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IoT – Industrial Internship
ASSIGNMENT - 1

List out 20 use cases of the Internet of Things.

1. Enterprise Asset Management

Enterprise asset management involves measures taken to improve device and machine health to achieve greater output. It is among the prime internet of things examples in the industrial setup. Machines retrofitted with IoT sensors inform users about the machine's current status and whether it needs any maintenance. It allows for more efficient checks for safety and compliance purposes.

2. Predictive Maintenance

Lack of proper maintenance is among the primary causes for a reduced lifetime of the machines. The application of IoT in maintenance involves using sensors inside robots and other automated devices to predict whether a failure is likely to occur or not. Based on certain preset thresholds, the sensors indicate the extent to which maintenance might be required.

3. Industrial Process Automation/Optimisation

This may be considered the most important one among the internet of things examples in an industrial setup. Most industrial processes can be automated remotely without having to be anywhere close to the actual machines. Devices fitted with IoT sensors detect signals over wireless networks and get to work on precisely the task that has been assigned.

4. Energy Management

Among the primary Internet of Things examples across several fields is the management of the power consumed by devices, especially in the manufacturing industry, where massive amounts of power is utilised. When used aptly, IoT devices can help predict individual devices' power utilisation and help reduce over-utilisation by using them judiciously or in a power-saving mode.

5. Outdoor Surveillance

This is among the primary internet of things examples in daily life. If your outdoor camera is IoT enabled, you can get information about whether there is an intrusion in your house or if someone is at the door. More advanced IoT devices will also be able to predict who is at the door and inform you through face-mapping technology.

6. Smart Lighting

This is another one of the Internet of Things examples that have gradually been coming into common usage. Bulbs and battens connected to Wifi can be turned on and off remotely. Schedule for usage can be set for these devices along with their brightnesses controlled and their power consumption monitored. Using other IoT devices, smart lighting devices can also be turned on and off by voice alone. The power consumption of these devices can also be easily monitored using IoT.

7. Electronic Road Toll Collection and Traffic Management

Using the data generated by cameras and other IoT devices, traffic regulators can automate the timings of traffic lights on busy roads and highways. This can go a long way in making roads safer and less susceptible to accidents. IoT devices can also be used to make road toll completely automated. This is done by detecting when a car is driven into the toll collection zone and lifting the barrier only once the toll has been paid.

8. Smart Parking

It is hard to regulate the occupancy and parking coverage in large multi-story car parking facilities. Among the many Internet of Things examples is the use of IoT in such facilities for counting the number of cars that have driven into the facility and the number that have driven out. Specific devices can also give you the exact location where you have parked your car so you are not lost.

9. Noise Monitoring

Municipal corporations of large cities struggle incessantly with factories located inside the city that produce large amounts of noise throughout the day. The application of IoT in this domain is made by fitting the premises of such facilities with sensors that continuously monitor the noise being produced by them. If noise levels are frequently above the stipulated limit, then the company is warned to comply.

10. Structural Health Monitoring

Among the many Internet of Things examples in architecture are the remote monitoring of occurrences such as vibrations and other issues with a building's structural integrity. This data can be used to determine whether any part of the building is weak and needs maintenance. This can also predict the likelihood of damage and help prepare plans and schedules for maintenance.

11. Waste Management

Waste management is one of the most inefficient activities carried out in a city. It is primarily because waste management tools are not standardised, and the route being followed by waste collection trucks is often not well-planned. IoT devices can help municipal waste collectors monitor the schedule of their trucks, the capacity of waste dumps, and the overall efficiency of the process.

12. Water Conservation

Homeowners, as well as industrial facilities, seldom have an understanding of the available local water levels, whether in overhead tanks or underground storage systems. A part of the Internet of Things examples in this domain is monitoring these local water levels. When the people impacted realize that the water levels are low, they are more likely to indulge in water conservation activities.

13. Smart Irrigation

It is among the innovative Internet of Things examples in agriculture, under which a sensor can determine the amount of moisture in the soil and the weather conditions. Based on these parameters, this sensor determines precisely the amount of water required by the crops. It enables farmers to save water and grow crops more healthily.

14. Leakage Management

The leakage of water in domestic and industrial water tanks, water transportation tankers, and industrial water storage systems is the reason for the wastage of millions of gallons worth of water every year. This is mitigated by using IoT sensors that inform you as soon as they detect water leakage of any kind. This doesn’t just save water but also saves users the cost of the leaked water.

15. Water Quality Management

The rules of the water constitution have become more and more stringent over recent years. However, with water supplies being privatised, these rules can be flouted by companies providing unhealthy water to citizens. IoT examples in this sector involve fitting sensors in water supplies to continuously monitor certain levels of chemicals and check whether they are below the required threshold included in the regulations. If not, the company supplying the water can potentially be penalised.

16. Ultraviolet Radiation Monitoring

Around 10% of the sun's light includes ultraviolet radiation. These rays can be harmful to the skin and have been related to various health problems. The concentration of these rays is different during different hours of the day. IoT sensors fitted outdoors can regularly inform you of the UV levels and warn you not to step outside when levels are too high.

17. Fall Detection

Senior citizens can face the problem of falling to the ground but not having the strength to get up. To mitigate this issue, specific Internet of Things examples may come to the rescue. A product designed especially for senior citizens can detect the fall and summon local resources to help them. This way, they do not have to spend a prolonged amount of time on the ground.

18. Companion Robots

Companion robots seem like a part of futuristic Internet of Things examples but are already becoming a reality. Companion robots are becoming more and more prevalent across the world. These robots can carry out specific essential tasks for you, like talking to you and informing you of other IoT devices' conditions in your household. Likely, these robots will only become more and more popular over the coming decades.

19. Medical Fridges

Medical fridges are a grand entry to the Internet of Things examples list and can be used for regulatory compliance and safety purposes. Vials of vaccines and medicines can often be spoiled if they are not kept at the correct temperatures. Medical refrigerators cannot be monitored throughout the day, especially in person. Having IoT sensors inside medical fridges can enable them to be monitored remotely, and their temperature changed as per requirement.

20. Patient Surveillance/Remote Patient Monitoring

IoT devices examples include applications in patient surveillance when a patient cannot be kept at the hospital. Patients can be monitored by doctors remotely. Especially after surgery, when the patient's body is vulnerable, an array of wearables can be used to monitor the vitals of the patient. This will help prevent the condition of the patient from deteriorating.