RESEARCH ARTICLE

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A Review on Future Beyond Human Intelligence Using Technology

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ABSTRACT

Combination of Internet of things (IoT), Nano-Technology, Augmented Reality (AR) and Artificial Intelligence (AI) will be the future. Lots of research and development is happening to develop the IoT based application and few of them have already developed. Home automation, self-drive cars, simulators are few examples of IoT based applications. Still, there is scope for more research and development to develop very advanced and intelligent applications, which can eliminate human intervention or provide intelligent reporting. This paper reviewed some of selected articles related to the future beyond human intelligence using technology. Current development in this sector is achievable. We sent astronauts to space for studying life on other planets and earth's movement. In the future, without sending astronauts to space, data should be available with intelligence reporting. Home automation is easily available these days, but it still requires human intervention to on and off the switches using mobile app or calls. In the future, without human intervention, it should be workable as well, we may not have to worry about odd times of water supply in housing societies and close the tap once the water tank is full, etc. I am going to focus on such a future developments through this paper. Combination of Human Intelligence and Technology will definitely be the future to come up with a solution.

Key Words: Internet of things (IoT), Challenging Applications,Human Intelligence.

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INTRODUCTION

"Intelligence is a corporate capability to forecast change in time to do something about it. The capability involves foresight and insight, and is intended to identify impending change which may be positive, representing opportunity, or negative, representing threat" is new definition defined by author (Breakspear, 2017) in his article.

If a man and a little boy stand up and ask them to sit down, the man will immediately sit down and the little boy will copy him. This is the basic concept of human intelligence. Ability to follow instruction, copy the action, learn things, apply logic, etc. are the part of Intelligence. Nowadays machines also follow the instructions. With the help of technology humans make them intelligent. The Internet of Things is the best example for the term Intelligence.

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Today's world is full of Technology. We are surrounded with so many luxury things, gadgets and appliances. In recent time IoT is becomes very popular, since it has been very useful for the old as

well as modern wireless communication systems. The IoT is so powerful wireless communication tool that can connect and communicate with any device over the Internet using either wired or wireless networks. Mr. Kevin Ashtonhad come up with the IoT technology in late nineties.(Atlam et al., 2018) Now, the IoT system involves a vast diversity of devices.

Authors (Haller et al., 2009) define IoT as *"A world where physical objects are seamlessly integrated into the information network, and where the physical objects can become active participants in business process."*The IoT has entirely changed human life in many fields, right from agriculture to smart cities. The Internet of Things can be defined as any electrical part of which offers lots of functionality and it connectsto the Internet. These connections are growing basic machine-to-machine communication for resolving simple issues. Short range wireless technology like Bluetooth, ZigBee, and RFID are connected to internet via physical object have been benefited to humankind in so many ways. In simple words, IoT is nothing but Network of Networks. All different individual networks such as home, medical, Agriculture, Education, Military, Entertainment are interlinked together with security, analytics and management. (Miraz, 2018)

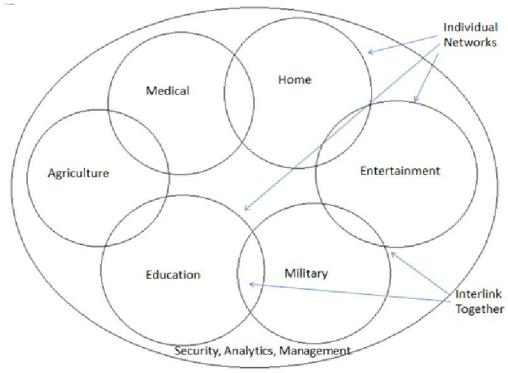

Figure 1: Basic view of Internet of Things

SOME EXISTING EXAMPLES OF IOT

Fitness Band

According to (Yong et al., 2017) Fitness is more important than economic growth. In their article health condition of users has been monitor by IoT based system. This device used for monitoring and tracking fitness related metrics such as distance walked or run, calorie consumption, and in some cases heartbeat and quality of sleep. It is a type of wearable computer.

Figure 2: Fitness Band. Adapted from Google

Smart Bulbs

Smart Bulbs can operate remotely via smart phone or remote. It is very convenient and easy to operate to make light on/off also for dimming. It has adjustable light intensity to set ambiance and many more features. Authors (Dikel et al., 2019) Evaluated the standby power consumption of smart LED bulbs by taking 3 samples from 30 models.

Figure 3: Smart Bulbs.Adapted from Google

Smart Toothbrush

The smart toothbrush is connected by Bluetooth to iOS and Android smartphone or tablet. Data sent from the toothbrush's integrated SENSORS is analysed by the application to give feedback on the way you brush your teeth.

Authors (Stark & Samarah, 2019) proposed a solution for improving the oral hygiene and preventing cavities by enabling concise feedback in real time based on the teeth and surfaces brushed.

Figure 4: Smart Toothbrush.Adapted from Google

Edible RFID

Authors (Yunsheng et al., 2009) discussed their views Towards Developing an Edible Fungi Factory HACCP MIS Based on RFID Technology. The NutriSmart concept for a food tracking system uses RFID tags embedded in food along with a special plate that scans everything you eat to track nutrition and food allergies as well as provide a little extra information.

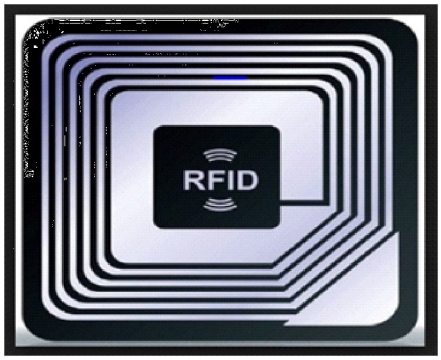

Figure 5: RFID. Adapted from Google

FUTURE CHALLENGES FOR IOT

Privacy and Security

IoT is getting integral part of our life. Since use of IoT is going to be in volume, It is going to be very important to discuss and implement security and trust concern. (Weber, 2020).

Confidentiality

In IoT applications, first requirement is internet connectivity.So, data exchange over the internet should be confidential. There might be a risk to send sensitive data over internet.

Cost

IoT is technology which works on internet to make the wireless communication between physical objects and technology. These components and objects that are needed to support functionalities like sensing, tracking and controlling should be less expensive.

Interoperability

The basic requirement for IoT devices is internet connectivity, all these systems communicated among themself and technology via particular protocols. These systems are design in such way that it can work across all the platform. To works over such different platform it should have high level of interoperability.(Weber, 2020)

Data Management

As IoT can be networks of various networks, tremendous amount of data is exchanged over internet. Many devices are connected to each other and continuously exchanging various information. It is very difficult task to handle all those data. (Weber, 2020)

Energy Issues

IoT device does communication over internet constantly. Since communication is continuous it consumes high energy.

Security Attacks

One of the important challenges related to IoT is Malware. IoT devices have limited resources because of that malware cause serious issue. For detecting malware antivirus is one of the most effective tools. but real time scanning is difficult for IoT devices.(Ning et al., 2013).

Regulation

While working with IoT applications we have to face some legal questions and regulatory. Just like privacy constraint we need to focus on satisfactory consideration for regulation.(Weber, 2020).

Some Fields Where Possible Future Applications Using Intelligence and Technology

Agriculture

Agriculture is backbone of our country. Today greenhouse technology for farming is growing rapidly. Greenhouse can be very effective way of growing crops in modern agriculture. Today greenhouses are capable of auto maintaining right temperature, weather, and humiditylevel and watering plants, shown in Fig. 6. Going forward greenhouse technology will be so advance that we will hardly require any manual intervention. Right from planting plants to fertilizing plants to harvesting plants will be done automatically. Forecasting weather as well as future weather prediction will be at next level that it can easily inform traditional farmer about next danger for the crops. Additionally, one can accept the challenge to build such a device which can take a call of weather or any kind of change in environment and protect the farm without farmer and before media.

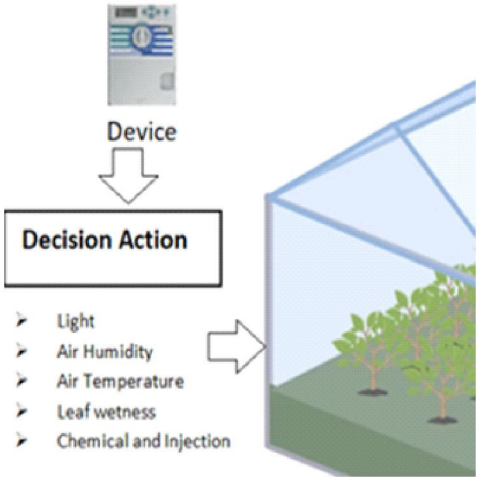

Figure 6: Basic view of Greenhouse Technology using IoT

Space

Many countries have sent their astronauts on moon. Recently India had sent his space shuttle on Mars. In such mission sending astronauts can be dangerous. We have biggest space laboratory in space where different countries astronauts reside for few months to study the space. As on today even though sending human is easy at the same time it can be life threatening. Going forward all the space shuttle will be entering in space without human intervention and even space laboratory wont required astronauts. As of now human have only reached to Mars but going forward reaching to any planet will be just click of button away. Getting information from any planet such as its soil sample, water existence, and Air Oxygen level will be possible without risking human life. Once we get info from any planet,device will be able to tell us whether human race can survive on any planet or not.

Home Automation

As there are some smart cities are being developed with home automation still there are scope for development of smart apps for electricity appliances, water management, security, kitchen appliances, LPG connections, etc. Even for Home automation we required human intervention to turn on and off the switches using mobile app or call. Going forward turning on and off switches manually will be optional. Machine will automatically switch on and off based on weather and humidity.

Figure 7: Smart Home. Adapted from Google

Office

"Time is Money". Time is very precious thing, but in many working places due to some fault in appliances or unavailability of certain things so much time wasted. Here we need some improvement that intelligent application finds out all fault that can be occur and report to respective employee. So that issues will be resolved without wasting time. For office one can design an application as per the employee's schedule. Which will control all appliances of that respective employee by starting and stopping remotely.

For example, if you reach to office at 10.00 o'clock, then all the appliances automatically turn on at 09.58 o'clock. If you stuck in traffic or have some outdoor duty, then according to your location and schedule respectively all appliances remain off.

Figure 8: Smart appliances in office

Education

In future it won't be surprise us if students interact with blackboard directly in classrooms to solve their queries. Exams will be done in different manner or interactive blackboard will automatically judge student based on their talents. Students do not have to wait till next morning for school to get answer to their queries. Student will be able of interact blackboard on the go for anywhere in the world to solve their queries.

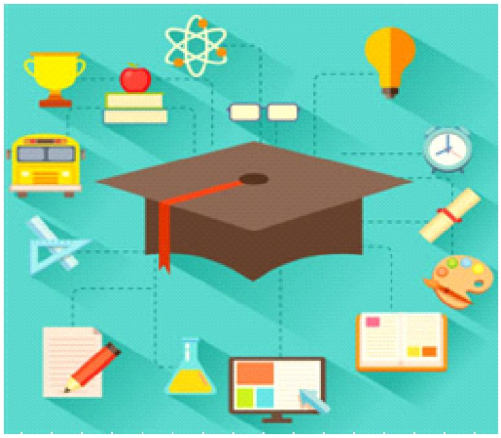

Figure 9: Smart Education System.Adapted from Google

Medical

For medical field there are so many challenging applications can be developed in areas such as medicine, ambulance, hospital, clinics, pathologies. Making used of intelligent technology one can develop a device which will use for patient health checkup. So that as soon as patient enter the hospital door, doctor or nurses will have entire patient history will be ready in less than minute. Device will be automatically preparing report about what treatment need to be given to that patient.

Figure 10: Smart Medical System. Adaptedfrom Google

Shopping

Nowadays many smart apps are available for shopping and selling purpose. But still there is a scope for more growth. One can develop an application which can track all groceries or needed things in house. Before it goes out of stock, application will search on internet for availability of those things in nearby markets while comparing price among themselves and then notify that user.

Figure 11: Smart Shopping application. Adaptedfrom Google

Entertainment

Now, just as ways of entertainment is growing, Development is also on the rise. Entertainment is very important to live life healthy. One can take a challenge to develop an application which will not only notify user about their favorite shows but it will book the show according to his interest and schedule.

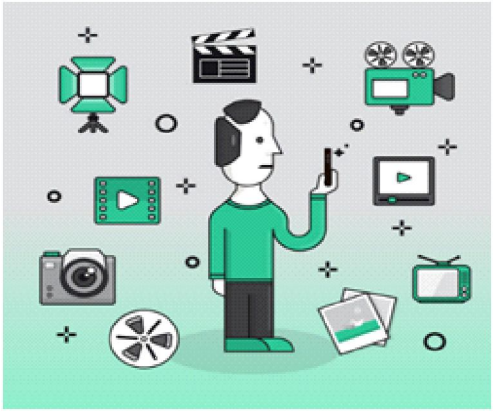

Figure 12: SmartEntertainment application. Adaptedfrom Google

Personal Use

Small missing things like key, certificates, books etc. will be just one click away from you. All small devices will have tag on it. Once the application gets in range, that thing will give beep. If that thing lost somewhere else then that application will guide about that location.

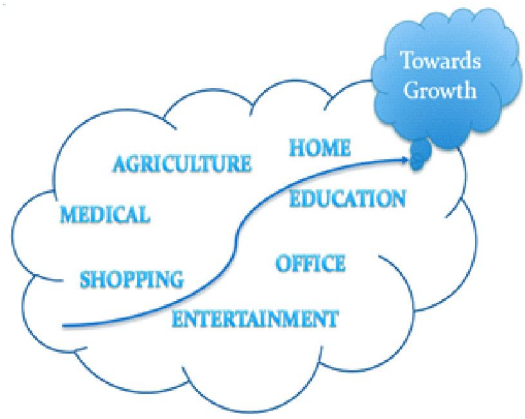

Figure 13: Conclusion

CONCLUSION

Internet of things (IoT),Augmented Reality (AR) and Artificial Intelligence (AI) are currently in advance development stage. Going forward this development will be beyond human imagination. Collaboration and integration of all these technologies will have great impact on human race.It may be possible that Combination of Human Intelligence and Technology will definitely have a great future.

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