

Internet of Things Trends and Surprises

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ABSTRACT

The Internet of things is gaining increasing attention. Due to growing interests in IOT, the number of platforms designed to support IOT has risen completely. IOT reached peak hype, giving way to new hyper cycle for Block chain, machine learning, data science and for Artificial Intelligence, a familiar topic area and one that requires IOT data as a fuel for its Intelligence. The top IOT trends that will shape the IOT sector in 2018 are discussed in this paper.

Keywords: Internet of things, top trends and surprises of IOT.

I. INTRODUCTION

Today's "Internet of things" is the term coined by Peter.T.Lewis (1985) is threatening to take control of planet and turn world around us. Interestingly one first Internet of things perhaps when John Romky created a toaster that could turn on and off over Internet for Inter Op conference in 1989. In an article in business week (1999), Neil Gross wrote in next century, planet earth will don on electronic skin.

Internet of things is one of the most important revolutions in technology in decades. It has strong attention from both industry and academia. As a core technology of fourth Industrial revolution, development and spread of IOT's technology have exponentially increased connectivity between human to human, human to object, reinforcing an entry to hyper connected society.

The Internet of things is considered as a next big step in evolution of internet. The European Union commission has written an IOT action plan for Europe

stating that Internet of things will drastically modify way our society function in coming 5 to 15 years.

IPV6 allows us to assign a communication address to billions of devices. Electronic companies are building Wi-Fi and cellular wireless connectivity into a wide range of devices. Electronic companies are building Wi-Fi and cellular wireless connectivity into a wide range of devices. There will be billions of objects connecting to network within next several years. For example Cisco's Internet of things Group (IOTG) products there will be over 50 billion connected devices by 2020.

IPV6' huge increase in address space is an important factor development of Internet of things. According to Steve Lei son, who identifies himself as "occasional docent at the computer history Museum", the address expansion means that we could "assign an IPV6 address to every atom on surface of earth and still have enough address's left to do another 100+ earths". In other words humans could easily assign an IP address to everything on the planet.

Definition of IOT

Kevin Ashton, Co founder and executive director of Auto-ID center at MIT first mentioned the Internet of things in a presentation he made to Procter & Gamble in 1999.

The internet changes user lives. The internet of things will change are lives again from the humble begins as Arpanet in 1969 to social network, the internet has been a major driving factor for high tech industry. IoT is a next wave in evolution of internet

A sensor is a hardware component which captures information of the physical environment by respond to a physical stimulus (as heat, light, sound, pressure, magnetism or a particular motion). For instance, by measuring humidity with a room, a sensor positional weather room captures humidity level of room.

Sensors transmit the captured information by electrical signals to devices to which are connected the connection may be wired or wireless.

Smart Sensors: The memory device stores transducers electronic data sheet (TEDS), identification calibration, correction data and manufactures related information.

Actuator: An Actuator is a hardware component which manipulates the physical environment. They receive command from this connected device and translate this electrical signal into a kind of physical action. An actuator can be configured using software, but cannot run software by itself.

The internet of things is an interconnected physical or virtual object with a sensing or actuating capability, with unique identification or with Core knowledge.

The term, “smart things” is used when the IoT “things” are interactive. Internet of things has evolved from the convergence of wireless technologies, micro

electro mechanical systems (MEMs), micro services and Internet.

The top trends in 2018:

Machine learning and Artificial intelligence: These two represent a tremendous opportunity to IOT. Being able to predict when machinery will need to be prepared. Self optimizing prediction and demand response are only a few application examples.

There has been no shortage of innovation and new product offering for smart home this past year, drive largely by advancement in AI, automation and value enabled technology.

Machine learning has also yielded some interesting case studies to date. While it won't move entirely to edge there are some compelling examples. So far, like retail shop security cameras with streaming video, where machine learning can be utilized to identify patterns of potential theft perform facial without digging into personal data, to head off security and privacy concerns.

Artificial intelligence will also become a necessity as amount of data created by IOT will simply be too large for humans to manage. Expecting an increase in machine learning based drones, a revival of smart dust as well as significant advancements in self enforcement learning and generative adverse networking.

The more futuristic trend of intelligent process automation (IPA). Robotic process automation tools are undergoing a renaissance of sorts brought about by NLP technology.

Today IPA uses Artificial Intelligence to help automated process act independently and make decisions with limited, minimal or no human intervention in a well defined well controlled business process.

Edge computing

Because of large data being created through the IOT, that companies we need to find a better, closer, cheaper to process it. However edge networking will be less of a trend and more of a necessity, as companies need to cost and reduce network usage.

Edge computing is fast emerging as must have tool for every enterprise. Many of them have already released numerous IOT platforms that work cohesively with these cloud platforms which is now beginning to result in cost effective responsive and more secure IOT deployments.

Block chain:

The rise of block chain in IOT as one of major emerging trends that this block chain and machine learning will become established elements of IOT land scope.

Two of most interesting IOT developments to emerge, with most potential for innovation, were block chain and machine learning.

Block chain is playing a major part in IOT by providing security making transactions and creating efficiency in supply chain. Block chain can help build trust between people and parties that transact together. Watson IOT block chain enables devices to participate in block chain transactions as a trusted party.

Block chain can enable participants to reduce and time commitments costs by ultimately removing the “middleman” from process.

Smart contracts allow for organizations to reduce time needed for complexity legal or contractual commitments. Building block chain based solutions to help organizations to improve operational efficiency, transform customer experience and adopt new business models in a secure, private and decentralized manner.

Block chain technology is considered by many concepts as missing link to settle scalability, privacy and reliability concerns in internet of things. Block chain technology can be used in tracking billions of connected devices allow for significant savings to IOT industry manufacturers.

This decentralized approach would eliminate single points of failure; create a more resilient ecosystem for devices to run on.

Unsecured cloud storage, data breaches and security issues will dominate 2018, highlighting the importance of people and process focus as well as Block Chain.

Enterprise apps will also become more robust, while decentralized apps (Dapps) like decentralized storage will come into active use. In India several promising applications of block chain are being tested. Financial services seem to be leading with life insurers and banks trying out block chain based repository of common information. Block chain and deeper mining of data will be major trends in 2018 but also believing the IOT will start driving changes in job market.

Big data Analytics in support of IOT:

Fast moving technologies will influence colleges and universities to adopt greater computer programming and data analysis courses. Universities must complement these with a focus on critical thinking and empathetic skills to meet the growing need of enduring skill in world.

There are some platforms for big data analytics like Apache Hadoop and Sci DB. However these tools are hardly strong enough for big data needs of IOT. The amount of IOT data generally is too huge to be fed and processed by available tools

In support of IOT these platforms should work in real time to serve the users efficiently.

Instead of providing application specific analytics, IOT needs a common big data analytic platform which can be delivered as a service to IOT application, thus analytics should not impose a considerable overhead on overall IOT eco system.

A recent research has proposed such an IOT Big data analytics to perform pattern mining on a large amount of collected sensor data. This analytic service rules on time series database service and is access able by asset of restful interfaces. One viable solution for IOT big data is to keep trend of just interesting data only. Existing approaches can help in this field principle component analysis, Pattern reduction, dimensional reduction and distributed computing methods.

Social Internet of things:

SIOT is one among the latest hot topics. It is a platform for worldwide inter connected objects to establish social relationships and better services to users. This SIOT is defined as IOT where things are capable of social relationships with objects, with respect to humans.

BotNets :

The spread of destructive BotNets such as Reaper and Mirai made companies come to realization that deploying IOT devices on existing networks.

Surprises of IOT:

Smart Home: Home automation which consists helping of video door bells. Video evidence also goes a long way in helping police prosecute package thieves plus they are much easier to install than home security cameras. Companies like Nest, Eco bee, Ring and August are using some home products as they are saving energy, time and money.

Wearable health devices: Wearable devices cover fitness, health and entertainment.

IOT health care: Tele medicine and additional technology to support operators such as record keeping, sharing reports across multiple locations dispensing medication.

Smart cities: According to Pike research on small cities the smart city market is estimated. Smart sectors such as smart governance, smart mobility, smart utilities, smart buildings and smart environment are enabled in smart city.

Smart waste management service: This service is a service that can reduce the cost of waste collection and improve quality of recycling.

Smart traffic: They can predict by tracking traffic patterns and know when it makes sense to turn red or green. This will reduce traffic problems in certain cities. Camera based traffic monitoring services are introduced and GPS can be installed in modern vehicles.

Smart parking: This is based on road sensors and intelligent displays that direct motorists along best path for parking the city.

Smart farming: Smart farming is monitoring agriculture is in the fast growing internet of things Application.

II. CONCLUSION

In this paper we discussed different types of trends in Internet of things and also some of the applications. The latest trends of 2018 are mentioned.

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