

An Intelligent Framework System for Smart City Prediction using Bigdata Analytics

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Abstract: Smartness is an important direction for future cities to push forward. Smart city is a developed urban city that includes intelligent systems to improve the quality of citizen's life by providing the smart services. Smart city as a concept envisions building of smart services in heterogeneous domains like healthcare, waste management, traffic management by intelligently managing and controlling web of interconnected heterogeneous end systems. We also need a smart service that can predict what might happen in the near future. Smart city requires development of technology that leverages data generated from Internet and also to control these end systems in a smart manner. We propose a system to prevent such risks, provide a good healthcare, smart service management system and to enhance the wellness of the City. This paper focuses in the collection of the huge amount of data preprocessing it, building predictive models to predict the status of what the city will be in the near future. No matter how much of data we have raw data is of no use, this is where big data analytic plays a major role, by providing meaningful results and predictions out of the given data. Prevention is better than cure. Instead if worrying about a Disastrous event, that might occur in near future, it's better to take proper measures to prevent it from occurring. Our system provides a way to do this, with the help of the predictive models, we're able to predict, what the status of the city will be in the future. Better ways to enhance the city is possible, as the problem is tackled before it gets too large to handle.

Keywords: Smart city, healthcare, waste management

I. INTRODUCTION

The world is facing increasing urbanization whereas, at the same time, major cities became a magnet for talent and a driver of economic process. At an equivalent time, cities area unit experiencing persistent social group challenges: state and crime demand resolution, the necessity for energy potency is changing into imperative, increasing population puts higher pressure on the urban infrastructure and public authorities ought to do additional with less for good. Technology has been incorporated by cities for several years. However, the pace at that this adoption takes place is increasing apace as tumultuous digital technologies have the potential to resolve major metropolitan challenges. As a consequence, urban areas remodel into 'smart cities'. during this transformation, tumultuous technology is simply one in all the drivers. The second ingredient of good cities is information, the lifeblood of good solutions. The challenge is to use the facility of information to form good solutions that address real desires of town users and area unit perceived as important by them. Their intuitive style causes them to be

adopted naturally, leading to changes of behavior that area unit lasting. In the end, good solutions area unit all regarding human behavior. Finally, the third cornerstone of good cities is wise folks. concentrate on employ ability and winning the 'war on talent' is important for property economic process. This transformation from a conventional town to a 'smart city' doesn't simply happen.

Success depends on the quality of the life and quality of decisions that are made and the way these decisions are executed by the people.

It is important to predict and maintain the life style of the people in the smart city. Mental health, Physical health, Environment these three are connected in one's life. Now a days, people getting affected by mental health, physical illness, and surrounding like pollution. So, It is necessary to connect the mental and physical health with environment and predict the life style of people in the smart city. This prediction leads to a good quality of life style of the people who live in the smart city in future. This project focuses in the collection of the huge amount of data, preprocessing it, building predictive models to predict the status of what the city will be in the near future. We aim to create a website and you only have to enter the website and select the filed about which you want the data and through this data you can predict the life style of the people in the smart city and status of the smartcity.

II. BIG DATA ANALYTICS

Big information analytics is that the use of advanced analytic techniques against terribly giant, numerous information sets that embrace structured, semi-structured and unstructured information, from totally different sources, and in numerous sizes from terabytes to zettabytes.

Big information could be a term applied to information sets whose size or sort is on the far side the flexibility of ancient relative databases to capture, manage and method the info with low latency. massive information has one or a lot of the subsequent characteristics: high volume, high speed or high selection. Computing (AI), mobile, social and also the web of Things (IoT) are driving information complexions through new forms and sources of knowledge. for instance, massive information comes from sensors, devices, video/audio, networks, log files, transaction applications, web, and social media abundant of it generated in real time and at a awfully giant scale. Analysis of huge information permits analysts, researchers and business users to create

higher and quicker selections victimization information that was antecedence inaccessible or unusable. Businesses will use advanced analytics techniques like text analytics, machine learning, prognosticate analytics, data processing, statistics and tongue process to realize new insights from antecedence untapped information sources severally or along with existing enterprise information.

Big Data:

Big information essentially refers to the actual fact that we are able to currently collect and analyse information in ways in which was merely not possible even a couple of years ago.

There are two things that are fueling this Big Data movement:

- The fact that we have more data on anything.
- Our improved ability to store and analyse any data.

The big business within the market, together with Amazon, Google, Walmart, and Face book, area unit already creating a splash victimization the large knowledge Analytics. Walmart, as an example, handles quite 1,000,000 client transactions every hour and imports those into databases calculable to contain quite two.5 petabytes of knowledge. The company is currently ready to mix knowledge from a spread of sources together with customer's past purchases and their portable location knowledge.

Applications

- Discovering consumer shopping habits.
- Personalized marketing.
- Fuel optimization tools for the transportation industry.
- Monitoring health conditions through data from wearable.
- Live road mapping for autonomous vehicles.

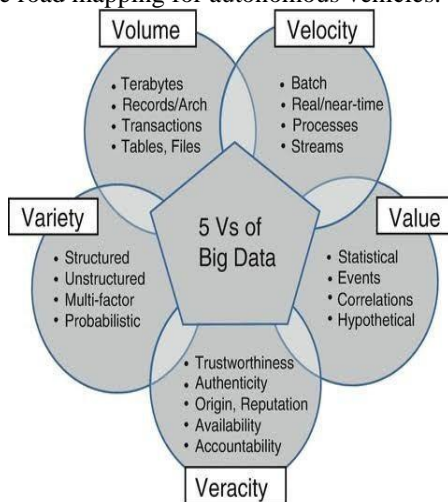


Fig.1 characteristics of Big Data

Benefits of Big Data & Analytics:

- Cost optimization.
- Improve efficiency.
- Foster competitive pricing.
- Boost sales and retain customer loyalty.

- Innovate.
- Focus on the local environment.
- Control and monitor online reputation.

Drawbacks of Big Data:

- Traditional storage can cost lot of money to store big data.
- Lots of big data is unstructured.
- Big data analysis violates principles of privacy.
- It can be used for manipulation of customer records.

III. LITERATURE REVIEW

3.1 Smart Emergency - A Contextual Framework for Cognitive Understanding of IOT Devices using Big Data Analytics

Author: Jawaher Ahmed Al-Salmi, Ameera Ali Al-Foori, Athari Yasir Al-Jahwari, Faizal Hajamohideen

In this paper, The project addresses the vital of emergency services significantly at the time of road accident within the sensible surroundings. This sensible emergency services works in perceptive actions of IOT sensors and imply actions that needed to avoid wasting the lifetime of slashed and supply intelligent emergency supports to bring back the sensible town usage for others speedily. The system give paradigm of sensible emergency services mistreatment IOT sensors, Aurduino with Rasperry Pi, CoolTerm. the info that square measure ascertained throughout the experiments square measure analyzed mistreatment Apache Zeppelin Bigdata analytical tools. The conclusive results of analytical information to be transmitted wirelessly to change the specified sensible emergency services starting from hospitals automobile, fire, traffic, improvement services to services that square measure bring back sensible town back to perform ordinarily. this method additionally emphasizes that the IOT and large information bonds closely plain-woven prospects of sensible emergency system.

3.2 Smart Waste Management System for Crowded area

Author: Dr. Rasha Elhassan, Dr. Mahmoud Ali Ahmed, Mrs. Randa Abd Alhalem

In implementing the good cities the nice challenge is the way to manage waste with low price and high performance. Waste contains a negative impact within the society quality that good town aims to enhance it. Makkah and holy sites [Mona, Arafat, and Muzdalifah] area unit terribly full areas wherever waste management may be a massive challenge. 3 factors build it a giant challenge, behind its natural, small area, short amount of your time and also the increasing of the Pilgrimages' member. the method of collected wastes, separated it, and transports the containers daily and quickly to avoid any prospect of a selection of diseases may be a complicated method. This paper aims to review the conception of the waste management and projected good systems for waste management system with usage .The projected system can use the sensors technique within the instrumentation, as a lower level, to separate the waste into four classes [food, plastics, papers, and metal] and use

mechanism at a high level to tell the management system to gather the instrumentation. The projected system can save time, cash and efforts compared to the recent method of the waste management system and improve the society quality as all.

3.3 Exploiting Big Data Analytics for Urban Planning and SmartCity Performance Improvement

Author: Bhagya Nathali Silva, Murad Khan, JihunSeo

The sensible town notion facilitate interoperation among multiple disciplines to boost the standard of Life (QoL) of urban voters. continuously growing urban networks has considerably redoubled the information process quality. In consequence, time period processing and analysis has become a significant concern in fashionable sensible town planning and implementation. Considering the challenges of existing sensible cities, during this work we have a tendency to propose a wise town design embedded with huge information Analytics (BDA). The utmost goal of the projected theme is to reinforce the standard of time period decision-making through economical huge information (BD) process. this technique design is in 3 folds to manage information assortment, processing, and information application. we have a tendency to measure the projected BDA embedded sensible town mistreatment authentic datasets on water consumption, holdup, parking management, and pollution measurements. The analysis provide helpful insights for the community development, whereas guaranteeing the performance improvement of the projected framework in terms of time interval and output.

IV. EXISTINGSYSTEM

In existing system, we can access data only about one field or factor such as environment status, health care, transportation, emergency services at a time. So, It is difficult to analyze data of different field and environment of a city. Cities realize it troublesome to figure across departments and limits. There are existing solutions for all problems separately. But we need to be kept in mind that each of the society's problems are inter related and that it needs to be handled both individually and collectively.

Disadvantage:

- Even if money was available, most of the smart technologies are still in their pre-commercial stage.
- Cities lack technology related skills and capacity.
- There are concerns about data privacy and security.

V. PROPOSEDSYSTEM

We proposed this system to overcome demerits of existing system. In the existing systems all of the different problems are tackled separately, the issue in this method of solving these problems is that most of us forget that all of the problems in the society like improper waste distribution, wellness of people, obesity, and mental health are all an interconnected web of problems. When one is tackled the other problem may rise and vice-versa. So, there needs to be a system which shall collectively analyze each of these problems and then predict of what the city's status will be in the near future. Thus, we can take care of the situation

before it goes out of our control. Our proposed system is capable of doing this. We aimed to create a user friendly website which can be access by both government and public. We not only provide data but also compare and interconnect the data about mental health, physical health and environment to predict the future life style of the people in the smart city using predictive model in Big Data Analytics.

Advantages:

- Prevention is better than cure. Instead of worrying about a disastrous event that might occur in the near future, it's better to take proper measures to prevent from occurring.
- This system is able to predict, what the status of the city will be in the future.
- This system is easier to use and more secured
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VI. SYSTEM ARCHITECTURE

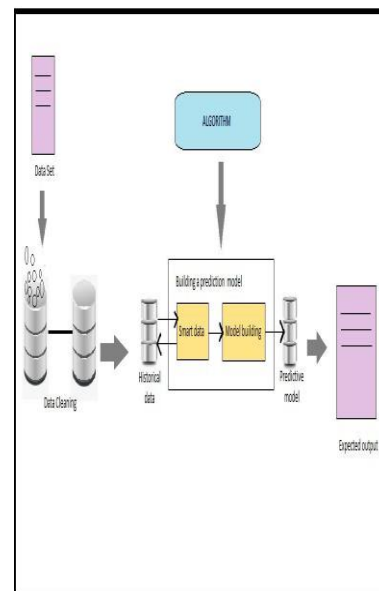


Fig.2 Architecture of Smart City Systems using predictive model in BDA

VII. SYSTEM MODULES

MODULES:

1. Mental health module
2. Physical health module
3. Environment module
4. Smart city Status

Mental health module:

In this module, we collect the data and display the predicted data about mental health of the people such as depression and their mental health condition in the smart city.

Physical health module:

In this module, we collect the data and display the predicted data about physical health of the people who live in the smart city. The data is based on Obesity and Physical condition of the people.

Environment module:

In this module, we collect the data and display the predicted data about waste management of the smart city.

Smart city status:

In this module, we predicted output is displayed to describe about the life style of the people who live in the smart city and Status of the smart city. It is predicted using predictive model of Big Data Analytics. This module is help to predict the future status of the smartcity.

APPLICATION

- The proposed system used in smarty city to provide a citystatus
- It also helps to predict and useful to prevent the futurecauses
- Monitoring health conditions through data fromwearable's.

VIII.CONCLUSION

Prevention is better than cure. Instead of worrying about a Disastrous event that might occur in near future it's better to take proper measures to prevent it from occurring. Our system provides a way to do this, with the help of the predictive models, we're able to predict, what the status of the city will be in the future. Better ways to enhance the city is possible, as the problem is tackled before it gets too large tohandle.

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