

Implementation of IoMT-assisted smart healthcare monitoring for clinical infectious diseases

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Abstract—Contactless interactions are more common in recent years due to advances in technology and consumer demand for the convenience of touch-free transactions. In this work, a nursing assist for hospitals is proposed which can reduce the risk of infection by decreasing the interactions with the patients. Nurses have to take rounds at least twice a day for the health check-up and doctors spend a part of their consultation time for the daily check-up of each in-patient. Therefore, the proposed device assists the nurses by monitoring the patient's health such as measuring temperature, heart rate and oxygen saturation level periodically using sensors. The medical report of the patient can be stored in the cloud and accessed from the nursing station. From the database, the doctors can analyze the patient's health easily and can change the way of treatment if needed. The proposed device here can avoid the systematic and tedious rounds by nurses and doctors and also improves the patient satisfaction. This machine could be a key system to help and drive down the costs of care and human labour.

I. INTRODUCTION

Traditionally the medical field requires a mix of diagnostic and surgical abilities which can only be reliably delivered by highly trained doctors and nurses. Over the last 40 years, robots have become increasingly prevalent in the medical field. Specialist camera-guided robotic surgical systems such as the Neuro-Mate, Minerva, and the Robot-Assisted Microsurgery System were introduced into brain surgery settings in 1990s [1, 2]. Considering the human body vitals, electrophysiological signals such as electrocardiography (ECG) and optical signals such as photoplethysmography (PPG) can be used to record

significant body parameters [3, 4].

With the advancements in Internet of Things (IoT), biomedical field is getting revolutionised enabling remote measurement and delivery of data over wireless channels. Internet of Medical Things (IoMT) is another emerging term which is a set of biomedical hardwares and softwares communicating with infrastructures for healthcare data management. This has got the potential to reduce the conventional strain on medical practices by facilitating sharing of medical records through IoMT platforms [5]. Now-a-days due to the increasing percentage of the aging population and population suffering from chronic illnesses such as asthma, diabetes and heart disease, home health care and monitoring is becoming increasingly important [6-7]. Thus, smart healthcare systems have become the need of the hour.

In this work, an automatic medico machine is proposed to convey the vital signs of patients measured non-invasively to nursing station. Vital signs such as heart rate, body temperature and oxygen saturation levels are included, considering contagious disease conditions similar to Covid.

This work is presented as in seven sections. Section II and III deal with the contents and working of the proposed system and, section IV depicts the details of implementation. Section V lays out the process flow of the working parts and, section VI showcases the results. Possible future works are pointed out in the final section VII.

II. PROPOSED SYSTEM

An automated medico machine is a nurse assist and the