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# Hands on Training of Iot Applications in Healthcare Education System: Today's Need

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***Abstract***—*Internet of things is capturing all the sectors and providing amazing changes in technology has been used in these sectors. Healthcare sector is one of these sectors where Internet of things is making its place. This paper represents the current status of Internet of things in healthcare sector and the answer of why Hands on training is the need of today's healthcare education system.*

***Keywords***— *Internet of things, personalized healthcare, Ubiquitous computing, wireless sensor networks.*

## I. INTRODUCTION

Health is a vital property. Today's fast growing technology in India provides facilities, comfort and development in various sectors. Healthcare is one of the important in them which is demanding more attention and fast recovery of Health issues. Internet of things is playing crucial role to fulfill these demands. Drastic changes have been occurred in medical devices; method of treatment as well as healthcare education system.IOT is helping the medical students, Practitioners and research person to find the innovative solutions for health related problems.IOT provides high quality and lower cost services and reliable preventive care.

## II. INTERNET OF THINGS AND HEALTHCARE

The Internet of things provides applications in healthcare, which improve how physicians deliver care to patient. It also provides resources from remote monitoring to smart sensors and medical device integration. It has potential to keep patient safe and healthy. In current existing health care system due to lack of awareness of advance techniques, poor facility with undeveloped technologies .it the need of the smart health care education system. On network hospital, help patients and doctors for remote handling of services. IOT allows tagging any patient, able to get health care information by the address or database corresponding to particular RFID (Radio frequency identification) .RFID automatically identifies, and tracks the tag attached to objects by using electromagnetic fields. The health care primarily problems on diagnosing treatment, health professionals and policies added to it the meditative considerations and public health.The particular health system refers to organization of people institutions and resources to deliver health care service to meet the need of smart health care .the smart health care system based upon IOT includes ehealth and smart devices as tool of up-gradation and future smart healthcare technologies too.

## III. IOT ROLE IN HEALTHCARE EDUCATION SYSTEM

Study of Following IOT based Healthcare devices, Enhance the Knowledge of doctors & nurses to achieve a high quality care of Patients.

- Health care monitors system is mostly depend on wireless sensor network that is why it gives advantage of reduced energy consumption and extend the communication coverage.
- Developing devices like heart-monitoring devices using a wireless sensors and smart phones. It detects the threatening arrhymains when it reaches at the certain threshold value its alarm alerts to patient.
- Applying IOT for personalized health care in smart homes gives service and technology of layered approach.
- Approach of IOT is an IOT aware architecture for smart health system using sensors like temperature sensors, barometric pressure, and ECG sensor. It gives facility like remote monitoring and management of emergencies.

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## IV. HEALTHCARE SUPERVISION

The smart health care system encounters the smart health disease supervisions. Categorized of this surveillance are mainly smart IOT devices and smart backbone devices.

This once and for all serves the mechanisms of cloud computing and main servers at the hospitals.

Personal Survey and a world response followed by overall public health by World Health Organization (WHO) that has proclaimed plans to ascertain the malady Intelligence Unit that may operate severally.

The trends and analysis have reached the backbone network that's the rife would like of these days.

Smart diseases police work is extreme novel and innovation to hurry up the present method of police work to succeed in the best goals of accuracy and time period info.

Smart malady police work is associate medicine follow by that eruption and spreading are often monitored.

Main role is to predict and to observe to minimize harm to the lives. Modern communication technology includes organization like world health organization WHO and centers for disease control that now can report with enhanced and advanced application like „smart grid" and smart devices like heart monitoring ,biochip, transponders, etc.

## V. ARCHITECTURE OF SMART HOSPITAL

Smart Hospital Paradigm contained of three layers as follows:

- Perception layer.
- Network layer
- Application layer.

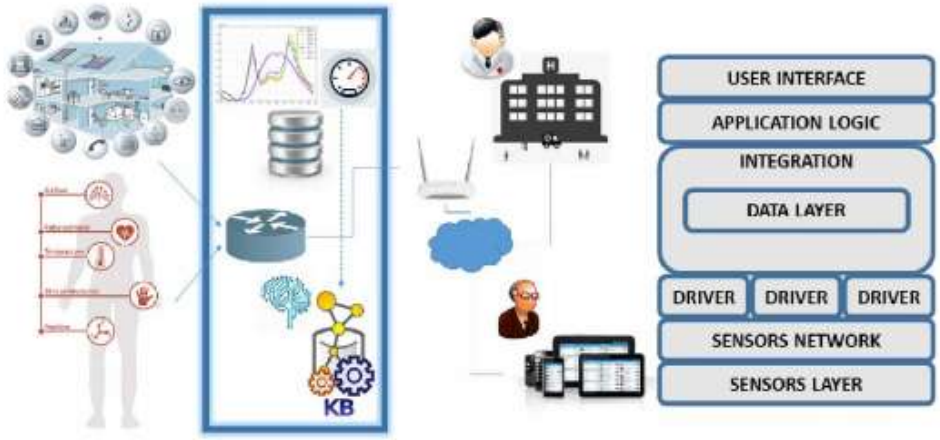


**Fig 1**

## VI. HEALTHCARE SOLUTION BASED ON IOT

Today, innovative healthcare solutions are becoming widely introduced in medical organizations enabling healthcare providers to reduce costs, improve patient treatment, and optimize workflow. These solutions promise to significantly transform the industry.

Mobile applications, smart devices, biosensors, wearable, home virtual assistants, block chain, predictive analytics, and web health portals represent a truly new stage in the healthcare environment.

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When it comes to the benefits of digital healthcare, I should first note the enhanced treatment process, intelligent data analysis, and better customer service. Also, by using innovative tech solutions, organizations can take advantage of automated decisions, continuous patient state monitoring, and successful diagnoses.

### 6.1 Sensors & Smart Devices

Sensor technologies, like wearable sensors and devices, offer several advantages for health management.

Accurate reading and interpretation of indicators with the likelihood of connecting sensors to mobile devices permits medical centers to interchange significant medical instrumentality with smaller devices.

Look at these fascinating statistics that replicate a speedy integration of IoT devices and big investments in them:

- in step with a brand new report by Grand read analysis Iraqi National Congress., IoT within the tending market is predicted to succeed in nearly USD 409.9 billion by 2022;
- By the top of 2018, tending suppliers can have saved $1 billion through the utilization of robotic method acceleration (RPA) tools;
- Technavio's research analysts expect the world IoT market within the tending sector to grow at an amazing CAGR of around thirty seventh by 2020.

Currently, sensible devices like sensible inhalers for treating respiratory disease, syringe pens for the treatment of diabetes, sensible pills, and sensible blister packs area unit being wide developed and introduced

on the market Such intelligent school solutions facilitate designation, enhance treatment, and improve client service, representing a big step towards the development of unwellness treatment.

For instance, sensible inhalers have already become the new normal of patient care with respiratory disease.

There are a unit several different nice applications of sensible devices in tending, e.g., period of time health systems (RTHS), equipment-monitoring systems, and connected tending systems.

### 6.2 Biosensors

At the instant, biosensors square measure among the foremost necessary parts of the health care digital transformation. You can realize a good vary of biosensors that transmit medical info over a wireless network to mobile and internet applications. Thanks to them, health care suppliers get the flexibility to regulate patient treatment and monitor health outside the hospital walls.

Biosensors can also facilitate users in their existence by assembling information regarding all their physical activities, sleep, and overall health. For example, biosensors will change users to live aldohexose levels, blood pressure, heart rate, chemical element level, pulse, blood alcohol level, and alert users (and doctors) if some health issues/problems are detected. Some of these devices record indicators with high sensitivity and specificity, that makes them terribly helpful for health management, particularly for treating senior patients with many chronic diseases quickly. What is necessary is that the ability of biosensors to trace patient health information in real time and supply doctors with all collected info, so avoiding malady complications and rising treatment.

Since the info is browse directly from the patient and is consistently updated, the symptoms taken square measure of upper quality than those reportable by patients throughout their visits to the

doctor and might offer specialists with a true image of the clinical course in every specific case.

### 6.3 Patient Health Portals

By now, patient health portals became a necessary a part of aid organizations. Helping offer improved client service and optimizing operations like request process and appointment programming, they facilitate the lifetime of each doctors and patients. Imagine, for example, a health portal, that enables patients to confer with doctors and consultants on-line, look

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at check and laboratory results, simply build payments, communicate with different patients, and find out healthy tips and food recipes, and schedule appointments.

### 6.4 Machine Learning Applications

As in several alternative sectors, machine learning has nice benefits for the aid trade also.

Machine learning applications will facilitate medical organizations improve client service, extract worth from giant information amounts, expeditiously analyze medical records, and enhance patient treatment.

Concerning sensible use cases, aid and pharmaceutical firms square measure victimization analytics in R&D, notably in streamlining clinical trials and decision-making processes.

When doctors and alternative specialists build selections, method the method} generally appearance a small amount muddy or restricted by the shortcoming to quickly process heaps of data. Also, there's usually a high probability of human error.

Intelligent information analytics will modification it by transferrable a lot of information points from new sources, breaking down data asymmetries, and adding machine-controlled algorithms to create processing as effective as attainable.

As data sources are becoming more diverse, so are new ways to collect and analyze it, which helps specialists make successful decisions more quickly. Though the healthcare industry still lags in the integration of machine learning solutions, ML offers tremendous opportunities to innovate clinical care and provide a personalized customer experience.

## VII. CONCLUSION

Smart health care education system will enhance the features healthcare education by including:-

- Intelligence of work has been acquiring with the help premises of IOT.
- Minimization of Complications and complexity due to knowledge of IOT Environment.
- Involvement the smart health care device is feasible way to manipulate existing healthcare education system.

The integration of Practical and theoretical Knowledge of IOT based application in Healthcare Education System with existing Healthcare Education System we can find a very good team of doctors ,nurses and resources to treat patients and to reduce risk.

## VIII. ACKNOWLEDGEMENT

In this work, we have proposed a model of Healthcare Education System based on IOT for future. It can be applied in existing healthcare education system to make doctors ready for any new challenge in medical field. We presented the Architecture of Smart hospital, which will be consisted of advance resources based on IOT to take care of patients in risk.

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