



BIG DATA ANALYTICS AND SMART CITIES

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ABSTRACT

Big data and Internet of Things technologies have grown and expanded tremendously and hence play a major role in building feasible solution for smart cities. Smart City is an emerging concept aiming at serious challenges raised due to the continuous urbanization development. To face these challenges government sponsors .Information & communication technologies is the technology used for smart city implementation. These technologies produce massive volumes of data known as Big Data.If separated Big Data is integrated and analyzed.. The process of extracting information from Big Data is known as Big Data Analytics.Internet of things.Internet of Things and Big Dataform a perfect potential role in bringing the reality of futuristic smart cities. These newchallenges mainly focus on business and technologyrelated issues that help smart cities to form theirprinciples, vision, & requirements of smart cityapplications. In this paper, the role of big data and Internet of Things technologies with respect to smart cities is studied.

Keywords: Big Data, Internet of Things, Smart cities, Challenges.

INTRODUCTION

Smart Cities are going to implement digital information and communication to improve the urban services with respect to quality, performance and standard of living. Smart Cities can contribute to reduction of cost and resource consumption. Smart Cities are developed with the aim of improving the management of urban flows and allowing the real time responses to challenges. Number of people living in cities is likely to double in coming decades. Currently, 31% of India's population live in cities; these cities also generate 63% of the nation's economic activity. These numbers are rapidly increasing, with almost half of India's population projected to live in cities. Smart Cities focus on the most crucial needs and the greatest opportunities to improve quality of life for residents today and in the future. The Smart Cities Mission is a new initiative by the Government to increase economic growth and improve the quality of life of people by encouraginglocal development and utilizing technologies as a means to create smart outcomes for citizens.

Internet of Things and Big Dataare the technologies which will be implanted into each smart device and become available to billions of people directly or indirectly. As the Internet is universal, with the government's initiative towards making every city smart, everything will be IoT enabled and will produce huge data. Thereafter, big data analytics can be applied to reduce various speculations. Thus Internet of Things and big data will eventually raise the standards of quality of people's lives in years to come.

UNDERSTANDING BIG DATA AND IoT

Big Data:The term Big Data describes a massive amount of data which is difficult to manage using traditional databases. The big data system will store, mine information from smart cities applications in an effective way and provide detailed information regarding smart city services. Thisdetailed information will help the decision-makers inplanning and developing various new smart city services.

Internet of things (IoT): It may sound new to many people around, but it is the widely used term for the world of smart gadget users. IoT is a huge network of devices that can connect and share the information with the help of these physical objects or "things" ranging from smartphones, wearable gadgets, and headphones to smart television sets. The IoT permits objects to sense and control remote access across given network.

Big Data & IoT Benefits in Smart Cities:

Big data and IoT together provide various benefits to the citizens of the smart city resources and achieve excellent urban planning. The IoT sensor network gives numerous benefits to both its citizens and the government authorities. Some of the benefits are, Waste Water management, Improving Patient Care,



Automation of public transport, Effective Traffic management, Monitor pollution levels in cities streets, Waste disposal management, Citizen Information system, Anti-Money Laundering, etc.

BIG DATA & IOT CHALLENGES IN SMART CITIES:

As smart cities are evolving and have rapid changing environment, following challenges may be faced during design and implementation of smart city solutions using Big Data and IoT.

□□ The biggest challenge faced is the collection of data from various sources. As the data is segregated in various forms, it is impossible to manage & store it in a single database.

□□ Another challenge is data integration from various sources & organizations. It is important to maintain the privacy of the data as it is being shared among various departments.

□□ With the integration of the data with other big data, the data needs to be stored in a specific format without tampering the quality of data

□□ The data security in a big data environment is even more challenging as the size and volume of data here is quite high. Proper encryption of data along with other security measures should be applied to avoid unauthorized use of data.

□□ Another issue is to be up to date with the ever changing technology. The smart city solutions should be designed in such a way that they should be able to adapt themselves as the technology advances with time. The upgrading of entire systems should be easy & flexible.

SCOPE OF BIG DATA AND IOT IN SMART CITIES:

As the technology advances rapidly IoT & Big Data is the future of smart cities. Due to urbanization, huge amount of data is produced every second & to manage this data, Big Data & IoT will play a crucial role in managing this data. The companies around the world are ensuring that products developed in the future should implement IoT to keep pace with the future market. A smart city believes in IT advancements in order to improve the quality of life of citizens, maintain available resources like roads and water in a sustainable manner and reduce environmental pollution. In order to sustain in the market the companies will have to gain experience and use big data and get equipped with this latest technology. 30 to 40 percent organizations are utilizing Big Data, out of which around 40 percent have started taking advantage of IoT. Analyzing the current trends in the IT field, we assume that Big Data and IoT will come up with new technologies that will help in the development of the smart cities.

CONCLUSION

The role of Big Data and IoT is essential in building smart cities. Consistent technology & infrastructure is required that can challenge M2M, machine to human, communication and provide public services to all cities. Big Data will assist to analyze, predict information collected by smart devices in smart cities. Various benefits that can be applied with the help of big data and IoT have already been discussed in the paper. The scenario has some challenges also as the data is from various heterogeneous sources. Hence, the technology must be implemented with proper understanding. Thus, managing big data and applying IoT related technology infrastructure will soon transform normal cities into smart cities.

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