ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 1, January 2016

Review on Assorted Form of Analytics and Its Features

A.Mahalakshmi[1], Devi Selvam[2], L.Viji[3]

Assistant Professor, Dept. of CSE, Sri Shakthi Institute of Engineering and Technology, Tamilnadu, India[1]

Assistant Professor, Dept. of CSE, Sri Shakthi Institute of Engineering and Technology, Tamilnadu, India[2]

Assistant Professor, Dept. of IT, Velalar College of Engineering and Technology, Tamilnadu, India[3]

ABSTRACT: In this competitive world, we are in need of maintaining large volumes of data in various fields. So many people requires for a reliable and efficient mechanism for storage and processing of data. Analytics is the discovery and communication of meaningful patterns in data. It is valuable in areas rich with recorded information, analytics relies on the simultaneous application of statistics, computer programming and operations research to quantify performance. In this paper, we discuss various analytics process like Data Analytics , Video Analytics, Security Analytics and Web Analytics. This survey aims to identify best analytics process for our datum.

KEY WORDS: Data Analytics, Video Analytics, Security Analytics, Web Analytics

I. INTRODUCTION

The field of analytics has grown many folds in recent years. Analytics is a process which helps in discovering the informational patterns with data. The field of analytics is a combination of statistics, computer programming and operations research. The field of analytics has shown growth in the field of data analytics, predictive analytics and social analytics. Data analytics is a tool used to support decision-making process. It converts raw data into meaningful information. Predictive analytics is a tool used to predict future events based on current and historical information. Social media analytics is a tool used by companies to understand and accommodate customer needs.

The outcome of Analytics have been used for prediction purposes, for example to identify the students in terms of drop out or course failure, Information visualization, typically in the form of learning dashboards which provide overview learning data through data visualization tools. Firms may commonly apply analytics to business data, to describe, predict, and improve business performance. Specifically, areas within analytics include predictive analytics, enterprise decision management, retail analytics, store assortment and stock-keeping unit optimization, marketing optimization and marketing mix modeling, web analytics, sales force sizing and optimization, price and promotion modeling, predictive science, credit risk analysis, and fraud analytics. Since analytics can require extensive computation. The algorithms and software used for analytics harness the most current methods in computer science, statistics, and mathematics[1].

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 1, January 2016

II. DATA ANALYTICS

It is the science of examining raw data with the purpose of drawing conclusions about that information. Data analytics is used in many industries to allow companies and organization to make better business decisions. Data analytics is distinguished from data mining by the scope, purpose and focus of the analysis. Data miners sort through huge data sets using sophisticated software to identify undiscovered patterns and establish hidden relationships. Data analytics focuses on inference, the process of deriving a conclusion based solely on what is already known by the researcher[2].

Data analytics refers to qualitative and quantitative techniques and processes used to enhance productivity and business gain. Data is extracted and categorized to identify and analyze behavioral data, patterns and techniques that vary according to organizational requirements. Data analytics is primarily conducted in business-to-consumer (B2C) applications. Global organizations collect and analyze data associated with customers, business processes, market economics or practical experience. Data is categorized, stored and analyzed to study purchasing trends and patterns[3].

Evolving data facilitates thorough decision-making. For example, a social networking website collects data related to user preferences , community interests and segment according to specified criteria, such as demographics, age or gender. Proper analysis reveals key user, customer trends and facilitates the social network's alignment of content, layout and overall strategy. Popular data analytics tools include KNIME, Data Applied, R, DevInfo and Zeptospace.

A. *Big Data Analytics:*

Big data analytics refers to the strategy of analyzing large volumes of data, or big data. This big data is gathered from a wide variety of sources, including social networks, videos, digital images, sensors, and sales transaction records. The aim in analyzing all this data is to uncover patterns and connections that might otherwise be invisible even that might provide valuable insights about the users who created it. Through this insight, businesses may be able to gain an edge over their rivals and make superior business decisions.

Big data analytics allows data scientists and various other users to evaluate large volumes of transaction data and other data sources that traditional business systems would be unable to tackle. Traditional systems may fail to analyze so many data sources. Sophisticated software programs are used for big data analytics, but the unstructured data used in big data analytics may not be well suited to conventional data warehouses. Big data's high processing requirements may also make traditional data warehousing a poor fit. As a result, newer, bigger data analytics environments and technologies have emerged, including Hadoop, Map Reduce and NoSQL databases. These technologies make up an open-source software framework that is used to process huge data sets over clustered systems.

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 1, January 2016

III. VIDEO ANALYTICS

Video Analytics, also known as Video Content Analysis (VCA), is a generic term used to describe computerized processing and analysis of video streams. Computer analysis of video is currently implemented in a variety of fields and industries, however the term "Video Analytics" is typically associated with analysis of video streams captured by surveillance systems. Video Analytics applications can perform a variety of tasks ranging from real-time analysis of video for immediate detection of events of interest**,** to analysis of pre-recorded video for the purpose of extracting events and data from the recorded video**.** Relying on Video Analytics to automatically monitor cameras and alert for events of interest is in many cases much more effective than reliance on a human operator, which is a costly resource with limited alertness and attention**.** Various research studies and real-life incidents indicate that an average human operator of a surveillance system, tasked with observing video screens, cannot remain alert and attentive for more than 20 minutes. Moreover, the operator's ability to monitor the video and effectively respond to events is significantly compromised as time goes by[4].

Furthermore, there is often a need to go through recorded video and extract specific video segments containing an event of interest. This need is growing as the use of video surveillance becomes more widespread and the quantity of recorded video increases. Due to time constraint, review must be undertaken in an efficient and rapid manner. Surveillance system users are also looking for additional ways to leverage their recorded video, including by extracting statistical data for business intelligence purposes. Analyzing recorded video is a need that can rarely be answered effectively by human operators, due to the lengthy process of manually going through and observing the recorded video and the associated manpower cost for this task.

In contrast, the benefit accrued from a surveillance system can be significantly increased when deploying Video Analytics. Video Analytics is an ideal solution that meets the needs of surveillance system operators, security officers, and corporate managers, as they seek to make practical and effective use of their surveillance systems[6].

Crunching the video data into image frames is the first step. The next step is more exciting—performing deep analytics on the Hadoop-friendly data. Hadoop MapReduce is a powerful and industry-proven scalable technology. But while it can solve lots of problems, it can't solve all of them. In this new adventure into the uncharted world of video analytics, pivotal performed a high-level review on several commonly-applied computer vision algorithms.

Video analytics is all about extracting structured insights out of unstructured data. We found that MapReduce fits naturally for several components in a video analytics algorithm such as feature extraction and object detection/recognition in computer vision. MapReduce provides linearly scalable performance, requiring little effort to craft parallelism. Instead, data scientists can focus on developing the analytic algorithm itself, and let the platform handle the rest.

IV. SECURITY ANALYTICS

Security analytics refers to information technology (IT) solutions that gather and analyze security events to bring situational awareness and enable IT staff to understand and analyze events that pose the greatest risk. Solutions in this area include Security information, event management solutions and user behavior analytics solutions.

Steps for Better Security Analytics are :

- Analyze structured data and emerging unstructured sources to proactively identify and correlate incidents and deliver insight. Send real-time alerts for predefined behaviors and events. Quickly ingest, analyze and correlate information as it arrives from thousands of big data sources or store for historical analysis in a Hadoop platform.
- Observe unearthed insights in real time to filter out false positives, expose false negatives or store information for additional analysis.

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 1, January 2016

- Highlight potential attack vectors by constantly analyzing the various ways of applications like networks, databases, mobile devices and more can be accessed from both inside and outside of the enterprise.
- Complete real-time analysis of big data to identify and respond to suspicious deviations from baseline behaviors.
- Create a baseline activity for cyber traffic and physical movements to identify deviations from normal behavior, then determine which deviations are meaningful to help in detecting attacks in progress[12]

A. *The Importance of Security Analytics:*

Big data security analytics is used in organizations to sift through massive amounts of data, generated inside and outside the organization to uncover hidden relationships, detect patterns and remove security threats. Security analytics blend real-time analytics on data in motion with historical analysis on data at rest. By deploying security-specific analytics, organizations can find new associations or uncover patterns and facts. This real-time insight can be invaluable for detecting new types of threats. Real-time cyber attack prediction and mitigation means organizations can discover new threats early and react quickly before they propagate. The goal is crime prediction and protection. Analyzing data from the Internet, smart devices and social media can help law enforcement better detect criminal threats and collect evidence. Instead of waiting for a crime to be committed, organizations can address it proactively. Privacy policies are enhanced with big data security analytics. For example, an organization could use real-time streaming security analytics for deep packet inspection to monitor Web traffic, Domain Name System lookups, Network flow, port and Protocol usage. The outcome of this analysis could reveal precisely which Web servers have been infected with malware, identify suspicious domain names, pinpoint leaked documents and deliver intelligence on data access patterns. This detailed analysis informs data protection policies. Analytics can help organizations know which data to mask, which documents to redact and which data sources, including databases, data warehouses and big data platforms to monitor.

V. WEB ANALYTICS

Web Analytics or Online Analytics refers to the analysis of quantifiable and measureable data of website with the aim of understanding and optimizing the web usage. Web analytics focuses on various issues. For example,

- Detailed comparison of visitor data and referral data.
- Website navigation patterns. The amount of traffic the particular website received over a specified period of time.
- Search engine data.

Web analytics improves online experience for customers and elevates business prospects. There are various Web Analytics tools available in the market like Google Analytics, Optimizely, etc.

Web analytics is the measurement, collection, analysis and reporting of web data for the purpose of understanding and optimizing web usage. Web analytics is not just a process for measuring web traffic but can be used as a tool for business, market research, to assess and improve the effectiveness of a website. Web analytics applications can also help companies measure the results of traditional print or broadcast advertising campaigns. It helps one to estimate how traffic to a website changes after the launch of a new advertising campaign. Web analytics provides information about the number of visitors to a website and the number of page views. It helps gauge traffic and popularity trends which is useful for market research.

There are two types of web analytics −

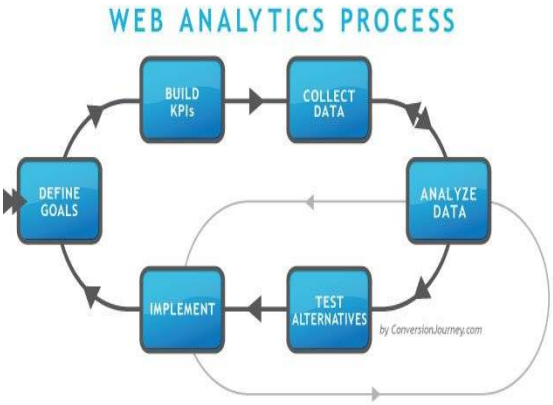
- **On-site** − It measures the users behavior once it is on the website. For example, measurement of website performance.
- **Off-site** − It is the measurement and analysis irrespective of whether you own or maintain a website. For example, measurement of visibility, comments, potential audience, etc.

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 1, January 2016



Metrics of Web Analytics
There are three basic metrics of web analytics −

Count
It is most basic metric of measurement. It is represented as a whole number or a fraction.

Ratio
It is typically a count divided by some other count. For example, Page views per visit.
Key Performance Indicator (KPI)
It depends upon the business type and strategy.

Basic Steps of Web Analytics Process
Most web analytics processes down to four essential stages or steps, which are:

- Collection of data: This stage is the collection of the basic, elementary data. The objective of this stage is to gather the data.
- Processing of data into information: This stage usually take counts and make them ratios, although there still may be some counts. The objective of this stage is to take the data and transform it into information, specifically metrics.
- Developing KPI: This stage focuses on using the ratios, counts and infusing them with business strategies, referred to as Key Performance Indicators (KPI). It depends on the organization.
- Formulating online strategy: This stage is concerned with the online goals, objectives, and standards for the organization or business. These strategies are usually related to making money, saving money or increasing market share.

Web Analytics Data Sources

The fundamental goal of web analytics is to collect and analyze data related to web traffic and usage patterns. The data mainly come from four sources:

1. Direct HTTP request data- directly comes from HTTP request messages.
2. Network level and server generated data associated with HTTP requests- not part of an HTTP request, but it is required for successful request transmissions. For example, IP address of a requester.
3. Application level data sent with HTTP requests-generated and processed by application level programs such as JavaScript, PHP, and ASP.Net, including session and referrals. These are usually captured by internal logs.
4. External data-can be combined with on- site data to help augment the website behavior data and interpret web usage. For example, IP addresses are usually associated with Geographic regions and internet service providers, e-mail open and click-through rates, direct mail campaign data, sales and lead history, or other data types as needed[11].

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 1, January 2016

A. *GOOGLE ANALYTICS:*

Google Analytics is a free Web analytics service that provides statistics and basic analytical tools for search engine optimization and marketing purposes. The service is available to anyone with a Google account. Google Analytics is flexible and can support different account configurations but the setup affects how data appears in the reports. Google Analytics code is a tracking code which is a snippet of JavaScript that collects and sends data to Google Analytics from a website. It is automatically generated for every web property.

Google Analytics features include:

- Data visualization tools including dashboard,scorecards and motion charts, which display changes in data over time.
- Segmentation for analysis of subsets, such as conversions.
- Custom reports.
- Email-based sharing and communication
- Integration with other Google products, such as AdWords, Public Data Explorer and Website Optimizer.

Google Analytics is geared towards small and medium-sized retail websites. The service has limitations that make it less suited to more complex websites and larger enterprises. For example, the system collects data through a JavaScript page tag inserted in the code of pages the user wants to collect data on. The page tag functions as a Web bug to gather visitor information. Google also uses sampling in its reports rather than analyzing all available data.

VI. CONCLUSION

There is a need for a reliable and efficient mechanism for storage and processing of large scale data today. With the amount of data being collected every day, analysis of this data might provide valuable insights, which may aid organizations and governments in many ways. An efficient data processing analyzing system will not only help in analyzing existing data, but also move towards best result in yielding to next generations. This survey has discussed the different types of analytics and its process for various applications in today's world. Depending upon requirements any type of analytics can be selected.

REFERENCES

1. http://link.springer.com/article/ 10.1007%2Fs11042-014-2345-z#/page-1
2. https://en.wikipedia.org
3. http://searchdatamanagement.techtarget.com /definition/data-analytics
4. http://www.agentvi.com/20-Technology-56- What_is_Video_Analytics
5. http://www.ee.columbia.edu/ln/mmsp/ papers/thesis-hluo.pdf

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 1, January 2016

6. https://blog.pivotal.io/data-science- pivotal/features/large-scale-video-analytics-on-hadoop
7. http://ieeexplore.ieee.org/stamp/stamp.jsp? arnumber=5562674
8. https://net.educause.edu/ir/library/pdf/ ELI7059.pdf
9. https://www.clarku.edu/offices/its/ webservices/pdf/web_analytics.pdf
10. http://ptgmedia.pearsoncmg.com/images/ 9780133552188/sample pages/0133552187.pdf
11. http://www.tutorialspoint.com/ online_marketing/web_analytics.htm
12. https://securosis.com/assets/library/ reports/SecurityAnalytics_BigData_V2.pdf