



THE WALL
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ZERO-KNOWLEDGE PROOF

True internet privacy could finally become possible thanks to a new tool that can - for instance - let you prove, you're over 18 without revealing your date of Birth, or prove you have enough money in the bank for financial transaction without revealing your balance or other details. That limits the risk of a privacy breach or identity theft.

The tool is an emerging cryptographic protocol called a zero-knowledge proof. Though researchers have worked on it for decades, interest has exploded in the past years, thanks in part to the growing obsession with cryptocurrencies, most of which aren't private. The credit for a practical zero-knowledge proof goes to Zcash, a digital currency that launched in late 2016. Zcash's developers used a method called a zk-SNARK (for "zero-knowledge succinct non-interactive argument of knowledge") to give users the power to transact anonymously.

For Banks, this could be a way to use blockchains in payments systems without sacrificing their clients's privacy.

BUG BOUNTY

CYBER SECURITY

A bug bounty program is a deal offered by many websites, organizations and software developers by which individuals can receive recognition and compensation for reporting bugs, especially those pertaining to exploits and vulnerabilities. These programs allow the developers to discover and resolve bugs before the general public is aware of them, preventing incidents of widespread abuse. Bug bounty programs have been implemented by a large number of organizations, including Mozilla, Facebook, Yahoo!, Google, Reddit, Square and Microsoft.

Companies outside the technology industry, including traditionally conservative organizations, like US Department of Defense, have started using bug bounty programs. The Pentagon's use of bug bounty programs is part of a posture shift that has been several US Government Agencies reverse course from threatening white hat hackers with legal recourse to inviting them to participate as a part of comprehensive vulnerability disclosure framework or policy.

HACKER1

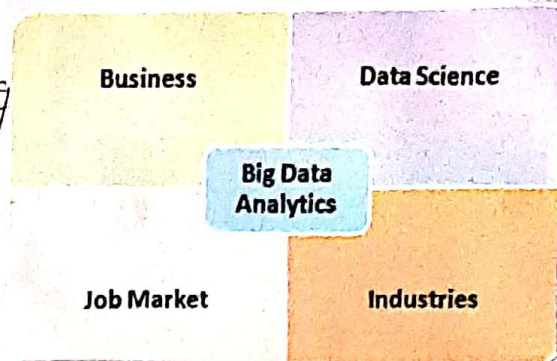
By Harshit
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bugcrowd

vulnerabilities

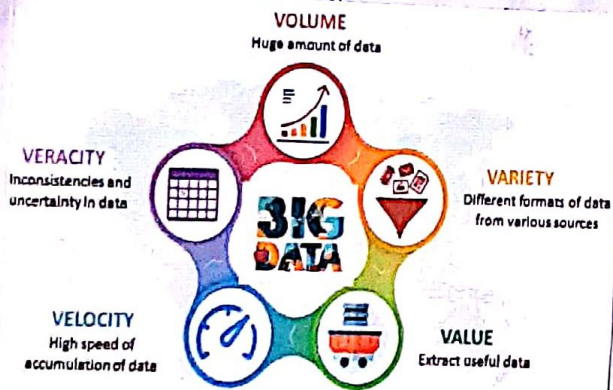
BIG DATA

Big Data is a term used for a collection of data sets so large and complex that it is difficult to process it using traditional application/tools. It is the data exceeding Terabytes in size. A recent survey says that 80% of the data created in the world is unstructured. Our challenge is how to convert unstructured data into structured and how to store it in order to analyse it and capture the most important data.



WHAT IS THE IMPORTANCE OF BIG DATA?

Big Data has the potential to provide companies with valuable insights into their customers which can be used to refine marketing campaigns, techniques etc. The importance of Big Data is how you utilize the data you own. Data can be fetched from any source and analyzed in order to help us with —



- Cost Reduction
- Time Reduction
- Smart Decision Making
- New Product Development
- Developing Business Strategies
- Real Time operations
- Finding Root cause of failures etc.

WHAT ARE THE CATEGORIES THAT COME UNDER BIG DATA?

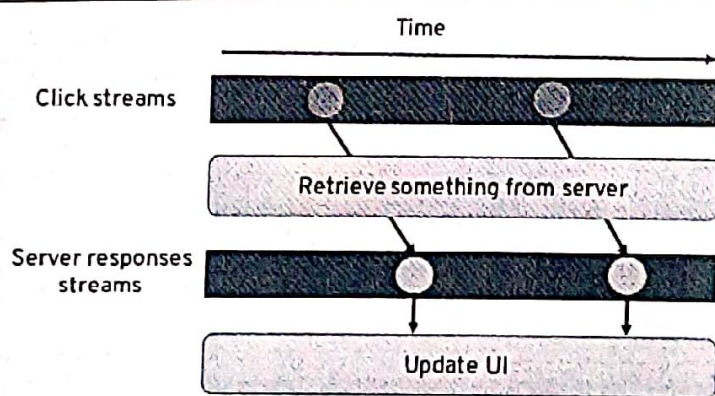
Below are some of the fields that are involved under it —

- 1) Black Box Data: Flight Data recorder is an instrument which records the activities of airplane during its flight.
- 2) Social Media Data: Social networking sites such as Facebook and Twitter contains the info. of millions of people across the globe.
- 3) Search Engine Data: It retrieves a large amount of data from different sources of database.
- 4) Transport Data: It includes the data from various transport sectors such as model, capacity, distance, availability etc.

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REACTIVE PROGRAMMING

In computing, reactive programming is a declarative programming paradigm concerned with data streams and the propagation of change. With this paradigm it is possible to express static (e.g. arrays) or dynamic (e.g. event emitters) data streams with ease, also communicate that an inferred dependency within the associated execution model exists, which facilitates the automatic propagation of the changed data flow.



Synchrony :- It is the underlying model of time synchronous versus asynchronous.

Determinism :- Deterministic versus non-deterministic in both evaluation process and results.

Update Process :- Callbacks versus data flow versus actors.

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JAVA Vs KOTLIN

	KOTLIN	JAVA
DEVELOPED BY	Kotlin was developed by JetBrains. Its first version was released in 2016.	Java was developed by Sun Microsystems later acquired by Oracle. Its first version released in 1995.
CODE SIZE	In Kotlin we have to write 30-40% less code as compared to Java.	In Java we have to write more code as compared to Kotlin.
NULL SAFETY	Kotlin does not have null pointer exception problem.	Null Pointer Exception is most common problem in Java.
CHECKED EXCEPTION	Kotlin doesn't have checked exception feature.	Java have checked exception feature.
OPERATOR OVERLOADING	Kotlin allows operator overloading. Programmer can define the operators working according to need.	Java doesn't support operator overloading.
USE OF SEMICOLON	It is optional to write semicolon at the end of statements.	In Java each statement must be terminated by a semicolon.
APP SIZE	Android app built with it has more size as it contains both Kotlin and Java libraries. Gradle build time is slower.	Android app built with Java has less space as compared to Kotlin. Also Gradle build time is little faster.

MACHINE LEARNING

Machine Learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. Machine Learning focuses on the development of computer programs that can access data and use it to learn for themselves. The process of learning begins with observations or data, such as examples, direct experience, or instruction, in order to look for patterns in data and make better decisions in the future based on the examples that we provide. The primary aim is to allow the computer learn automatically, without human intervention or assistance and adjust actions accordingly.

MACHINE LEARNING METHODS

- Supervised machine learning algorithms.
- Unsupervised machine learning algorithms.
- Semi-supervised machine learning algorithms.
- Reinforcement machine learning algorithms.

Machine learning enables analysis of massive quantities of data. While it generally delivers faster, more accurate results in order to identify profitable opportunities or dangerous risks, it may also require additional time and resources to train it properly. Combining machine learning with AI and cognitive technologies can make it even more effective in processing large volumes of information.

By: Shivam Mani
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IT-3rd
Year

VISION OF THE DEPARTMENT

To emerge as a center of excellence producing globally competent and morally sound professionals in the field of Information Technology who will practice commitment to their profession and dedicate themselves to the service of mankind.

MISSION OF THE DEPARTMENT

1. To develop state-of-art laboratories providing relevant practical inputs to students.
2. To provide strong knowledge base to students in the area of Information Technology and to train them as per the requirement of industries and research organizations.
3. To facilitate institute industry interaction to the benefit of stake holders and motivate teachers for the continuous improvement of their academic standards.

The PEOs of B.TECH IT program are as follows:

1. Graduates will take up professional career in the field of software development, will exhibit teamwork skills and work with values that meet the diversified needs of industry, academia and research.
2. Graduates will encompass entrepreneurship skills and ability to develop and implement the innovative, integrated and secure Information Technology solutions for meeting the global challenges and changing requirements.
3. Graduates will be able to perform effectively in a multi-disciplinary environment consistent with ethical and moral practices following environmental friendly approach

PROGRAM SPECIFIC OUTCOMES

After the completion of B.TECH (IT) course the student will be able to

PS01: Design reliable and efficient software systems using software design principles, Algorithm design techniques and data structure.

PS02: Select appropriate Software, hardware and networking environment for IT needs of any organization.

PS03: Use modern technologies such as Artificial Intelligence, Big Data, cloud computing for building real world applications.

