



# **SNS COLLEGE OF TECHNOLOGY**

**(An Autonomous Institution)**

**COIMBATORE-35.**



Accredited by NBA – AICTE and Accredited by NAAC – UGC with ‘A+’ Grade  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.

## **DEPARTMENT OF AUTOMOBILE ENGINEERING**

**COURSE NAME : 19AUT205 – INTERNET OF THINGS IN AUTOMOTIVE SAFETY**

**II YEAR /IV SEMESTER**

**Unit 1- Introduction**

**Topic 1 : Introduction to IoT, Future and Market potential of IoT**



# CONTENT



- ❖ Introduction
- ❖ Features and Characteristics of IoT
- ❖ Applications of IoT
- ❖ Future of IoT
- ❖ Market Potential of IoT



# What is an IoT??



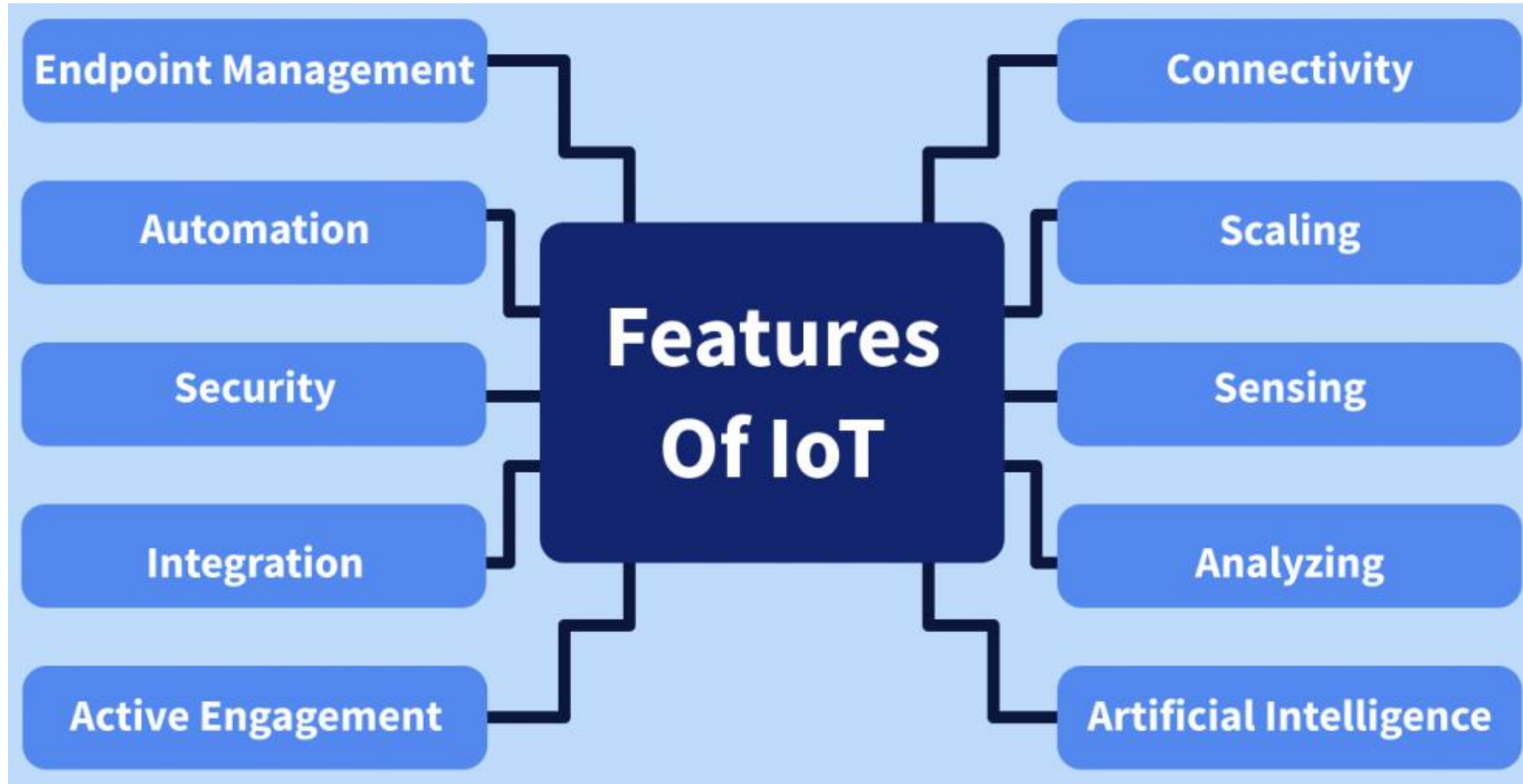
➤ The Internet of things describes physical objects that are embedded with sensors, processing ability, software, and other technologies that connect and exchange data with other devices and systems over the Internet or other communications

networks





# FEATURES OF IoT





# Features and Characteristics of IoT



- 1. Connectivity**
- 2. Sensors and Actuators** (Sensing)
- 3. Data Collection and Analysis** (Analysing)
- 4. Interoperability** (Active Management)
- 5. Remote Monitoring and Control** (Automation)
- 6. Scalability** (Scaling)
- 7. Security** (Security)
- 8. Real-time Communication** (Artificial Intelligence)
- 9. Energy Efficiency** (End point Management)
- 10. Integration with Cloud Computing** (Integration)



# Features and Characteristics of IoT



1. **Connectivity:** IoT devices are interconnected through various communication protocols, enabling seamless data exchange and collaboration.
2. **Sensors and Actuators:** IoT devices are equipped with sensors to collect data from the environment, and actuators to perform actions based on the processed information.
3. **Data Collection and Analysis:** IoT systems gather vast amounts of data, which is analyzed in real-time or stored for later insights, facilitating informed decision-making.
4. **Interoperability:** IoT promotes interoperability, allowing different devices and systems to work together harmoniously, fostering a more integrated and efficient environment.



# Features and Characteristics of IoT



5. **Remote Monitoring and Control:** IoT enables remote monitoring and control of devices, empowering users to manage and interact with connected systems from anywhere with an internet connection.
6. **Scalability:** IoT architectures are designed to be scalable, accommodating the addition of new devices and expanding capabilities without compromising performance.
7. **Security:** Security is a paramount concern in IoT. Robust measures, such as encryption, authentication, and secure communication protocols, are implemented to protect data and prevent unauthorized access.
8. **Real-time Communication:** IoT devices often require real-time communication to enable quick responses and timely decision-making, especially in critical applications like healthcare and industrial processes.



# Features and Characteristics of IoT



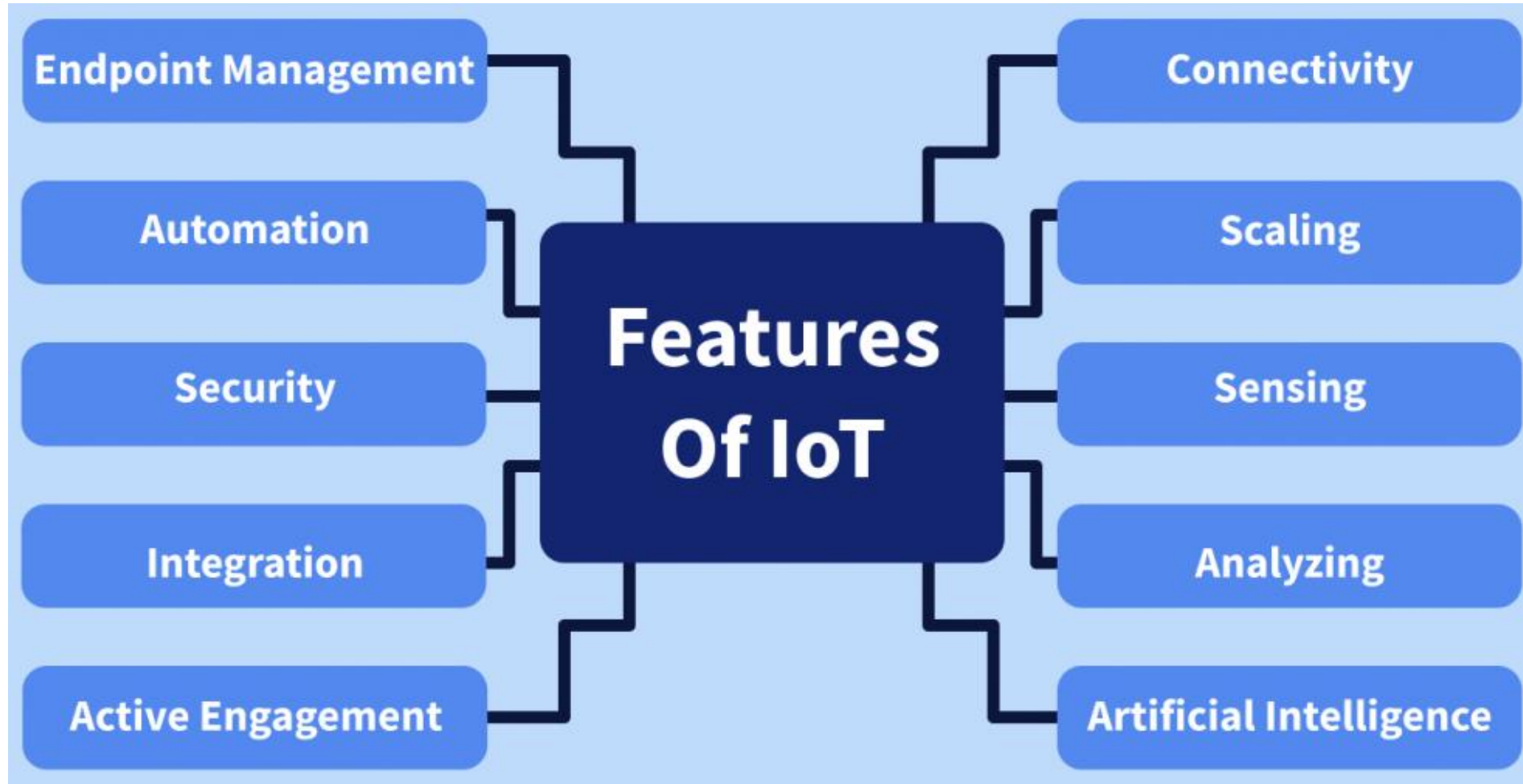
**9. Energy Efficiency:** Many IoT devices are designed to be energy-efficient, employing low-power technologies to prolong battery life and reduce overall energy consumption.

**10. Integration with Cloud Computing:** IoT systems often leverage cloud computing for data storage, processing, and analysis, providing a scalable and cost-effective solution for managing the immense volume of data generated by connected devices



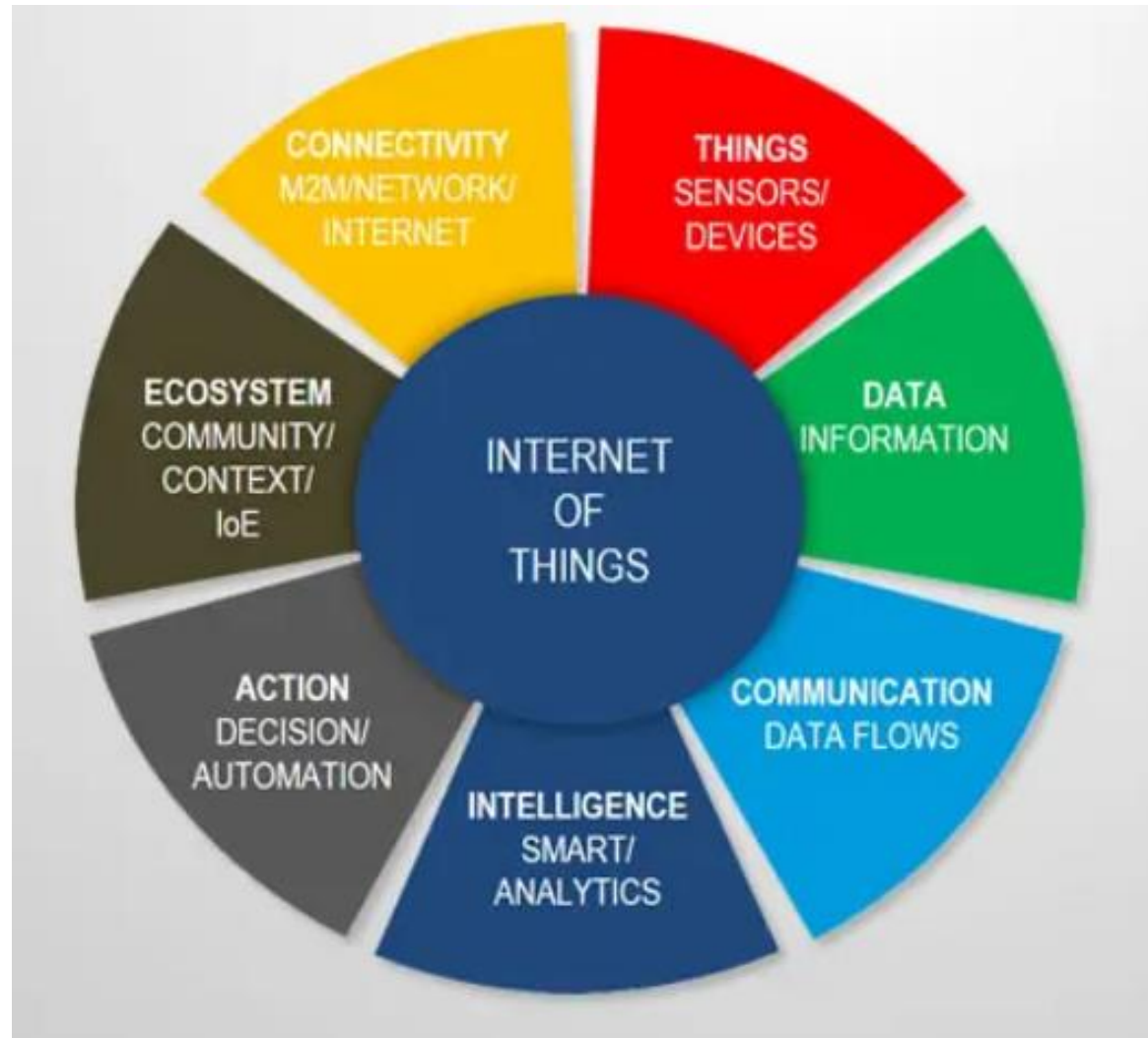


# FEATURES OF IoT





# CHARACTERISTICS OF IOT





# APPLICATIONS OF IoT



**Environmental Monitoring**



**Smart Home**



**Wearable**



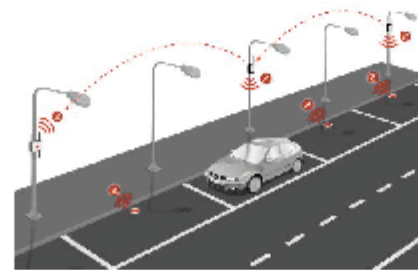
**Smart Grid**



**Medical & Healthcare**



**Connected Vehicle**



**Smart City**



**Industrial Automation**



# APPLICATION OF IoT in AUTOMOBILE



- 1) Connected Vehicles.
- 2) Telematics
- 3) Vehicle-to-Vehicle (V2V) Communication
- 4) Smart Parking
- 5) Vehicle-to-Infrastructure (V2I) Communication
- 6) Fleet Management
- 7) In-Car Entertainment and Connectivity
- 8) Vehicle Diagnostics and Maintenance
- 9) Enhanced Driver Assistance Systems (ADAS)
- 10) Usage-Based Insurance (UBI)



# APPLICATION OF IoT in AUTOMOBILE



**Connected Vehicles:** IoT enables vehicles to be connected to the internet, allowing for real-time communication between vehicles, infrastructure, and other devices. This connectivity enhances navigation, traffic management, and overall road safety.

**Telematics:** IoT facilitates the collection and transmission of data from vehicles, providing insights into driver behavior, vehicle performance, and maintenance needs. This data is crucial for insurance companies, fleet management, and predictive maintenance.

**Vehicle-to-Vehicle (V2V) Communication:** IoT allows vehicles to communicate with each other, sharing information about their speed, location, and other relevant data. This communication enhances safety by enabling vehicles to anticipate and react to potential hazards on the road.



# APPLICATION OF IoT in AUTOMOBILE



**Smart Parking:** IoT applications help drivers find parking spaces more efficiently through sensors that monitor parking space availability. This reduces congestion, saves time, and enhances the overall parking experience.

**Vehicle-to-Infrastructure (V2I) Communication:** IoT enables communication between vehicles and infrastructure such as traffic lights and road signs. This connectivity can optimize traffic flow, reduce congestion, and improve overall transportation efficiency.

**Fleet Management:** IoT devices in vehicles assist in fleet management by providing real-time tracking, monitoring fuel efficiency, and managing maintenance schedules. This results in cost savings and improved operational efficiency for fleet operators.



# APPLICATION OF IoT in AUTOMOBILE



**In-Car Entertainment and Connectivity:** IoT enhances the in-car experience by providing connectivity for infotainment systems. Passengers can access streaming services, navigation, and other applications through seamless integration with their smartphones and other devices.

**Vehicle Diagnostics and Maintenance:** IoT sensors monitor the health of various vehicle components and systems. This data is used for predictive maintenance, allowing for timely identification of potential issues and reducing the risk of breakdowns.

**Enhanced Driver Assistance Systems (ADAS):** IoT contributes to ADAS by enabling the integration of sensors, cameras, and communication technologies. This results in features such as adaptive cruise control, lane departure warnings, and collision avoidance systems.



# APPLICATION OF IoT in AUTOMOBILE



**Usage-Based Insurance (UBI):** IoT enables insurance companies to offer personalized insurance policies based on individual driving behavior. Data collected from connected vehicles allows insurers to assess risk more accurately, leading to fairer premiums for drivers

The integration of IoT in automobiles is transforming the industry by making vehicles smarter, safer, and more efficient





# FUTURE OF IoT



Artificial Intelligence and  
Advanced Machine  
Learning



Intelligent Things



Virtual Reality and  
Augmented Reality



Blockchain  
(Distributed Ledgers)



Conversational Systems



Digital Platforms



Adaptive Security  
Architecture



Digital Health



Big Data/Advanced Analytics



Super Computing



# MARKET POTENTIAL & FUTURE OF IoT



- ❖ IoT is seen as the **future of IoT** is due to its ability to enhance efficiency, provide real-time insights, and enable automation across various industries, leading to improved decision-making and resource optimization
- ❖ The IoT market reached \$761.4 billion in 2020 and is expected to reach \$1.39 trillion by 2026, according to Mordor Intelligence.
- ❖ The growth is happening primarily in a few industrial sectors, namely manufacturing, retail, and health care, where IoT technology has been deployed to track illness and handle other logistics involved with pandemic abatement.
- ❖ As global infrastructure for edge computing and 5G becomes more widely accessible
- ❖ IoT is expected to be more readily available for corporate development and grow at a faster rate.



1. Mention some features of IoT
2. Mention the applications of IoT
3. what is the future scope of IoT?

ASSESSMENT





## REFERENCE



- ❖ <https://www.datamation.com/trends/internet-of-things-iot-market/#market>
- ❖ <https://medium.com/@anukritisaurabh/what-is-the-future-of-iot-internet-of-things-a94182444671>



THANK YOU !!!