Recent Trends in IOT Technology and Smart Wearables: A Review on Iot Application

Sana Irfan[1], Nabeel Fazlehaque[2], Shahela Shaheen[3], Mohammad Ibrahim[4], Saif Mohammad[5]

[1,3,5](E & TC Department, MMANTC, Mansoora, Malegaon/ SPPU, India)
[2,4](EE Department, MMANTC, Mansoora, Malegaon/ SPPU, India)

Abstract: *Now a day's the world is going towards the new technologies, and in this paper we summarized the IOT evolution, development, architecture and IOT technology. The IOT plays major role in the field of technologies.it also consist of advantages and disadvantages long with their applications. This paper starts with the introduction of IOT technology.*
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I.   Introduction

IOT is a technology which has made automation in things, and the internet of things is a new light of technology progression in the succeeding coming years. So it's not possible to describe introduction about IOT technology and applications. The IOT is a major drive to support service composition with various applications, and it also supports the various sensors, actuators and transducer for data acquisition. IOT can work with or without any human involvement. The IOT sensor and actuator are connected to a wireless network and the internet has played a major role in development of IOT devices.

II. Literature review

IOT consists of four pillars: 1-things, 2-people, 3-process and 4-data. IOT pillar process connects things, people and data, simplifies and makes faster billions of operations worldwide. IOT solutions will positively impact for campus ecosystem, without iot in campus of university there are some issue, like: security, staff and student's management, energy, water, heating, excess usage. IOT elements to provide securable books for student are rent. Flipped classroom as element of iot education is a part of educational iot application. Instructor prepares video lessons and shares them with students. Students can use it as their requirements. IOT flipped classroom gives opportunity for students to learn subject at any time and place. [1]

According to the survey the mode of flipped classroom is seen to be leading. Survey showed the following results, 27.5% strongly agreed that video lesson better than traditional lectures, 45.2% of students agreed, 19.2% answered with neutral answer and 11% disagreed. Currently turnstile is placed with microchip with RFID

The central server database is connected with the readers. Students and instructors pass through the turnstile and server recognizes them and gives permission or deny pass. Many problems in big lecture are solved by iot. Also it will be able to make SOS signal when water feed mechanism will be failed. IOT heating system, in Kazakhstan , winters are cold and much energy spent to heat the university, but not always energy distribute rationally iot smart heating system that will regulate heating supply on demand by using pre-defined schedule and according to temperature information token from temperature sensor. This model could save about 60% of spent energy. [2]

A home provides digital convenient life is a smart home. In smart home all facilities are provided with the help of iot for our benefit. There is some electronic devices which work wirelessly like wifi ,zig bee ,z-wave which control the home appliances and other devices .there is so many challenges in connectivity in smart home network which needs to be take care of . The system consists of several smart nodes in a home area network incorporate with several sensors. Web based system or mobile application can be used to read nodes and sensor data. A standard infrastructure that supports interoperability with multiple wireless protocols will become a solution for a smart functioning of a smart home in the near future. [3]

This review is on the basis of the most important technologies, participating to build the technological platform for a realistic implementation of the internet of things (IOT) paradigm. It the present state of the evaluation of IOT, these technologies is mostly like: radio frequency identification (RFID), green electronics (GE), wireless power transfer (WOT) and energy (EH). The growing interest in a multidisciplinary area such as IOT, is driving ICT community towards several directions of investigation. This contribution provides a

comprehensive, dot exhaustive, picture of the most important technologies involve now a days in this process. [4]

This final remark is that whatever will be the leading technologies, these ones should be implemented concurrently to support the big wave of IOT. The term of IOT was coined by kelvin ashton during his work at procter and gamble, later MIT's auto ID Centre in1999 .IOT provided human life with ease and comfort like hapi fork: which helps in better metabolism, smart egg, smart shirt etc. Till now we don't have a universally accepted architecture of IOT it changes according to the need. It consists of three layers namely Applications, network and perception. We can create application for smart cities, smart homes etc. The three layer architecture was not sufficient, more layers were required and they are business, transport, processing layer. The functionality of two layers is same and others are different. There are various architecture like human brain architecture, representative architecture etc. There are some merits and demerits of it like 1_It saves time and financial aspect is one of the best advantages. 2_privacy is big issue with respect to IT. We should always careful at consumer side. There will be various developments in near future like smart home, smart farm, smart city etc. [5]

Wireless sensor network is promising solution for a no of monitoring application such as health, indoor, fire etc. Such as in safety application a wireless sensor system for toxic volatile is provided by IOT, this name is LORA. It can cover long distance and high range. In this work, the wearable sensor nodes are based on LORA wireless technology. Each sensor node consist multiple sensors such as CO_2, CO, UV, and MCU etc. Power management system contains a coin battery, buck-boost converter and quit output discharge switch for many purpose. There are many sensor nodes and each function differently. eg:BME280 measure temperature ,humidity and pressure CO_2 sensor chosen is the CO2IR CO_2 sensor as in reference wearable nodes are programmed to user. The base station received the data and display it GUI and store in local my SQL database. Power consumption is different for different stages of LORA nodes. The mobile application developed for WE_state nodes. Form the mobile user can if profitably. Such an IOT platform will present new opportunities for saving life or preventing health issues etc. [6].

Embedded system and wireless sensor network based interaction is becoming popular phenomenon for many artistic installation now a day. The aim of waka structure is raise awareness of the interconnected nature of the waikato river in its physical, spiritual, historical and mental capacities through the movements, vibration and interaction of human and nonhuman participants. The waka structure itself acts a symbolic function; the structure connotes a boat in form. A waka is fundamentally a vessel, in all its metaphorical and literal forms. The structure made especially for travelling in an environment that decenters the preeminence of people. The LED lights and panels on the waka structure are not simply nice to have feature instead of care integrated aspects of the interactive structure. Each ribs of the waka will also have additional animations because each have LED's and motion sensors. In waka structure the sensor are used to responsible in detecting both human and non-human interaction with the waka. All the sensor should be connected to arduino based microcontroller. A combination of zigbee and wi-fi based sensors will be used to create a network for the data transmission. The selection of sensor is on the basis of their specification and performance in outdoor environment. In waka to use thermal imaging camera sensor instead of ultrasonic sensor was informed by the possibility of interfering with the navigation capabilities of a nearly bat population. [7].

The internet of things is a new light of technology progression in the success comings years. IOT has the potential to speed up the' sharing economy' as offering new techniques to manage and track minor things. Today in worldwide IOT technology is among top 5 technologies according to gartner's chart that means it is highly used in different sectors. Government has initiated supporting environment and good living standard for increasing of smart application so IOT plays the vital roles in the growth of market. The highest rated priority project by Indian government is 'Digital India program' which is used for encourage of digitalization for expansion of the iot productiveness ecosystem in the country. [8,9]

III. Conclusion

This Internet of Things (IoT) infrastructure will be strongly integrated with the environment. This paper focuses on reviewing on the architecture and key technology of Internet of Things. Moreover, the applications of Internet of Things are interpreted in this paper. IOT opens opportunities for wearable devices to share and communicate information on the Internet. Given that the shared data contains a large amount of private information, preserving information security on the shared data is an important issue that cannot be neglected.

References

[1]. Amisha Ashok Karia, Lavina Vijay Budhwani, Vishal Sahebrao Badgujar, IoT-Key Towards Automation, *International Conference on Smart City and Emerging Technology (ICSCET)*, 2018

[2]. L. Roselli, C. Mariotti, P. Mezzanotte, F. Alimenti, G. Orecchini, M. Virili, N.B. Carvalho Review of the present technologies concurrently contributing to the implementation of the Internet of Things (IoT) paradigm: RFID, Green Electronics, WPT and Energy Harvesting, *IEEE Topical Conference on Wireless Sensors and Sensor Networks (WiSNet),* 2015

[3]. S.Sujin Issac Samuel, A Review of Connectivity Challenges in IoT-Smart Home, *3rd MEC International Conference on Big Data and Smart City,* 2016

[4]. Trusit Shah, S. Venkatesan,, Authentication of IoT Device and IoT Server Using Secure Vaults, *17th IEEE International Conference On Trust, Security And Privacy In Computing And Communications/ 12th IEEE International Conference On Big Data Science And Engineering,* 2018

[5]. Shulong Wang, Yibin Hou, Fang Gao and Xinrong Ji, ,A Novel IoT Access Architecture for Vehicle Monitoring System, *IEEE 3rd World Forum on Internet of Things (WF-IoT),* 2016

[6]. Kritika Sharma, Deepali D. Londhe, Human Safety Devices using IoT and Machine Learning: A Review, *3rd International Conference for Convergence in Technology (I2CT),* 2018

[7]. Fan Wu, Christoph Rudigery, Jean-Michel Redout´e and Mehmet Rasit Yuce,WE-Safe: A Wearable IoT Sensor Node for Safety Applications via LoRa, *IEEE 4th World Forum on Internet of Things (WF-IoT)*, 2018.