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IoT- An Implementation of Top Technology Trends

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ABSTRACT: The advancement in the day today technology made humans depend on the electronic devices rather than using traditional ways of processing. Traditional process is time consuming that is the reason why people are in search of innovation technology that can process in a short time. There are many technologies in the market which make huge change in the present day world and have greatest impact in the society. Traditional IT services are replaced with the computerised realities. The previous technologies will be continued with updated trends so that the latest technologies are implemented in an efficient way. The efficiency of any technology can be known after it's usage in the present world. Introducing new technology is not an easy task. There is a need to consider several aspects in building it. Before innovating new technology, we need to understand motivations behind it. In order to build a technology one should clearly know about the purpose and usage of it in the society. A particular problem is considered and several tasks are initiated in order to solve the desired problem chosen. There are basically four processes involved to solve any desired problem. First process include metrics which are related to specific domain problem termed as categorisation. Next process is to find necessary data to solve the desired problem. Then implementation of machine learning algorithms such as clustering, deep learning, linear regression and anomaly detection. Last process is to look for necessary patterns from large data sets.

KEYWORDS: Traditional IT, categorisation, machine learning algorithms, clustering, deep learning, linear regression, anomaly detection.

I. INTRODUCTION

Internet of Things is the network of things or devices over the internet and allow large amount of data to be collected and can be used for multiple purposes. One can track the heartbeat of a person and pass information through bluetooth to our smartphone using IoT technology. The smartphone stores data on the cloud have access to view report of heart beat for over any period of time. In the similar way there are many such examples which we come across in our daily life. As we all use remote control to operate television in our homes we can manipulate channels as per the press button on the remote control to handle various channels involved with television. IoT is a similar technology which operates depending upon the instructions given to it on the device such as smart phone. There are many trends in technology which are explained below are few top technology trends.

TOP TECHNOLOGY TRENDS

Artificial intelligence(AI)

Artificial intelligence (AI) is an intelligence which make innovative use cases to be applied in order to solve several real time problems across the world. AI helps experts across all industries for faster processing and focus is mainly concentrated on results. In an analytical process, four key elements are used to understand AI concepts. They are : categorization, classification, machine learning, and collaborative filtering. These four pillars also represent steps in an analytical process.

Categorization

A lot of data is required to solve a desired problem to solve in an efficient way. The metrics for the problem must be defined in a well manner so that it can be categorised into small pieces of information to solve in a faster and easy way.



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For example : In wireless communication, key metrics include user connection establishment and response time, throughput and roaming.

Classification

After categorization of the problem in different regions, there is a need to maintain classifiers for every aspect that leads the users to attain meaningful results. For example : In wireless communication, after user identified the category of a problem (e.g. a pre- or post-connection problem), there is need to start classifying what are the factors involved to cause the desired problem: association, authentication, interoperability.

Machine learning

Now the desired problem is split into domain-specific pieces of metadata. Users are ready to enter the information into the powerful world of machine learning. Neural networks is the most popular approach in machine learning approaches and algorithms.

Collaborative filtering

Filtering concept is generally used to remove waste. Collaborative filtering is used to arrange necessary sets of data from large data sets. This is where all the data collection and analysis is turned into meaningful insight or action. It helps to provide easy and quick solution for complex problems.

Hence any problem can be solved with the basic top technology trends performing all the four tasks in an efficient and simple manner.

II. LITERATURE SURVEY

Nowadays we observe many people are busy with their daily activities and unable to remember the tasks to be handled by them all the time. Hence people are ready to depend on the technology rather than traditional services. In a short time the tasks are managed using IoT technology. Using the microcontroller board we can give instructions to the device where ever we go the program runs depending upon the instructions. We can even control the operations with the Wi-Fi technology building programs related to wireless communication. The mobile devices or smart phones can also be used in the busy world to control operations from office to home whenever needed. The operations performed by the devices depends upon the user purpose and need to handle operations of home from any other location. The efficiency of technology can be measured with the number of users who are satisfied with the tasks executed in the given manner. The Bluetooth technology have limited distance to process any desired problem. The next technology introduced is WiFi technology to process such problem for overcoming the limitation wireless communication is the future technology which can satisfy every user operating the device. There are many advantages to use smart devices using a single click one can operate the handheld devices. The smart devices are easy to use the defined operations and also fast to handle any type of operation performed in order to satisfy user needs in few seconds in busy world. Sensors are embedded devices of different kinds in Internet of Things that provide flow of data through internet connectivity to one or more central locations for efficient processing and achieving accurate information wirelessly. The basic steps involved in sensors are :

- Analyze
- Transmit
- Store
- Sense
- Act

The above steps are possible only when hardware, software, and connectivity are provided for any device to operate the given task. The IoT was born to process sense, transmit and store steps which is small, cheap and efficient. It means the data is analysed for defining set of instructions then data is transmitted to access as per the given instructions. The data is stored in the device to process instructions as per the requirement. The sensors help in identifying the movement of operations through devices and the action performed is represented as a task for the instructions processed through the smart phones or handheld devices. Multiple tasks are performed as the instructions defined to implement the tasks in an easy and efficient way which are done accurately. This increased the development of new innovative technology such as IoT with several operational tasks to perform using wireless communication by following the system defined instructions.



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III. PROPOSED METHODOLOGY AND DISCUSSION

There are certain issues to discuss about the Internet Of Things technology. The proposed IoT technology involves technological interoperability issues, analytical hurdles, security and privacy risks and legal regulations for implementation of certain standards and also ethics to be followed in the day today activities with the internet of things spread over the smart devices using network.

1) **Technological Interoperability Issues**

Using IoT devices and sensors provided by various manufacturers need to work together without any loss of data such that all the tasks must work together. It is impossible to create a network that is reliable of connected things. There is need to integrate the newly established IoT network with existing system and tools involved in development of business in the real world.

2) **Analytics Hurdles**

For processing the proposed technology one should take care of tools and infrastructure for processing the collected data from smart devices or sensors. The importance is given to the efficient data analytics and reliable processing of the technology using several mechanisms involved in utilization of infrastructure and tools established in innovation technology.

3) **Security and Privacy Risks**

In the innovative technology, security and privacy risks are the major issues identified. If the data is not protected then problem cannot be solved easily. The standards must be developed more to utilize the facilities provided through the innovative technology. Hence there is need to develop security measures for the information placed in the smart devices or sensors which can be easily manipulated using certain techniques involved in problem solving process.

4) **Legal Regulations**

Till now there are no legal regulations for the IoT industry. There are domain specific laws and limitations. The challenges faced in the innovative technology dealing with patents, licenses, and industry compliance standards. Every individual need to follow certain regulations legally to fulfil the necessity of the individual in the busy world. Proper instructions must be given to follow the legal regulations during the execution of tasks given to perform the necessary computations using the innovative technology.

IV. EXPERIMENTAL RESULTS

The challenges of the innovative technology is easy to handle the present day day today activities. The challenges in the implementation of the technological changes made the solution of the problem depend on connection with several devices such as smart phones or sensors. To process the technology there is a need to consume power in order to process the technology with several issues involved in the busy life. This is the major problem to be faced by the devices with all the time power is on to process the current technology seems to be very innovative but at the same time the devices must be on all the time for solving any problem is faced using the smart devices or sensors only. In situations when the power connection is lost then the problem cannot be solved using the IoT technology as power connection plays an important role in using electronic devices. The power consumption is more for operating several electronic devices. The necessary tools and proper power consumption are necessary to process any electronic devices to control the operations before the problem occurs. It is necessary to handle power fluctuations in the desired environment as the proper utilization of resources is also an important concept in implementing the desired problem with an efficient solution.

The solution for such connectivity problems such as Google Fiber may solve the connection problems in the near future. There is no solution for connections with the Internet of Things in a perfect manner. The operations related to it are hard to manage when there are fluctuations occurred in the power issues. The problem can be faced at any time during the process of execution of IoT devices. Hence there is a need to utilize the tools and provide security for the operations performed using IoT devices. Security must be available for all the devices connected in a network which are to be protected from unauthorised access.



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V. CONCLUSION AND FUTURE WORK

The Internet of Things is an innovative technology to be implemented efficiently during the process of multiple operations security must be provided for accessing smarter devices as per the instructions defined in the system to perform actions. The idea behind such innovative technology is to make things easier to operate and handle multiple operations without using traditional IT services. It also makes the average person to think about the easy and innovative technology which helps in processing tasks easily. The devices are connected in a network in such a way that the devices perform actions as per the instructions given to the system using Wi-Fi or sensor technology or with the help of smart devices. Security is one of the major concern in the innovative technology. The defined instructions can be changed by the increase in the period of time as per the need of requirements . It's implementation depends on operations performed according to the instructions given using the smart devices or sensors. Its implementation will have on the legal, ethical, security and social fields. Any technology must be developed in such a way that Hackers were unable to access our IoT. Privacy is a major issue in innovative technology. Hence certain techniques are to be introduced to use such devices with internet technology.

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BIOGRAPHY

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