

## Chapter 6

# Harnessing the IoT– Based Activity Trackers and Sensors for Cognitive Assistance in COVID–19

**Uma N. Dulhare**

*Muffakham Jah College of Engineering and Technology, India*

**Shaik Rasool**

*Methodist College of Engineering and Technology, India*

### ABSTRACT

*The COVID-19 pandemic raised the need for harnessing digital infrastructure for many healthcare services like appointment scheduling, surveillance, and checking the patients remotely. A digital platform is needed that should be reliable for disease identification and monitoring using IoT, which can compensate for vital activities like the slow rate of viral tests and vaccine development also recognized as apt technology for bridging various devices. Although the technology has been used to connect the daily activities with the physical metrics, forecasting of COVID-19 is very vital and necessary. The fitness measures like body temperature, heartbeat rate,  $SPo_2$  from wearable devices can be used to alert the users. Groups of affected individuals can be remotely checked, and data can be collected to analyse the rate of transmission and symptoms. This chapter emphasizes harnessing the potential of IoT by comprehending the importance of IoT in various domains and its various applications. It will explore various IoT devices and focus on challenges and advantages and security aspects.*

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## **1. BUDDING SIGNIFICANCE OF IOT IN THE MODERN ERA**

Internet of Things (IoT) is assembly of heterogeneous devices that are equipped with sensors, software and various technologies that can connect, collaborate and interchange data. IoT devices can range from simple everyday objects in home to complex industrial applications. It is estimated by experts that currently there are around 10 billion IoT devices and the number may increase to 25 billion by the year 2025. IoT has grown into significant technology in this era. Embedded systems supported IoT to connect small appliances like thermostats, doorbells, baby monitoring systems to internet for storing and sharing data. Reliable communication was made possible through utilization of IoT among the devices and sensors which led to the application of IoT in multidisciplinary fields (Satyanarayana et al., 2022). IoT supported development of many modern technological innovations around the world which as not possible in past years. Various organizations and businesses benefitted from advancements made possible through IoT in supply, services and user experience.

IoT is also playing a significant role in harnessing the modern technologies like Artificial Intelligence, Machine Learning, Robotics and 5G for building application to sustain society. Complex tasks can now be executed with ease and enormous data generated from the IoT devices can be collected efficiently for analytics that can enhance the integration of AI and improve accuracy in automation with trivial errors. Past two years increased demand and need for IoT due to pandemic and lead to development of various innovative devices and applications. This demand will further increase in succeeding years and open doors for more research and opportunities. Imminent trends of IoT are discussed below that gives an insight into future stressing the need for IoT (Baidya & Levorato, 2018).

### **1.1 IoT Evolving as Apt Solution for Sustainable Innovations**

Intelligent connected IoT devices are well capable of providing advanced applications which include power optimization, monitoring the environment and defence management are few to be named. Nevertheless, their importance in business was neglected by the major IoT developers till date. The shift of focus to green economy by several nations lead to increase in green initiatives for building smart cities and communities where IoT has huge potential and can provide the necessary techniques and infrastructure. Several cost-effective applications can be made possible that can be controlled and deployed remotely, effectively monitored for failures will increase extensively driving the IoT technology forward. IoT can be considered as a viable solution for global economy and should be integrated into suitable real-time application (Baidya & Levorato, 2018).

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