Continuous Assessment 1

Cource code : CAP456

Cource NAME : Introduction to Big Data

Section : D2112

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(1.) Make a documentation on different sources of data in the field of big data. For all sources the practical use case should be discussed as example.

Ans:—

Big Data

Big data refers to massive complex structured and unstructured data sets that are rapidally generated and transmitted from a wide variety of sources. These attributes make up the three Vs of big data.
(1) Volume: The huge amount of data being stored. (2) Velocity: The lightning speed at which data streams must be processed and analyzed. (3) Variety: The different sources and forms from which data is collected, such as numbers, text, video, images, audio and text. These days, data is constantly generated anytime we open an app, search Google or simply travel places to place with our mobile devices. The result, massive collections of valuable information that companies and organisations need to manage, store, visualize and analyse. Traditional data tools are not equipped to handle this kind of complexity and

Volume, which has led to a slew of specialized big data software and architecture solutions designed to manage the load.

Different sorces of data in the field of big data and its practical use case discussed below :—

(1) Banking and Securities :-

The securities Exchange commission (SEC) is using Big data to monitor financial market activity. They are currently using network analytics and natural language processors to catch illegal trading activity in financial markets.

Retail traders, Big banks, hedge funds, and other so-called 'Big boys' in the financial markets use Big data for trade analytics used in high-frequency trading, pre-trade decision-support analytics, sentiment measurement, predicate analytics etc. This industry also heavily relies on big data for risk analytics, including, anti-money laundering, demand enterprise risk

management, "Know your customer" and "fraud mitigation". Big data provides are specific to this industry includes 1010 data, Panopticon Software, Streambase systems, Nice Actimize, Nice Actimize, and Quartet FS.

② Communications, Media and Entertainment

Organisations in this industry simultaneously analyze customer data along with behavioral data to create detailed customer profiles that can be used to:- create content for different target audiences, Recommend content on demand measure content performance.

A case in point is the Wimbledon Championship (YouTube video) that leverages Big data to deliver detailed sentiment analysis on the tennis matches to TV, mobile and web users in real-time.

- Amazon Prime, which is driven to provide a great customer ~~exer~~ experience by offering video, music, and kindle books. in a one-stop-shop, also heavily utilize

big data.

- Stotify, an on-demand music service, uses Hadoop Big data analytics, to collect data ~~form~~ from its millions of users worldwide and then use the analyzed data to give informed music recommendations to individual users.

(3) Healthcare Providers

The healthcare sector has access to huge amounts of data but has been plagued by failures in utilizing the data to curb the cost of rising healthcare.

Some hospitals, like Beth Israel are using data collected from a cell phone app, from millions of patients, to allow doctors to use evidence-based medicine as opposed to administering several medical / lab tests to all patients who go to the hospital. A battery of tests can be efficient, but it can also be expensive and usually ineffective.

(4.) Education

Big data is used quite significantly in higher education. for example, The university of Tasmania. An Australian university with over 26000 students has deployed a learning and management system that tracks, among other things, when a student logs onto the system, how much time is spent on different pages in the system, as well as the overall process of a student over time.

In a different use case of the use of Big Data in education, it is also used to measure teacher's effectiveness to ensure a pleasant experience for both students and Teachers. Teacher's performance can be fine-tuned and measured against student numbers, subject matter, student demographics, student aspirations, behavioral classification, and several other variables.

(5.) Manufacturing and Natural Resources

In the natural resources industry, Big Data allows for predictive modeling to support decision making that has been utilized for ingesting and integrating large amounts of data from geospatial data, graphical data, text, and temporal data. Area of interest where this has been used include; seismic Interpretation and reservoir characterization.

Big data has also been used in Solving todays manufacturing challenges and to gain a competitive advantage, among other benefits.

(6) Government

In public services, Big Data has an extensive range of applications, including energy exploration, financial market analysis, fraud detection, health-related research and enviromental protection.

The food and Drug Administration (FDA) is using Big data to detect and study patterns of food related illnesses and diseased

• This allow for a faster response, which has led to more rapid treatment and less death

Big Data is being used in the analysis of large amounts of social disability claims made to the Social Security Administration (SSA) that arrive in the form of unstructured data. The analytics are used to process medical information rapidly and efficiently for faster decision making and to detect suspicious or fraudulent claims.

(7) Insurance

Big data has been used in the industry to provide customer insights for transparent and simpler products by analyzing and predicting customer behavior through data ~~doe doe~~ derived from Social media, GPS-enabled devices, and CCTV footage. The Big Data also allows for better customer retention from insurance companies.

When it comes to claims management, predictive analytics from Big Data

has been used to offer faster service since massive amounts of data can be analyzed mainly in the underwriting stage. Fraud detection has also been enhanced.

(8) Retail and Wholesale Trade

Big data from customer loyalty data, POS, store inventory, local demographics data continues to be gathered by retail and wholesale stores.

In New York's Big Data Show retail trade conference in 2014, companies like microsoft, Cisco, and IBM pitched the need for retail industry to utilize Big Data for analytics and other uses, including - optimized staffing through data from shopping patterns, local events, and so on, Reduced fraud and Timely analysis of inventory.

(9) Transportation

Some uses of Big data by Goverment, private organization, and individuals

include :- Governments use of Big Data : traffic control, route planning, intelligent transport systems, congestion management.

Private-sector use of Big Data in transport : revenue management, technological enhancements, logistics and for competitive advantage.

- Individual use of Big data include route planning to save on fuel and time for travel arrangement in tourism. etc.

(10) Energy and Utilities

Smart meter readers allow data to be collected almost every 15 minutes as opposed to once a day with the old meter reader. This granular data is being used to analyze the consumption of utilities better, which allows for improved customer feedback and better control of utilities use.

In utility companies, the use of Big Data also allows for better

asset and workforce management, which is useful for recognizing errors and correcting them as soon as possible befor complete failure is expesienced.