and Artificial Intelligence-controlled process.

- IoT for environmental monitoring facilitates the development of wireless, remote environmental monitoring systems, which enable operations to remove much

- Facilitates sophisticated on-site testing, provides lower latency, and connects detection systems to response teams, ultimately resulting in higher rates of significant disaster and contamination prevention

STANDARDING OF ENVIRONMENTAL

BIODIVERSITY ENVIRONMENTAL MONITORING

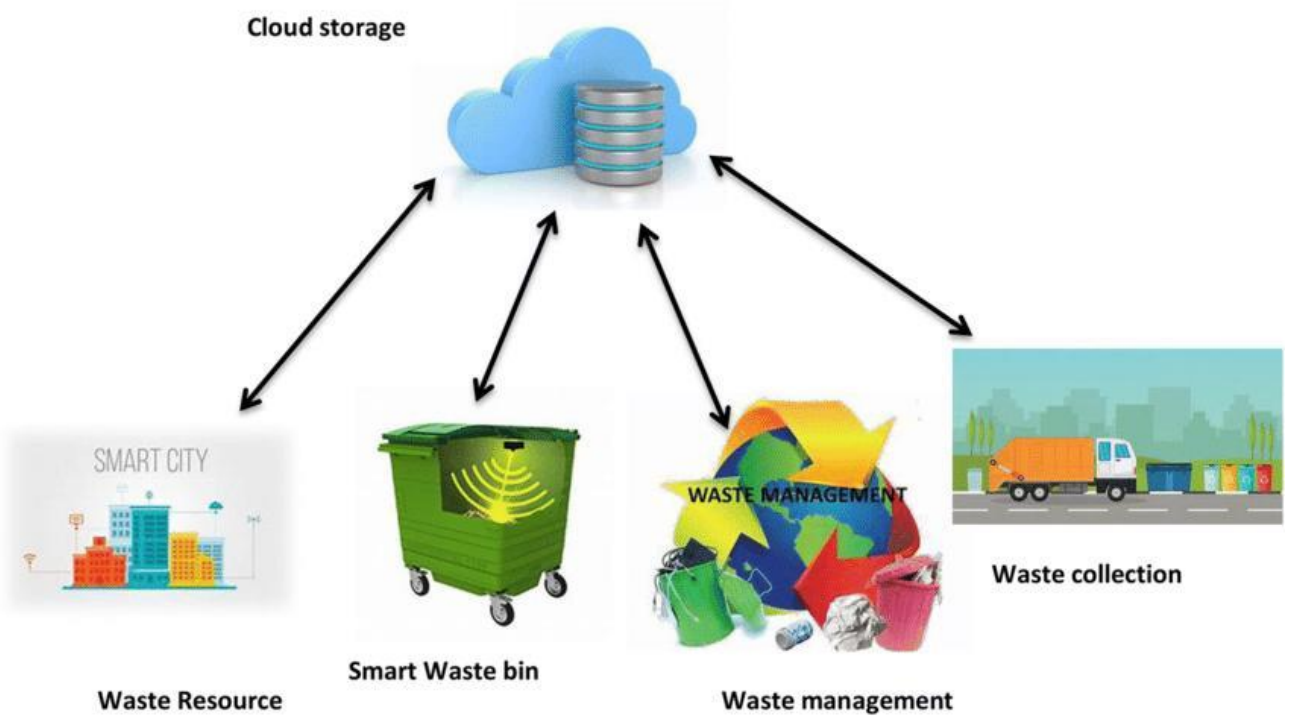
- Biodiversity is all the different kinds of life you'll find in one area—the variety of animals, plants, fungi, and even microorganisms like bacteria that make up our natural world.

- Each of these species and organisms work together in ecosystems, like an intricate web, to maintain balance and support life.

Waste fill-level monitoring

- The solution provides real-time online access to data related to monitored bins, boxes, or containers

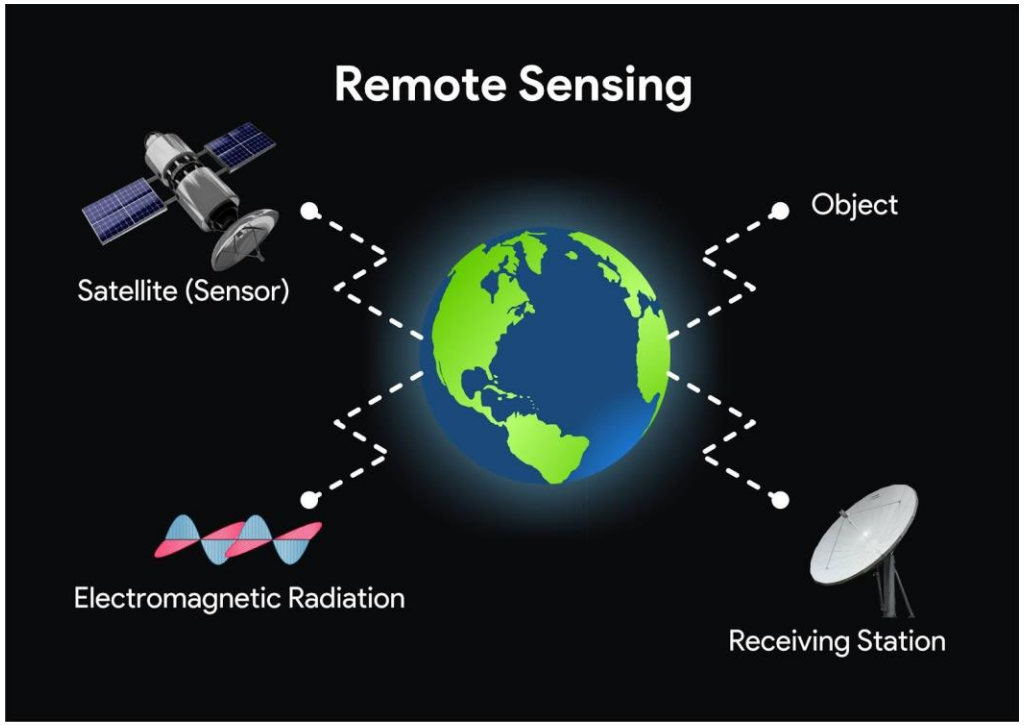
- Waste Monitoring solution combines Smart Sensors, Smart Waste Management Software System, and Citizen App.
- Sensor Waste Monitoring solution allows cities and businesses to uncover and understand the complex dynamics of their waste production


Cloud storage
SMART CITY
WASTE MANAGEMENT
Waste collection
Smart Waste bin
Waste Resource
Waste management

REMOTE SENSING

- Remote sensing is used in numerous fields, including geophysics, geography, land surveying and most Earth science

- E.g. exploration geophysics, hydrology, ecology, meteorology, oceanography, glaciology, geology); it also has military, intelligence, commercial, economic, planning, and humanitarian applications, among others.


Remote Sensing
Satellite (Sensor)
Object
Electromagnetic Radiation
Receiving Station

Program

- Import network
-
- import time
-
- From machine import Pin
-
- Import dht
-
- Import ujson
-
- From umqtt.simple import MQTTClient

- # MQTT Server Parameters
-
- MQTT_CLIENT_ID = “micropython-weather-demo”
-
- MQTT_BROKER = “broker.mqttdashboard.com”
-
- MQTT_USER = “”
-
- MQTT_PASSWORD = “”
-
- MQTT_TOPIC = “wokwi-weather”

- Configsip: 0, SPIWP:0xee
-
- clk_drv:0x00,q_drv:0x00,d_drv:0x00,cs0_drv:0x00,hd_drv:0x00,wp_drv:0x00
-
- mode:DIO, clock div:2
-
- load:0x3fff0030,len:4728
-
- load:0x40078000,len:14876
-
- ho 0 tail 12 room 4

- Umqtt/simple.py", line 134, in publish
-
- OSError: [Errno 104] ECONNRESET
-
- MicroPython v1.21.0 on 2023-10-05; Generic ESP32 module with ESP32
-
- Type "help ()" for more information

ADVANTAGES

- Validation and verification of cleaning and sanitation programs. …
- Provides data of the overall effectiveness of your sanitary program, personnel practices, and operations procedures. .
- Provides data about indicator organisms, spoilage organisms, and pathogens to prevent outbreaks.

CONCLUSION

- Environmental monitoring is critical to the protection of human health and the environment.

- As the human population continues to increase, as industrial development and energy use continues to expand, and despite advances in pollution control, the continued production of pollution remains inevitable.


THANK
YOU