

# MONTHLY INSIGHTS

## AUGUST 2023

DEPARTMENT OF INFORMATION TECHNOLOGY



### **Departmental Vision statement of Information Technology**

To nurture the joy of excellence in the world of Information Technology

### **Departmental Mission statements of Information Technology**

M1: To develop the critical thinking ability of students by promoting interactive learning.

M2: To bridge the gap between industry and institute and give students the kind of exposure to the industrial requirements in current trends of developing technology.

M3: To promote learning and research methods and make them excel in the field of their study by becoming responsible while dealing with social concerns.

M4: To encourage students to pursue higher studies and provide them awareness on various career opportunities that are available.



# ARTICLES

## What is Big Data?

As Gartner defines it – “Big Data are high volume, high velocity, or high-variety information assets that require new forms of processing to enable enhanced decision making, insight discovery, and process optimization.”

The term ‘big data’ is self-explanatory – a collection of huge data sets that normal computing techniques cannot process. The term not only refers to the data, but also to the various frameworks, tools, and techniques involved. Technological advancement and the advent of new channels of communication (like social networking) and new, stronger devices have presented a challenge to industry players in the sense that they have to find other ways to handle the data. From the beginning of time until 2003, the entire world only had five billion gigabytes of data. The same amount of data was generated over only two days in 2011. By 2013, this volume was generated every ten minutes. It is, therefore, not surprising that a generation of 90% of all the data in the world has been in the past few years. All this data is useful when processed, but it had been in gross neglect before the concept of big data came along.

### **Why Big Data**

With the development and increase of apps and social media and people and businesses moving online, there’s been a huge increase in data. If we look at only social media platforms, they interest and attract over a million users daily, scaling up data more than ever before. The next question is how exactly is this huge amount of data handled and how is it processed and stored. This is where Big Data comes into play.



And Big Data analytics has revolutionized the field of IT, enhancing and adding added advantage to organizations. It involves the use of analytics, new age tech like machine learning, mining, statistics and more. Big data can help organizations and teams to perform multiple operations on a single platform, store Tbs of data, pre-process it, analyze all the data, irrespective of the size and type, and visualize it too.

### **Big Data Use Cases**

- **360-Degree View Of The Product**

Big data is often used by businesses to create dashboard applications that offer a 360-degree perspective of the consumer. These dashboards gather information from many internal and external sources, evaluate it, and then provide it to customer care, sales, and/or marketing staff in a way that supports their work.

- **Enhanced Client Acquisition And Retention**

Big data allows businesses to better understand client interests, usage patterns for products and services, and why customers cease using or buying from them. Businesses may more precisely determine what customers are looking for and track their behavioural trends by using big data apps. They may then use those patterns to enhance their offerings, increase conversion rates,

- **Better Cybersecurity And Fraud Prevention**

For businesses, combating fraud is a never-ending struggle. Organisations use big data analytics to spot trends of fraud or abuse, spot oddities in system behaviour, and stop criminal actors. Big data systems may sift through enormous transactions and log data on servers, databases, apps, files, and devices to identify, stop, detect, and mitigate possible fraud.



- Forecasting And Pricing Optimisation Improvements

While it may not be able to predict the future with absolute precision, big data allows corporations to see patterns and trends before others do. Early detection of shortfalls in product manufacturing, for instance, enables businesses to make necessary adjustments, preventing costly errors down the supply chain. Early demand information can enhance sales forecasting or assist in establishing the ideal pricing before a product enters the market. Big data has, in fact, aided businesses in making wiser decisions by providing them with knowledge of the likelihood of certain outcomes.

### **The Three V's of Big Data**

- **Volume**

We'll start with the one that is the most evident. Big data is all about quantity. data volumes that, in reality, may reach hitherto unimaginable heights. There will be 40 zettabytes of data generated by 2020, representing a 300-fold increase from 2005, according to estimates that 2.5 quintillion bytes of data are created every day. As a result, Terabytes and even Petabytes of data in storage and servers are now commonplace for big businesses. While tracking success, this data aids in shaping a company's future and activities.

- **Velocity**

The expansion of data and the significance it has taken on have changed the way we think about data. We used to underestimate the value of data in the business world, but because of changes in how we obtain it, we now often rely on it. Velocity simply gauges how quickly data is entering the system. While some data will be provided to us in batches, others will arrive in fits and starts. Additionally, since not all systems will process incoming data at the same rate, it's critical to avoid making assumptions before obtaining all the information.

- Variety

Data used to be given in a single format from a single source. Previously given in database files like excel, csv, and access files, it is now being delivered through tech like wearable devices and social media in non-traditional formats, including video, text, pdf, and graphics. Although this data is helpful to us, it demands more labour and analytical abilities to interpret it, manage it, and make it function.

**sejal Gawde**



**BE IT**



## **Empowering Insights through Data Analytics**

### **What is Data Analytics?**

Companies around the globe generate vast volumes of data daily, in the form of log files, web servers, transactional data, and various customer-related data. Companies need to use all of their generated data to derive value from it and make impactful business decisions. Data analytics is used to drive this purpose.



Data analytics is exploring and analyzing large datasets to find hidden patterns, and unseen trends, discover correlations, and derive valuable insights to make business predictions. Data analysis is not just a mere process; it's a tool that empowers organizations to make informed decisions, predict trends, and improve operational efficiency. It's the backbone of strategic planning in businesses, governments, and other organizations.

### **The Data Analytics Process: A Step-by-Step Guide**

The process of data analytics is a systematic approach that involves several stages, each crucial to ensuring the accuracy and usefulness of the results.



**Steps Involved in the Data Analytics Process**

### **Step 1: Defining objectives and questions**

The first step in the data analytics process is to define the objectives and formulate clear, specific questions that your analysis aims to answer. This step is crucial as it sets the direction for the entire process. It involves understanding the problem or situation at hand, identifying the data needed to address it, and defining the metrics or indicators to measure the outcomes.

### **Step 2: Data collection**

Once the objectives and questions are defined, the next step is to collect the relevant data. This can be done through various methods such as surveys, interviews, observations, or extracting from existing databases. The data collected can be quantitative (numerical) or qualitative (non-numerical), depending on the nature of the problem and the questions being asked.

### **Step 3: Data cleaning**

Data cleaning, also known as data cleansing, is a critical step in the data analytics process. It involves checking the data for errors and inconsistencies and correcting or removing them. This step ensures the quality and reliability of the data, which is crucial for obtaining accurate and meaningful results from the analysis.





#### **Step 4: Data analysis**

Once the data is cleaned, it's time for the actual analysis. This involves applying statistical or mathematical techniques to the data to discover patterns, relationships, or trends. There are various tools and software available for this purpose, such as Python, R, Excel, and specialized software like SPSS and SAS.

#### **Step 5: Data interpretation and visualization**

After the data is analyzed, the next step is to interpret the results and visualize them in a way that is easy to understand. This could involve creating charts, graphs, or other visual representations of the data. Data visualization helps to make complex data more understandable and provides a clear picture of the findings.

#### **Step 6: Data storytelling**

The final step in the data analytics process is data storytelling. This involves presenting the findings of the analysis in a narrative form that is engaging and easy to understand. Data storytelling is crucial for communicating the results to non-technical audiences and for making data-driven decisions.

#### **The Types of Data Analytics**

Data analytics can be categorized into four main types, each serving a unique purpose and providing different insights. These are descriptive, diagnostic, predictive, and prescriptive analyses.



**The four types of Analytics**



### **Descriptive analytics**

Descriptive analytics, as the name suggests, describes or summarizes raw data and makes it interpretable. It involves analyzing historical data to understand what has happened in the past. This type of analytics is used to identify patterns and trends over time. For example, a business might use descriptive analytics to understand the average monthly sales for the past year.

### **Diagnostic analytics**

Diagnostic analytics goes a step further than descriptive analysis by determining why something happened. It involves more detailed data exploration and comparing different data sets to understand the cause of a particular outcome. For instance, if a company's sales dropped in a particular month, diagnostic analytics could be used to find out why.

### **Predictive analytics**

Predictive analytics uses statistical models and forecasting techniques to understand the future. It involves using data from the past to predict what could happen in the future. This type of analysis is often used in risk assessment, marketing, and sales forecasting. For example, a company might use predictive analytics to forecast the next quarter's sales based on historical data.



### **Prescriptive analytics**

Prescriptive analytics is the most advanced type of data analysis. It not only predicts future outcomes but also suggests actions to benefit from these predictions. It uses sophisticated tools and technologies like machine learning and artificial intelligence to recommend decisions. For example, prescriptive analytics might suggest the best marketing strategies to increase future sales.

**Divyajothi Raja**



**TE IT**



## **Blockchain**

A blockchain is a distributed database or ledger shared among a computer network's nodes. They are best known for their crucial role in cryptocurrency systems for maintaining a secure and decentralized record of transactions, but they are not limited to cryptocurrency uses. Blockchains can be used to make data in any industry immutable—the term used to describe the inability to be altered.

Because there is no way to change a block, the only trust needed is at the point where a user or program enters data. This aspect reduces the need for trusted third parties, which are usually auditors or other humans that add costs and make mistakes.

Since Bitcoin's introduction in 2009, blockchain uses have exploded via the creation of various cryptocurrencies, decentralized finance (DeFi) applications, non-fungible tokens (NFTs), and smart contracts.

### **Transaction Process :**

Transactions follow a specific process, depending on the blockchain they are taking place on. For example, on Bitcoin's blockchain, if you initiate a transaction using your cryptocurrency wallet—the application that provides an interface for the blockchain—it starts a sequence of events.

In Bitcoin, your transaction is sent to a memory pool, where it is stored and queued until a miner or validator picks it up. Once it is entered into a block and the block fills up with transactions, it is closed and encrypted using an encryption algorithm. Then, the mining begins.



## **What is Blockchain Technology?**

Blockchain defined: Blockchain is a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network. An asset can be tangible (a house, car, cash, land) or intangible (intellectual property, patents, copyrights, branding). Virtually anything of value can be tracked and traded on a blockchain network, reducing risk and cutting costs for all involved.

Why blockchain is important: Business runs on information. The faster it's received and the more accurate it is, the better. Blockchain is ideal for delivering that information because it provides immediate, shared and completely transparent information stored on an immutable ledger that can be accessed only by permissioned network members. A blockchain network can track orders, payments, accounts, production and much more. And because members share a single view of the truth, you can see all details of a transaction end to end, giving you greater confidence, as well as new efficiencies and opportunities.

## **Advantages of Blockchain Technology:**

This section discusses the advantages of blockchain technology.

**1.Open:** One of the major advantages of blockchain technology is that it is accessible to all means anyone can become a participant in the contribution to blockchain technology, one does not require any permission from anybody to join the distributed network.

**2.Verifiable:** Blockchain technology is used to store information in a decentralized manner so everyone can verify the correctness of the information by using zero-knowledge proof through which one party proves the correctness of data to another party without revealing anything about data.

**3.Permanent:** Records or information which is stored using blockchain technology is permanent means one needs not worry about losing the data because duplicate copies are stored at each local node as it is a decentralized network that has a number of Blockchain technology is considered free from censorship as it does not htrustworthy nodes.



## **Applications for Blockchain Technology**

### **1. Money transfers**

The original concept behind the invention of blockchain technology is still a great application. Money transfers using blockchain can be less expensive and faster than using existing money transfer services. This is especially true of cross-border transactions, which are often slow and expensive. Even in the modern U.S. financial system, money transfers between accounts can take days, while a blockchain transaction takes minutes.

### **2. Financial exchanges**

Many companies have popped up over the past few years offering decentralized cryptocurrency exchanges. Using blockchain for exchanges allows for faster and less expensive transactions. Moreover, a decentralized exchange doesn't require investors to deposit their assets with the centralized authority, which means they maintain greater control and security. While blockchain-based exchanges primarily deal in cryptocurrency, the concept could be applied to more traditional investments as well.

### **3. Lending**

Lenders can use blockchain to execute collateralized loans through smart contracts. Smart contracts built on the blockchain allow certain events to automatically trigger things like a service payment, a margin call, full repayment of the loan, and release of collateral. As a result, loan processing is faster and less expensive, and lenders can offer better rates.



**Vinit Sukale**

**SE IT**



## FULL STACK WEB DEVELOPMENT

An Event based on Full Stack Web Development was held by the CSX Committee on 5th August, 2023. Mr. Dipesh Patil explained the working and procedure of Web Development in detail. A total of 36 attendees participated in this Event.

### **Faculty Coordinators:**

Prof Jyotsna Moore

Prof Teena Varma

### **Student Coordinators:**

Lekha Pulavarthy

Aditi Satam









# PLACEMENTS

In this month, many different companies visited the campus of XIE to recruit students from various different branches for a variety of positions in the company. The student from IT department who got placed in this month was:

**Name :** Aradhana Singh  
**Company :** New Fold Digital  
**Package :** 3.5 LPA

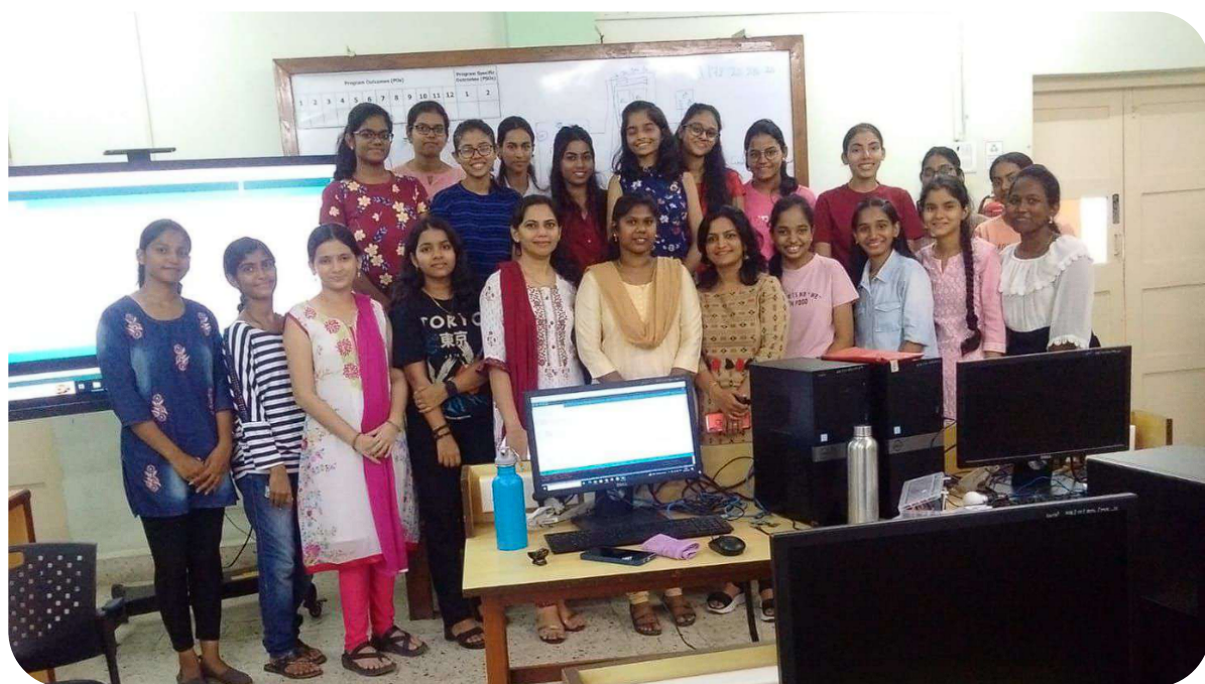
# ACHIEVEMENTS

Prof. Chhaya Dhavale is selected as a Jury for IET India scholarship Award 2023



## Internet of Things

Prof. Stella J conducted a workshop on Internet of Things Basics to Advanced for Allyn Girls organized by Women Development Cell on 12/8/2023 and 19/08/2023.



# OUR AMAZING CREW

- **Prof. Stella J (Staff Co-ordinator)**
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