INTERNET OF THINGS

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ASSIGNMENT-1

List out 20 use cases of internet of things?

Industrial process automation/optimization

Organizations can keep a real-time record of the metrics of all the machines inside a plant using IoT and IP networks. Manufacturers can use this data to automate workflows and to optimize production systems. Automation and optimization support industrial companies to reduce costs and increase the quality and volume of output.

Energy Management

IoT devices can help manufacturers manage energy consumption based on real-time data collected from devices. Intelligent energy management systems reduce energy bills, operational expenditures and carbon footprint of the factory while increasing energy efficiency. WebNMS is an IoT platform that provides IoT applications including energy management to optimize the energy consumption of businesses.

Smart lighting

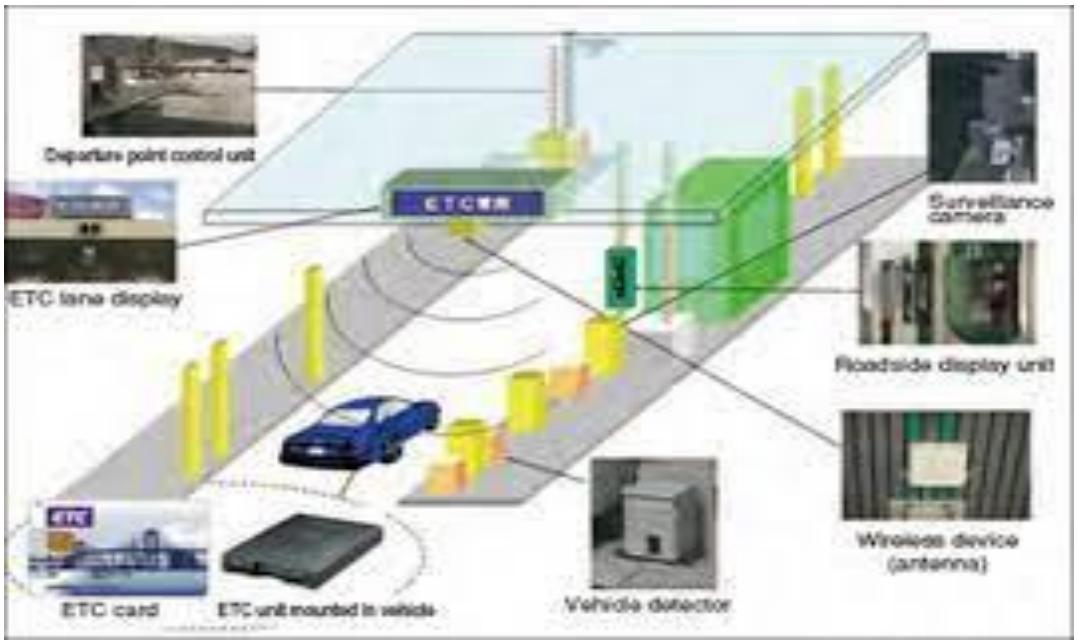
Smart lighting is made up of street lighting with IoT sensors. Sensors collect data about the condition of traffic and pedestrians. With that data, street lights provide optimum lighting so that street lighting systems can save up to 80% of the energy. Smart lighting can also be applied to factories or homes.

Outdoor surveillance

When IoT CCTV cameras combined with artificial intelligence and machine vision, governments can automate surveillance of streets through cameras. As IoT enables connectivity of machines, they are able to record and analyse video data in real time, and they can provide police officers with insights instead of single pieces of images.

Electronic Road Toll Collection and Traffic Management

Traffic engineers augmented by smart systems at a central traffic management center (TMC) can analyze data from IoT sensors then optimize timing of traffic lights throughout the day. This can help divide the traffic more evenly over roads as traffic volume fluctuates.



Structural Health Monitoring

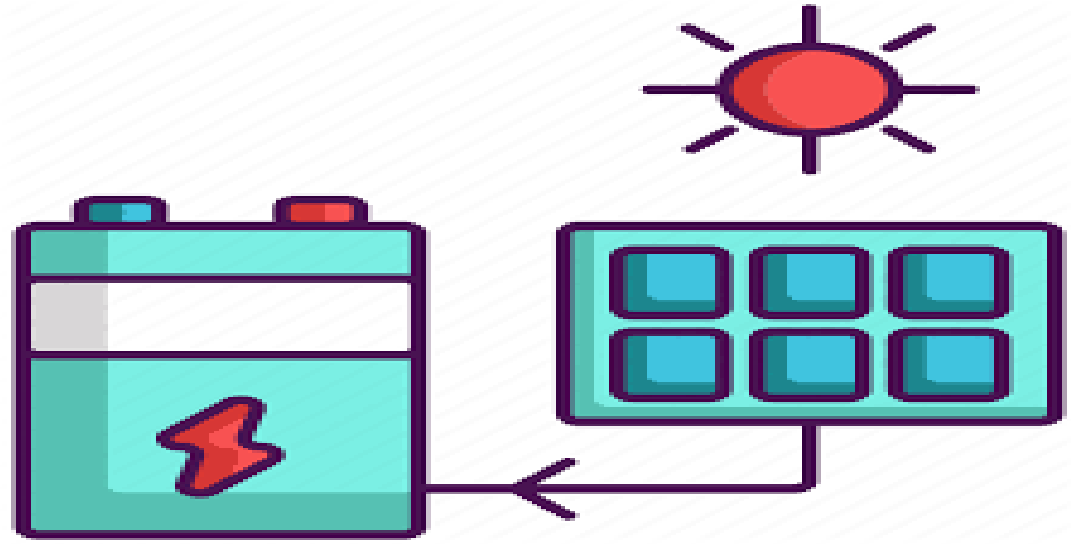
IoT allows remote collection of architectural data to monitor events such as vibrations and changes in material conditions, predict structural damage, and prepare action plans for structures such as bridges, buildings, stadiums, ships, airplanes, etc.

Waste Management

Traditional waste collections are complicated and costly since a fleet of trucks drives along busy streets using inefficient routes. Fill levels of garbage containers differ for each container: ranging from overflowing, partially filled and empty. IoT sensors can monitor fill levels for conventional bins and send the data to the relevant department of the city hall. With that information, the garbage truck routes can be optimized for trash collection.

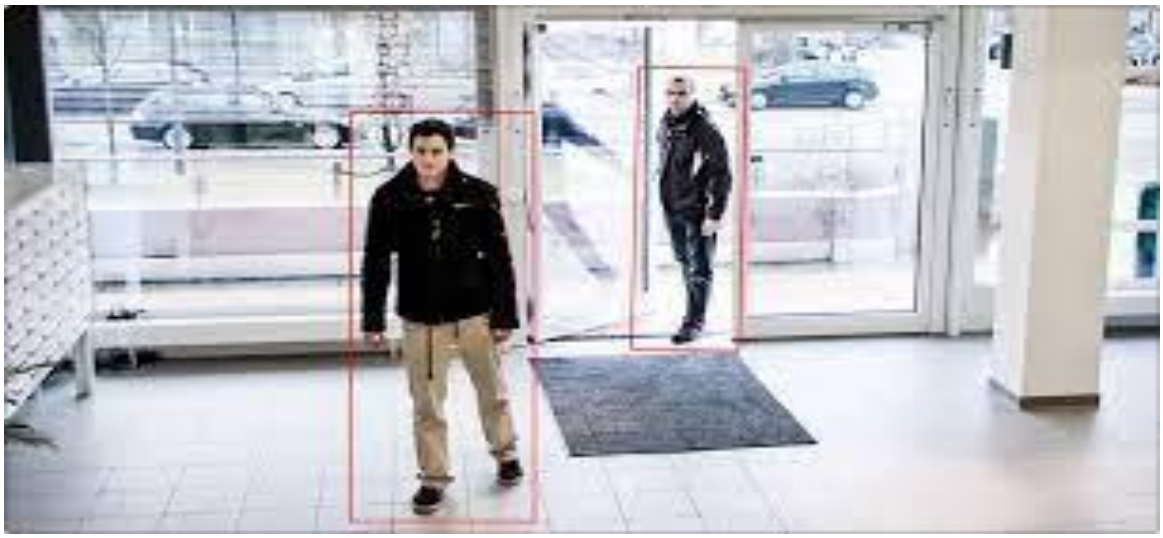
Smart Product Management

IoT sensors enable retailers to control the rotation of products on shelves and warehouses to automate merchandising decisions.



Motion detection

Manything is another vendor in IoT based home security market. It streams homes/office videos and lets users receive alerts when it detects any activity.



Fleet Tracking

IoT fleet tracking systems improve security and provide precise and complete reports that give the fleet managers full transparency towards the fleet's activities. Through GPS monitoring and geo-location tools, companies can track the location of their trucks, optimize routes and monitor their fleet utilization in detail.

Smart Grid

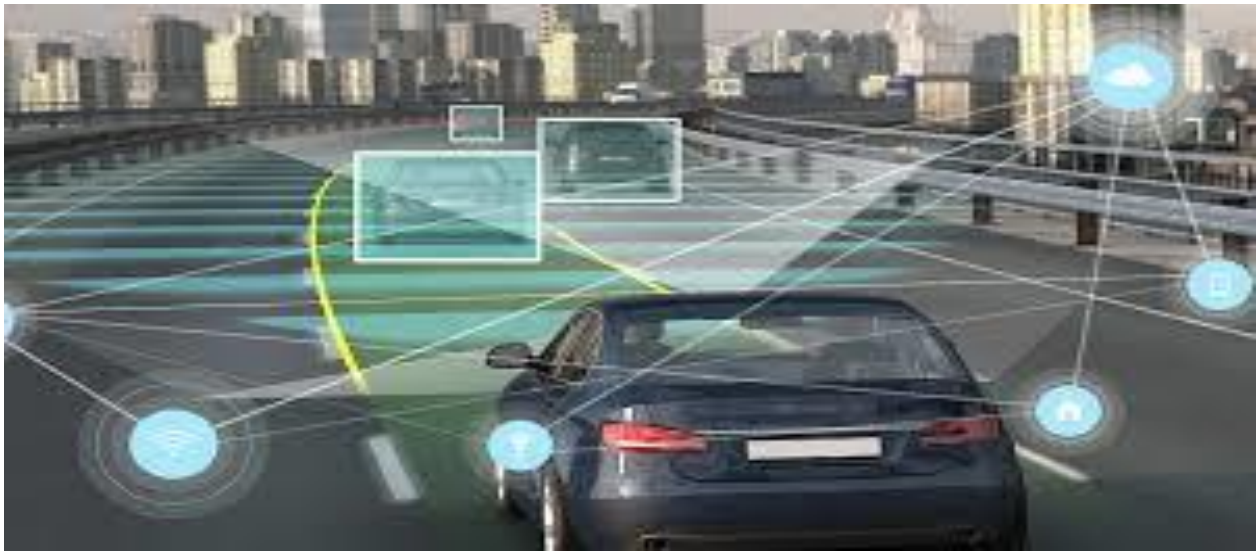
With the increasing attention regarding climate change and carbon emissions, utilities focus on reducing energy consumption. For utility companies, IoT enables remote data management and monitoring capabilities to manage better power flows into and out of their grids, and give users the insights needed to understand their energy infrastructure investments.

Digital Twins

A digital twin is a virtual replica of physical entities such as devices, people, processes, or systems that help businesses make model-driven decisions. With the help of IoT sensors, businesses collect data that is needed to create a digital twin.

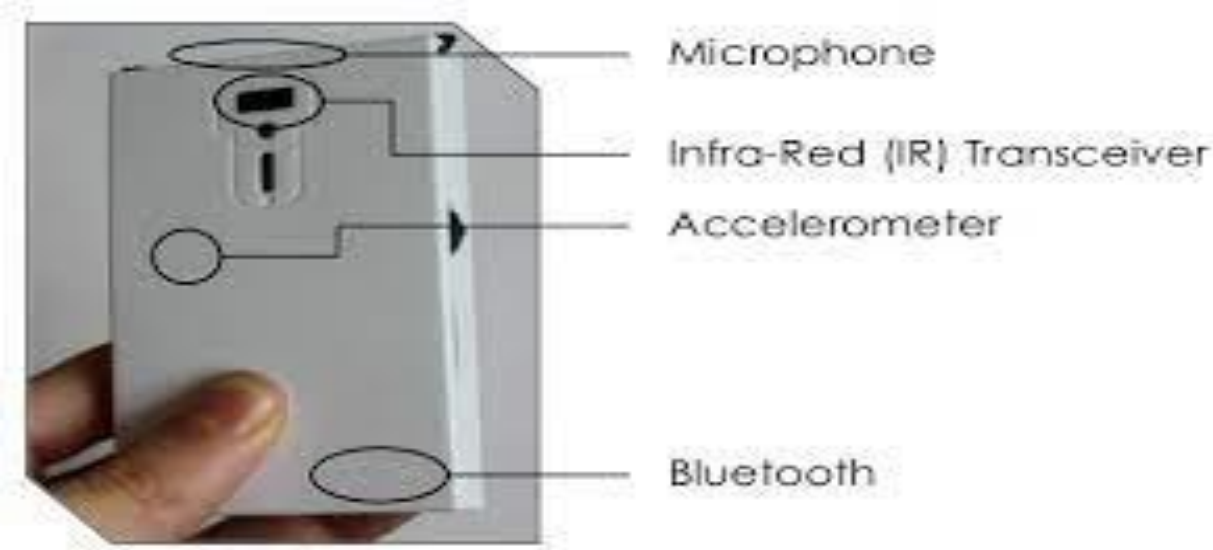
Connected Vehicles

Autonomous vehicles are also an application of IoT devices. Though it is not commonly used in logistics yet, we will witness this approach soon. For instance, Mercedes-Benz prototype of the semi-autonomous truck is scheduled for release in 2025.



Sociometric badges

Sociometric sensors are wearable IoT devices that measure the amount of face-to-face interaction, conversational time, physical proximity to other people, and physical activity levels using social signals derived from vocal features, body motion, and relative location.



Remote Control Appliances

IoT powered home appliances let residents remotely switch on and off devices using smartphone apps to avoid incidents and save energy. Additionally, these devices can make autonomous decisions based on sensor inputs such as preparing fresh coffee when a resident is identified to wake up

Supply Chain Control

IoT devices have transformed supply chain management. Sensors, which are attached to storage containers or to products themselves,

- show the location of goods using GPS,
- track the speed of movement providing an accurate estimated time of arrival (ETA) for goods,

- monitor warehouse conditions such as temperature, humidity, light intensity, and other environmental factors

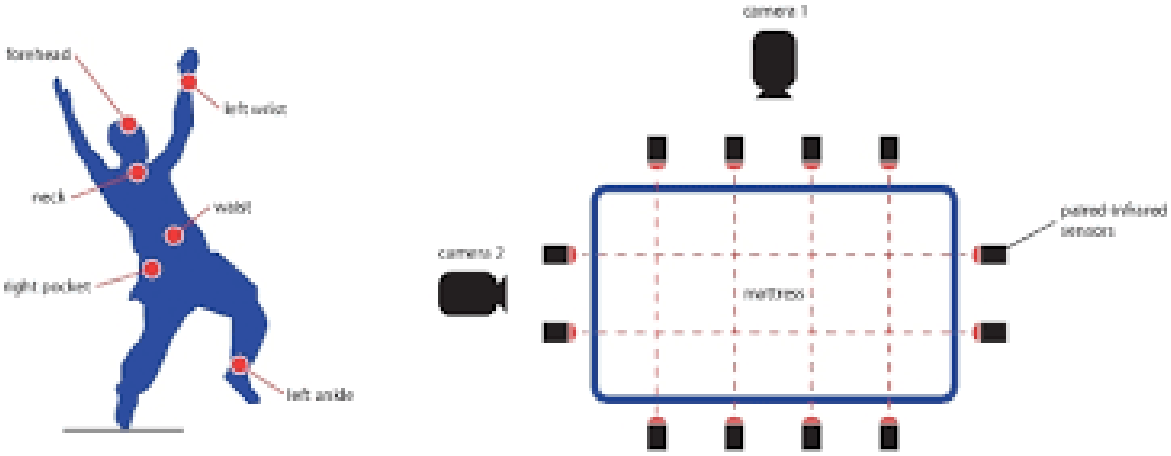
Companion Robots

A companion robot is a robot that is designed to create companionship mostly for elderly and single children. IoT sensors are essential for robotics and it is the same for companion robots as well. Sensors detect objects that surround the robot and enable the robot to move.

Fall Detection

Falling into the ground and not being able to get up or request help can be a scary experience for senior citizens. IoT sensors can detect falls using geolocation data and

summon help so that it reduces the time the elderly remote on the floor after a fall which could lead to lethal consequences.



Smart Irrigation

IoT sensors determine the weather condition and the soil moisture, which will help in getting the appropriate amount of water that soil needs. Bosch offers an IoT solution that measures how much water the tree needs and provides that amount of water.

Leakage Management

IoT sensors can detect temperature changes, water leakage, chemical leakage, and pressure level in water tanks.


IoT in Water
Water Conservation for
Future Generation