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Role of Arduino Lily Pad in Health Care Using Iot

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Abstract: Internet of things plays an important role in healthcare. In healthcare internet of things are used to track, trace and monitor the patients and other medical objects using Arduino lilypad. Internet of things based Arduino lilypad is developed to ensure the safety of patients and other healthcare activities. The Arduino lilypad is used for collecting, analyzing and transmitting data in healthcare system. The main purpose of Arduino lilypad is to increase quality of care and most importantly reduce the cost of care.

Key words: Internet of things (IOT) · Cloud Computing · Arduino lily pad · wireless sensor network

INTRODUCTION

The term internet of things was first coined by Kevin Ashton in 1999. The RFID group defines Internet of things as the worldwide network of interconnected objects uniquely addressable based on standard communication protocols. It incorporates traditional fields like Embedded Systems, Control Systems and Automation, Wireless Sensor Networks to facilitate Device to Device (D2D) communication through the internet [1]. The concept was first used at the Auto-Id centre at MIT. RFID (Radio Frequency Identification) was seen as a pre-requisite for implementing systems which were classified as IoTs. Today, it has applications for both private as well as business users. From the perspective of private users, healthcare, e-learning, domotics are the major fields while from business users' perspective, automation, logistics and industrial manufacturing are the important domains [2].

In this paper we have presented the U-healthcare system in the Internet of Things (IoT) environment with the support of the mobile gateway which makes it possible for integration. We have presented here the mobile gateway architecture in which the main purpose is to receive the sensing data and make a local analysis and generate keywords and then will beset to remote medical server for analysis.

Health Care System: Ubiquitous healthcare is an emerging technology that promises increases in efficiency, accuracy and availability of medical treatment. U-healthcare system is to provide convenient healthcare service to both caregivers and patients and to make it easy to diagnose patient's health condition. People can monitor their health without visiting the hospital or clinic.

Pervasive computing has made the interaction between humans and computational devices completely natural and user can get the desired data in transparent manner. The newly introduced devices like mobile phone, laptops and PDAs have made ubiquitous computing possible. They are available anywhere at any time. Pervasive computing is used in hospitals, emergency and critical situations, industry, education, or the hostile battlefield [3].

Figure below shows the Traditional U-healthcare System Architecture. The system architecture is mainly divided into:

- Body Area Network (BAN)
- Wearable Body Sensor Network
- Personal Monitoring Devices
- Intelligent Medical Server

Remote Health Monitoring Using IOT: IoT devices can be used to enable remote health monitoring and emergency notification systems. These health monitoring devices can range from blood pressure and heart rate monitors to advanced devices capable of monitoring specialized implants, such as pacemakers or advanced hearing aids. Specialized sensors can also be equipped within living spaces to monitor the health and general well-being of senior citizens, while also ensuring that proper treatment is being administered and assisting people regain lost mobility via therapy as well. Other consumer devices to encourage healthy living, such as,

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connected scales or wearable heart monitors, are also a possibility with the IoT. More and more end-to-end health monitoring IoT platforms are coming up for antenatal and chronic patients, helping one manage health vitals and recurring medication requirements. Distinct advantages over similar products from the US and Europe are cost-effectiveness and personalization for chronic patients. Doctors can monitor the health of their patients on their smart phones after the patient gets discharged from the hospital [4].

EXISTING SYSTEM

For the satisfactory information transmission of the mobile healthcare, seamless data transfer must be supported. To construct a seamless data flow, the heterogeneous network integration, the disconnected operations and the communication link redundancy are important issues. Sensor mobile gateway should ideally be hosted on a small and portable device, suitable for daily use, such as a Smartphone or PDA. The majority of smart phones and PDAs currently do not support typical WSN or Near Field Communication interfaces, but there already are some exceptions which are announcing their comprehensive implementation [4].

Arduino Lilypad: The microcontroller that are used is ATmeg328 And operating voltage and input voltage is 2.7-5.5v. The digital input and output pins are 9 and PWN channels are 5 Analog input channel is 4 and DC Per current input/output pin is 40 ma The memory of arduino lilypad in healthcare are as follows:

- Flash Memory that are used is 32 KB (of which 2 KB used by boot loader)
- SRAM is 2 KB
- EEPROM is 1 KB
- Clock Speed is 8 MHz

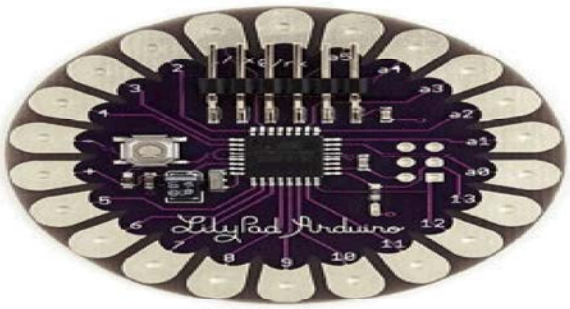


Fig: Arduino Lilypad

One of the most common programmable microcontroller boards, designed for wearable projects and e-textiles is the Arduino board called LilyPad. The data are stored in server which was monitored by physician. And physician prescribe the tablets according to continuous reading of patient condition.

The LilyPad Arduino Simple is a circle, approximately 50mm (2") in diameter. The board itself is 0.8mm (1/32") thick [3].

Washability: We recommend washing projects in cold water by hand with a mild detergent. Drip dry. Do not dry clean or dry in a dryer. Remove the battery before washing the board!

The team created a system around self data-tracking, specifically calculating particulate matter inhaled and collecting basic health data, transmitting them real-time to any Bluetooth-enabled device and allow their visualization in different format. The prototype was made using Arduino Lilypad connected to a particulate matter air sensor that hangs near the neck and a series of stretchy strips of silver-knitted yarn wrapping around the chest to measure breathing [3].

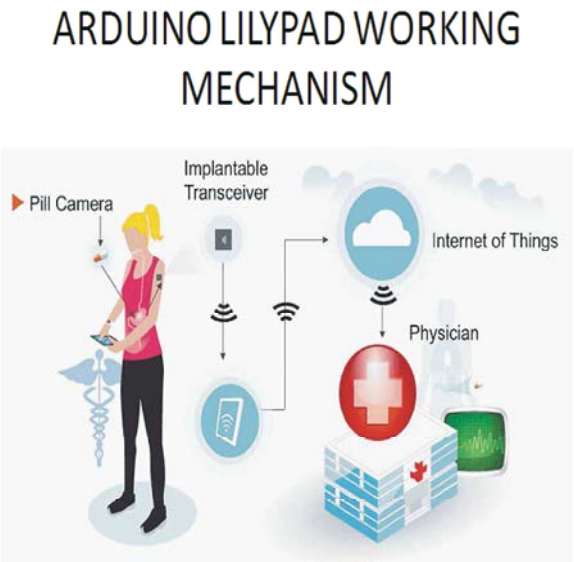
Working of Arduino Lilypad: This is the LilyPad Arduino Simple Board. It's controlled by an ATmega328 with the Arduino bootloader. It has fewer pins than the LilyPad Arduino Main Board, a built in power supply socket and an on/off switch. Any of our LiPo batteries can be plugged right into the socket.

The Simple board is designed to streamline your next sew able project by keeping things simple and giving you more room to work and eliminating the need to sew a power supply. This revision does away with the ISP header and adds a charging circuit based on the MCP73831 IC.

The board contains a MCP73831 LiPo battery charging chip. If the board is connected to both a FTDI connection and a battery, the FTDI power will charge the

battery. This is true regardless of the position of the switch. The LED adjacent to the switch lights up while the battery is being charged. The charging will stop automatically when the battery is fully charged [5].

Because of the battery charging circuit, it is not possible to power components like a bluetooth modem via the FTDI connector. for the internet of things,"Internet Computing, IEEE, vol. 14, pp. 44-51, 2010.



LilyPad is a wearable e-textile technology developed by Leah Buechley and cooperatively designed by Leah and SparkFun. Each LilyPad was creatively designed to have large connecting pads to allow them to be sewn into clothing. Various input, output, power and sensor boards are available. They're even washable!

Advantages: It is easy to fit into the dress. By which arduino lilypad can provide continuous monitoring of patient.

It reduces the death rate of the patients and increases the health care.

CONCLUSION

Arduino lilypad increase the safety of patient by collecting, analysising and transmitting data in healthcare system. And Arduino lilypad are easy to fit in dress, watches, shoes etc. Why because it don't want to carry any where with special care. It is with us and monitor us 24/7.

REFERENCES

1. Giusto, D., A. Iera, G. Morabito and L. Atzori (Eds.), 2010. The Internet of Things, Springer, 2010. ISBN: 978-1-4419-1673 italy.
2. Vinoth, M. and G. Hariharan, 2015. "An Effective way of Human Body Function Monitoring Using Body Sensor Network" International Journal of Scientific & Engineering Research, 6(10).
3. Dave Evans, 2011. The Internet of Things:How the Next Evolution of the Internet Is Changing Everything, Cisco.
4. Kortuem, G., F. Kawsar, D. Fitton and V. Sundramoorthy, 2010. "Smartbobjects as building blocks for the internet of things," Internet Computing, IEEE, 14: 44-51.
5. Jayashree, S., R. Kruthika and R. Raju Kumar Shankar, 2015. "Arduino Lilypad Shoes For Visually Challenged" International Journal of Scientific & Engineering Research, 6(10).