WIRELESS SYSTEM FOR TRACKING AND COMPLIANCE HAND HYGIENE PERFORMANCE

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Abstract

The wireless system for tracking and compliance hand hygiene performance, comprising a wearable device, consisting; an odor sensor that analyzes the smell of an alcohol disinfectant for hand cleaning process, a transmitter that delivers real time hand postures of the staff to a central server, a receiver that collects the hand postures of the staff, a processing unit that compares the real time hand postures of the staff with stored data and identifies the missing steps in the process and also generate the degree of completeness of the process.

Keywords: wireless, wearable device, detection unit, processing unit.

1. Introduction

Every year tens of thousands people died only because of nosocomial infection. The nosocomial infection is also known as 'Hospital acquired infection' that are contracted within hospital environment. They are basically transmitted through the health care workers, patients, hospital equipment's or interventional procedures. The most common sites of the highly contagious infection are the blood stream, urinary tracts, lungs, and surgical wounds. Though any type of bacteria are responsible for causing nosocomial infections, but it is found that multidrug resistant (MDR) pathogens are responsible for causing hospital acquired infection at a fast rate. Conventionally, the system used for determining and compliance the hand hygiene includes a camera and processor being attached to the camera to receive the images of the hand washing process from the camera. The processor analyzes the hand movements as if the hands mutually moves in desired postures and later generating quality induction of the hand washing process according to the analysis. It does not delivers the notification regarding the complete or incomplete handwashing process on the display of the wearable device. If the camera is not capturing the images clearly then it became difficult to analyze the degree of completeness of hand cleaning process. In order to minimize the aforementioned limitations there is need to develop system that works in economical, user-friendly and environment friendly manner.

It provides notification regarding the degree of completeness of the cleaning process on the display unit of the wearable device.

2. Experiment

The system for tracking hand hygiene, by capturing real time hand postures of the person and delivering the same to a central server for differentiating the real time gestures with the guidelines endorsed by the world health organization (WHO) [1][2]. The system comprise a wearable [3]device, wherein the wearable device having watch like configuration is installed in the system that displays the degree of completeness of the hand cleaning process after and before entering the patient room in the hospital [4]. The wearable device used herein is preferably a wrist band. The odor sensor installed in the device that senses the odor of the alcohol in disinfectant required for removing unwanted pathogens away from the body portion of the stuff while entering and leaving the patient room. [5]. The transmitter installed in the device that collects the real time hand gestures of the stuff from the accelerometer and gyrometer and transfers the same to the central server. The detection unit present on the table of the patient room that detects out the presence of the health care professional, such as a stuff inside the patient room [6]. It also delivers the patient and staff ID to the central server [7]. The central server installed in the system that matches the real time hand gestures steps with the previously stored guidelines recommended by the WHO. When the staff or doctor enters the patient room then before and after patient [1][8] treatment the stuff need to clean their hands so as to remove the pathogens away from the body of the stuff. The database unit installed in the central server that stores the information, such as time stamp, patient ID, staff ID, and degree of completeness and missing steps in the cleaning process [3].

3. Result and Conclusion

The system is fabricated to minimize the chances of the highly communicable disease, such as cold, flue and human immune deficiency syndrome (HIV). It monitors the current hand postures of the person and later differentiating the same with the guidelines allocated by the world health organization (WHO).

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