

Capital University of Science and Technology

Department of Computer Science

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| CS4743 – Internet of Things (IoT) Section - 1  **ASSIGNMENT NO. 4** | |
| **Semester:** Spring 22 | **Max Marks:** 10 |
| **Instructor:**    **Assigned Date:**  June 13, 2022,  **Due Date:** June 19, 2022 | |
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**Question No.1** Write the summary of the attached document keeping in view the following points. **[10 Marks] – [CLO-2]**

1. Industrial Internet of Things (IIoT)
2. Machine to Machine Communication (M2M)
3. IoT in Smart Cities
4. IoT in Agriculture
5. IoT in Retail Sector
6. IoT in Energy Sector
7. IoT in Healthcare
8. Future of IoT

The Industrial Internet of Things (IIoT) is an emerging trend in the industry that allows engineers to create intelligent machines using sensors, software and big data analytics. The main purpose of IIoT is to enable smart devices to communicate with each other more accurately and reliably than humans, enabling organizations to detect inefficiencies and problems earlier. The Internet of Things (IIoT) is a network of smart devices that monitor, collect, share and analyze data. Improved field services and the ability to anticipate machine failures using real-time data are two benefits of IIoT. If an item is damaged or in danger, the system alerts investors to take immediate action.

The Internet of Things for smart cities includes smart controls, automated transportation, smart energy management systems, water distribution, city security, and environmental monitoring. IoT solves major urban problems, such as pollution, traffic congestion and lack of energy. Smart Belly Trash can notify municipalities when they can dispose of their waste. The sensor can also detect meter distortions, general errors and installation errors in electrical systems.

The UN predicts that by 2030, traffic will decline as two-thirds of the world's population lives in densely populated cities. This immediately draws attention to congestion and the need to plan smart cities to reduce congestion.

According to Intel Juniper Research, smart cities can save up to 125 hours for every city dweller. This study identifies four key areas of smart cities: mobility, health, public safety, and productivity.

A steady increase in world population will lead to a sharp increase in food demand. Smart farming is one of the fastest growing IoT domains. Farmers use meaningful concepts in their data to get higher returns on their investments. Determining soil moisture and nutrients, controlling water consumption for plant growth, and determining the right fertilizer are some of the simplest IoT applications. According to BI Intelligence, by 2020, the number of IoT device installations for agriculture will increase by 20% per year, to 75 million. In addition, by 2025, the global smart farming market is expected to triple to $ 15.3 billion.

IoT has great potential in retail. IoT enables merchants to connect with consumers and enhance their trading experience. Smartphones allow retailers to stay in touch with consumers even when they are not in the store. It can also track the direction consumers are heading to the store, helping to improve store locations and place high-quality products in high-traffic areas. The potential economic impact of IoT on retail is estimated at $ 410-1.2 trillion per year by 2025. IoT helps reduce inventory errors, improve supply chain management, and reduce labor costs.

IoT is already beginning to have a significant impact on the energy sector. According to Energy.gov, this type of technology is critical because 30% of the energy used in existing commercial buildings in the United States is wasted. IoT is also one of the key factors in the development of innovative energy networks that benefit consumers, cities and energy companies. IoT is also useful for net zero buildings (ZNEs), also known as zero-energy buildings. The amount of energy consumed by a building and the amount of renewable energy it produces are the same every year. It is a combination of IoT, AI, solar, battery and LED lighting systems. The building reduces electricity and exhaust bills and is gaining popularity around the world.  
  
The concept of integrated medical system and intelligent medical device offers great hope not only for business but also for the well-being of all. Research shows that IoT will be essential for health in the years to come. The goal of Health IoT is to help people live a better life by wearing fake devices. The information gathered will help the individual study of human health and the development of specific tactics for treating the disease. If you are not taking your medication or have other symptoms that need to be reported to your healthcare team, this dispenser will immediately send the data to the cloud. The future medical IoT has arrived. Research shows that by 2019, 87% of healthcare companies will have IoT technology in their units. Studies show that 73% of IoT healthcare applications are for remote monitoring and patient care, 50% for remote management and monitoring, and 47% for location services.

Portable devices with smart features are a new technology. Glasses, watches, and bracelets can be enhanced with IoT applications that can generate usage data. It also works with smart machines that can communicate with each other and share traffic information through IoT software for optimal route management. You can then combine the benefits of transportation with other city services to create a complete IoT solution. The future of IoT is a smart city where every device is connected and uses the power of peripherals, cloud storage and collective intelligence to make the right decisions. The retail industry with future IoT applications will inevitably change. IoT solutions found in smart sensor stores will enhance the shopping experience and provide unique solutions for every visitor.