

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

**Summary**

The Industrial Internet of Things (IoT) is a new trend in the industry that allows engineers to create intelligent machines using sensors, software and big data analytics. The main purpose of IoT is to enable smart devices to communicate with each other more accurately and reliably than humans, enabling organizations to identify inefficiencies and problems early. The Internet of Things (IoT) 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 IoT. If an item is damaged or threatened, the system notifies the investor to take immediate action.

The Internet of Things for smart cities includes smart surveillance, 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 city authorities when trash can be emptied. The UN predicts that by 2030, traffic will decline as two-thirds of the world's population lives in high-density cities. This immediately draws attention to congestion and the need to plan smart cities to reduce congestion.   
Smart cities can save up to 125 hours for every city dweller, according to a Juniper Research study by Intel. This study identifies four key areas of smart cities: mobility, health, public safety, and productivity.

The continuous growth of the world's population leads to a significant increase in food demand. Smart farming is one of the fastest growing IoT domains. Farmers use meaningful concepts in their data to get a high return on their investment. Determining soil moisture and nutrients, controlling water consumption for plant growth, and determining the right fertilizers are some of the simplestapplications of IoT. According to BI Intelligence, the number of agricultural IoT device installations will reach 75 million by 2020, growing at a rate of 20% per year. Simultaneously, the global smart agriculture market is expected to triple in size by 2025, reaching $15.3 billion.

IoT has great potential in retail. IoT allows merchants to connect with customers and enhance their shopping experience. Smartphones allow retailers to stay in touch with consumers even when they are not in the store. It also allows you to track the customer's route to the store, which helps 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 billion to $ 1.2 trillion a 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 essential because 30% of the energy used in typical 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 Zero Net (ZNE) buildings, also known as zero energy buildings. The amount of energy used by the building and the amount of renewable energy produced by the building are the same every year. It is a combination of IoT, AI, solar, battery and LED lighting systems. The building reduces electricity and emissions 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 important for health in the years to come. The goal of IoT in the field of health is to enable people to 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 medications or have other indications that your healthcare team needs to be notified, these dispensers will send your data to the cloud immediately. The future medical IoT has arrived. According to the survey, 87% of healthcare companies will have IoT technology in their facilities by 2019. According to the survey, 73% of IoT applications in healthcare are for remote monitoring and patient maintenance, 50% for remote control and monitoring and 47% for location services.

Wearable devices with smart features are a new technology. Glasses, watches, and bracelets can be enhanced with IoT applications, which can generate usage-relevant data. We also work with smart machines that can communicate with each other and share traffic information through IoT software for optimal route management. Then you can combine the benefits of transportation with other city services to create complete IoT solutions. The future of IoT is a smart city where all devices are interconnected and use the power of peripheral computers, cloud storage and collective intelligence to make better decisions. The retail industry with future IoT applications is sure to change. IoT solutions that can find stores equipped with smart sensors will enhance the shopping experience and provide customized solutions for each visitor.