

IoT Seminar Notes:

What is IoT?

IoT stands for the Internet of Things, which refers to the interconnectedness of physical devices, vehicles, home appliances, and other objects through the internet.

Key Components:

- **Sensors:** Collect environmental data.
- **Actuators:** Make changes in the physical world.
- **Communication Protocols:** Enable devices to communicate with each other.
- **Data Storage:** Where collected data is stored.
- **Analytics:** Analysis of data to derive meaningful insights.

Security:

- Security is crucial for IoT devices. Weak security can lead to malicious attacks and data breaches.

Application Areas:

- **Smart Cities:** Used in traffic management, energy usage, security, etc.
- **Healthcare:** Smart medical devices, patient monitoring, health tracking systems.
- **Industry 4.0:** Automation in factories, improvements in productivity and production processes.

Standards and Protocols:

- Importance of communication protocols like MQTT, CoAP.
- Compliance with security standards and data encryption.

Energy Efficiency:

- Given the limited energy resources of IoT devices, energy efficiency is of paramount importance.

Future Trends:

- **Edge Computing:** Processing data on the device itself.
- **5G Connectivity:** Faster and more reliable communication.

Example Application:

- The Seminar explored a detailed application example of smart management of traffic lights in a city using IoT.