FUTURE GENERATION INFORMATION SYSTEMS

# Convergence of Deep Learning and Artificial Intelligence in Internet of Things

Edited by
Ajay Rana, Arun Kumar Rana,
Sachin Dhawan, Sharad Sharma,
and Ahmed A Elngar

CRC Press

Chapter 10 | 17 pages

COVID-19 Patient Remote Health Monitoring System Using IoT

*By Jivan Parab, M. Lanjewar, C. Pinto, M. Sequeira, G.M. Naik*

Abstract ∨

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Prediction of Alanine Using Neural Network Model

*By M. Sequeira, Jivan Parab, G.M. Naik*

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Hybrid Algorithm for Detection of COVID-19 Using CNN and SVM

*By Pranjali G Gulhane, Anuradha Thakare*

Abstract ∨


Book

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## ABSTRACT

This book covers advances and applications of smart technologies including the Internet of Things (IoT), artificial intelligence, and deep learning in areas such as manufacturing, production, renewable energy, and healthcare. It also covers wearable and implantable biomedical devices for healthcare monitoring, smart surveillance, and monitoring applications such as the use of an autonomous drone for disaster management and rescue operations. It will serve as an ideal reference text for senior undergraduate, graduate students, and academic researchers in the areas such as electrical engineering, electronics and communications engineering, computer engineering, and information technology.

• Covers concepts, theories, and applications of artificial intelligence and deep learning, from the perspective of the Internet of Things.

• Discusses powers predictive analysis, predictive maintenance, and automated processes for making manufacturing plants more efficient, profitable, and safe.

• Explores the importance of blockchain technology in the Internet of Things security issues.

• Discusses key deep learning concepts including trust management, identity management, security threats, access control, and privacy.

• Showcases the importance of intelligent algorithms for cloud-based Internet of Things applications.

This text emphasizes the importance of innovation and improving the profitability of manufacturing plants using smart technologies such as artificial intelligence, deep learning, and the Internet of Things. It further discusses applications of smart technologies in diverse sectors such as agriculture, smart home, production, manufacturing, transport, and healthcare.

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# COVID-19 Patient Remote Health Monitoring System Using IoT

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All over the world, over 20 million people have been infected with COVID-19 and there are more than 7.3 lakhs fatalities. It is of utmost importance to monitor the health parameters of these patients. In spite of following the mandated SOP for their protection while monitoring the parameters of the patients, the health workers were affected with COVID-19. Keeping this in mind, we have designed a system to remotely monitor all the essential parameters such as body temperature, oxygen saturation, heart rate, heart rate variability, respiration rate, and total haemoglobin. The system is designed around the ESP32 development board, which acquires these parameters from individual patients and sends it over WiFi on the ThingSpeak Internet of things (IoT) server. Also, due to the rise in the number of asymptomatic patients and limitation in hospital beds, many governments have issued guidelines to home quarantine such patients. In such cases, the above system can be very useful. As the system is embedded with a GPS feature, patients with critical conditions can be traced and brought to the appropriate health centre for further treatment. The data of COVID-19 patients and their location also can be accessed by the concerned administration on regular basis for their statistics and planning. The system is validated with Bland–Altman analysis and the accuracy for all parameters is more than 98%.