INTERNET OF THINGS (IOT) BASED SURGERY WITH INNOVATIVE COMBINATION OF ARTIFICIAL INTELLIGENCE AND HUMAN INTELLIGENCE

R.Samyuktha[1] and B.Gayathri[2]

[1] Bio Medical Department, Dhanalakshmi Srinivasan Institute of Technology , Tiruchirapalli, India

[2] AP Computer Science Department, Bishop Heber college, Tiruchirapalli, India

ABSTRACT

While examining the historical backdrop of clinical procedure, we can understand that medical practitioner have/had created and refined instruments for complicated surgeries. Development in clinical progressions is on a standard with that saw in the sickness causing specialists and infections. Since ancient time, clinical practices were performed using obtrusive medical procedures without sedation, which resulted in high mortality and post-surgery complications. This led to the emergence of effective, safe and user friendly medical instruments and procedures with little to moderately death rate. At present obtrusive methodologies are negligibly practiced, but provides less twisted related complexities, fast organ work return, and more limited hospitalizations. The success of these methods has prompted for higher acknowledgment of picture guided surgeries. We present an Internet Of things (IOT) and Artificial Intelligence (AI) based model that includes a computer generated experience based (VR-based) User interface and some benefits and limitations. It can be done by Raspberry pi, android application and also done by Sap cloud system.

KEYWORDS

Picture guided surgeries, Raspberry pi, Sap cloud system, IOT, AI1.

1. INTRODUCTION

IOT is a recent technology where it will go all around the world and for sure will rule the medical field. It is a smart way communicating the patients in long distance. Still in some rural areas they don't have any hospitals and in lack of health care or we can say poor health care systems. In lack of health care system many children, pregnant women and older people are facing many problems in day to day life. IOT assumes a part in attaching these issues. If mimicking all wellbeing crude information under the idea of IOT it brings the idea of DOCTOR which is an analogue to ATM machine in medical services.

By the continuation of IOT health care system, it is further developed for surgery too. It is done by the robotic arm controlled by the nurse in place of doctors during surgery to help in picking and placing tasks.

Figure 1: IOT Healthcare

2. IMPLEMENTATION

Method 1: Using Android Application

With the help of Python, the android application controls the the robotic arm.Here accelerometer and gyroscope are used. In principle, the generated signals of the accelerometer and the whirl gig will be caught by an android application and shipped off to Raspberry pi to control the automated arm. For programming the robots for surgery, Raspberry pi is employed to the python script which receives the command and control the robot from the smart phone.

Figure 2: Remote surgery using mobile phone

Method 2: Using Sap cloud system

Computer software supports the artificially created environment.We can also use headsets and other navigates along with virtual reality set up. Experience gained from the VR is not less than actual reality. For deep experience oculus VR system is used as part of proposal model. VR is connected to SAP IOT interface of cloud system .

In our proposed model SAP is more sufficient platform to build a surgical model. It could provide real time prediction during surgery. AI is computing paradigm. It is used to create automate intelligent process system.
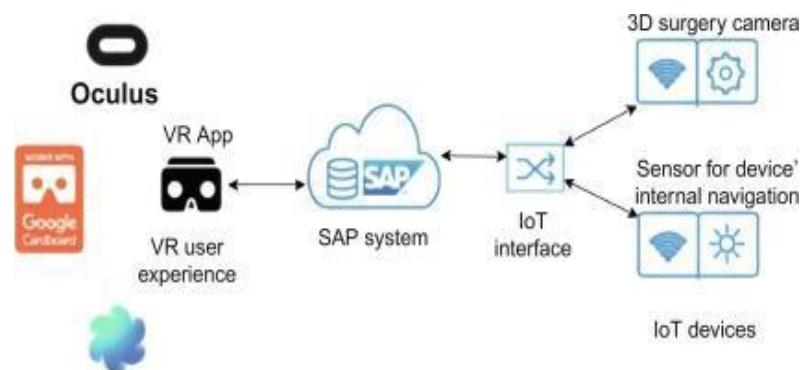

Figure 3: Surgery based on SAP cloud system

Figure 4: Operation room using SAP cloud system

3. BENEFITS AND LIMITATION

Benefits

- IOT gives effective and safe surgical practices worldwide.
  e.g., from remote corners at instance.
- Reduces the cost of surgery and man power.
- Reduces many medical errors by showing the danger area in red colour and the operating area in blue colour via 3D dimensional display system.
- In fact it is very useful for the people in battlefields and space crafts.

Limitations

- First, stake holders should develop a global network for remote surgery with AI.
- Secondly, we need a great financial support from government to make this real.
- Patient's health andprivacy should be keenly addressed to check the patients remotely.
- Though, it reduces "medical error" it is wholly possible by maintaining the systems and robots regularly without fail.

4. DISCUSSION ON FUTURE WORK

Future work incorporates legitimate and moral issues, which are identified with patient's well-being security and their gathered individual delicate information in distant cloud workers and with many innovative artificial intelligence.

5. CONCLUSION

By use of IOT medical procedure, surgery could be imagined. This will improve the security on surgery the ideal utilization of careful gadgets legitimate utilization of electro cautery and normalization of the surgeries.

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AUTHORS

R.Samyuktha, Studying B.E., Bio-Medical Engineering in Dhanalakshmi Srinivasan Institute of Technology, Tiruchirapalli Tamilnadu,. Her Research Interest focuses on Bio-Medical Instrumentation and their applications.

Dr.B.Gayathri, Working as Asst., Professor in Bishop Heber College, Tiruchirapalli, Tamilnadu with work experience of Twelve years and Research experience of Seven years and With specialisation of Green Cloud Computing.