Chapter 14
Real-Time Monitoring of the Patients by Using Different Types of Protocols Using AI

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ABSTRACT

The concept of Internet-connected devices has been around for a while. New research fields, ranging from industrial control to environmental monitoring, have been established as a result of market trends and innovations in the electronics sector. The amount of data travelling worldwide is increasing at an exponential rate due to the growing number of users and connected devices. Mobile phones, computers, and numerous commonplace appliances like air conditioners, TVs, refrigerators, tablets, PDAs, and smart sensors are all immediately connected to the Internet thanks to the widespread adoption of wireless communication. A big, intricate cable network needs a high throughput. New design problems arise from the exponential growth in the number of connected devices and the mixed use of wired and wireless network components. Service providers are searching for ways to enhance mobile users' data transfer speeds and connection quality. Understanding the basic principles underlying the long-distance wireless signal propagation under various environmental circumstances is crucial for the development of more sophisticated networks. This chapter discusses the different used protocols and sensors device used for communication in IOT devices. It defines the different routing algorithm for calculating the smallest path between the routers.

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1. INTRODUCTION

For wireless networks, several topologies, routing schemes, and design objectives might be taken into account. The next stage in the development of wireless sensor networks (WSN) is represented by the introduction of sensor and communication technologies. For instance, the architectural models and routing protocol performance are strongly associated. Devices that are connected may be able to function independently, processing data for use in self-made decisions in addition to uploading and downloading it. Examples of apps that facilitate widespread user access to multi-application platforms and allow users to engage with global systems, comprehend devices, and react to them in response to events are e-health and smart cities.

But there are many obstacles to this ambition, including scalability, cost, and power consumption. Owing to the widespread and smooth requirements of IoT connectivity, devices can have varying capacities, be virtual or physical, and be able to be recognised and followed by their neighbours. Smooth integration between heterogeneous components is necessary for connectivity between various IoT network segments. When creating network routing protocols for exchange systems, heterogeneous data creation, or dynamic topologies, additional design considerations must be made. The goal of IoT networks is to offer services that can satisfy particular quality standards wherever, at any time. Network designers need to take into account every factor, including device mobility, location, and area population, in order to deliver the necessary quality of service.

1.1. Wireless Medium access issues

Wireless Medium access is important issue in wireless communication due to the reason that it coordinates and synchronize the data transfer in between different IoT devices. In order to achieve high throughput, low latency as well as low power consumption various issues at the MAC layer must be overcome. Further, when communicating over the wireless medium, there is always a risk of interference from other communication technologies and frequencies already in use.

There are also issues related to different mobile stations that communicate with other nodes over common channels.MAC layer provides addressing and channel access control techniques in multiple-access networks that allow multiple terminal or network to communicate over a shared medium such as wireless network. This type of communication makes MAC design more difficult that the design of fixed or wired networks. There are issues related to communication modes, burst channel errors, synchronization and energy consumptions during communication. Also, there are issues related to collision as well as radio signal distortion issues like reflection, diffraction and scattering (Ahady et al. 2012).