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Characteristics of Big data :-

(i) Volume - Files are large (in no of files & sizes)

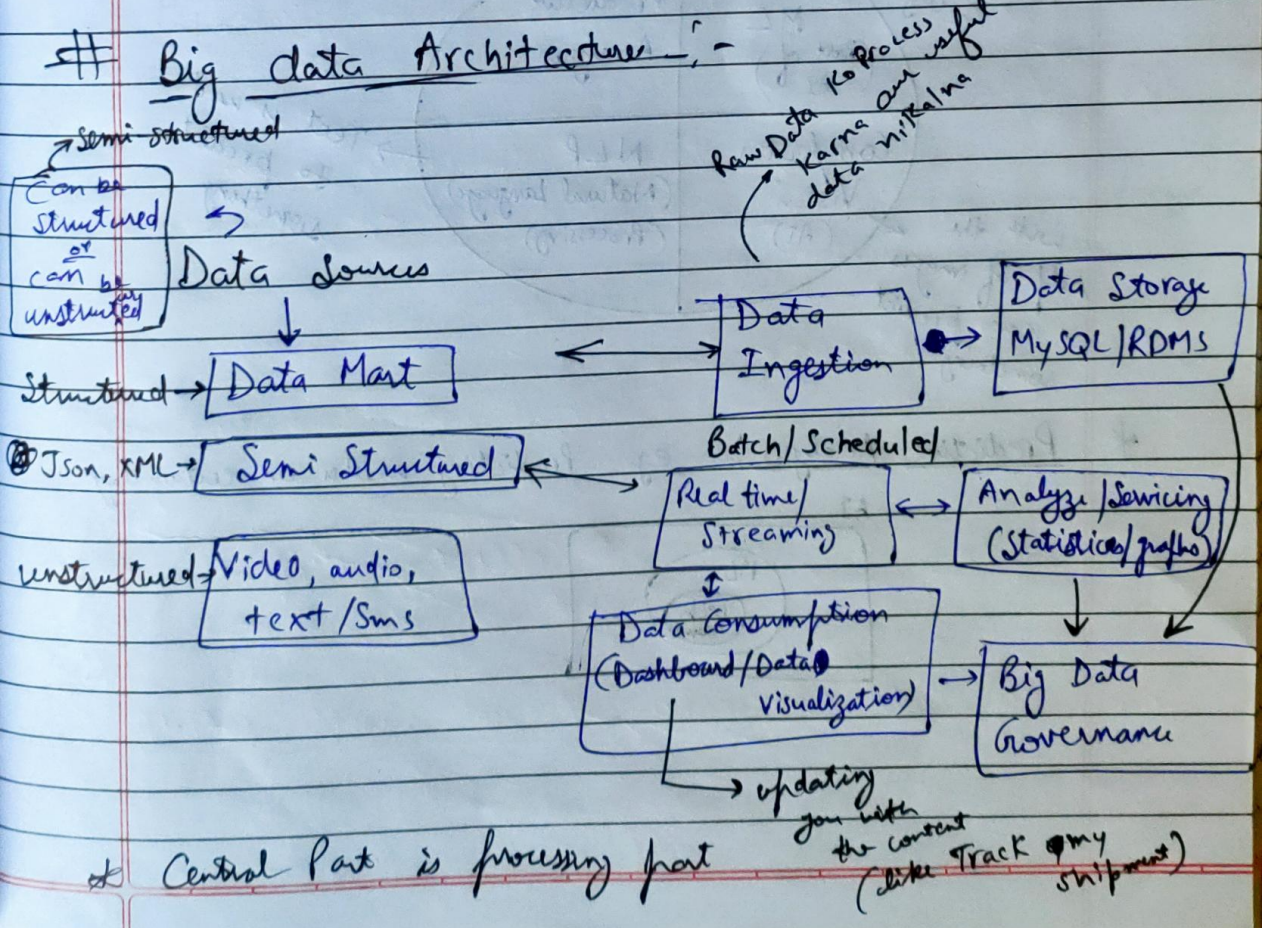
(ii) Varacity - Uncertainity of data.

(iii) Variety - Data is stored from different sources. Data can be video, text, etc.

(iv) Velocity - The speed with which data is collected.

(v) Value - The data that is to be collected is useful.

Big data Architecture :-



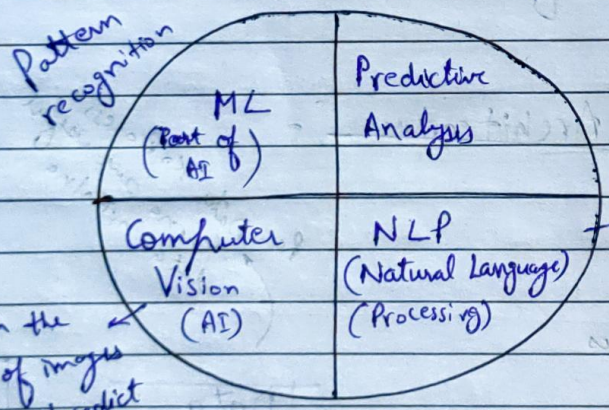
* Central Part is processing part

→ Attribute is also called Feature in ML

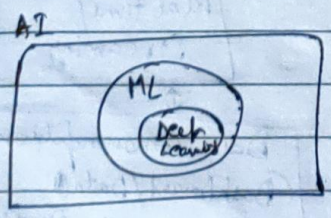
Technology Components :-

(i) Data Capture
(ii) Data Storage
(iii) Data Processing
(iv) Data visualization

* Imputation – Missing values/data ko fill karna, like mode bhar diya.
↓
Highest Frequency.



* Predictive Analysis :- eg. Predicting weather on certain day.



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Technology :-

(i) Apache Hadoop - It is an open-source framework.
eg. 10 years ago the facebook followed.
It enables the distribution of large scale dataset & it is flexible.

(ii) Apache Spark :- This can be used with Apache Hadoop.
It is an open-source processing engine.

(iii) Apache Flink :- It is an open-source stream processing framework.
It is High analytics
It is user friendly API

(iv) Presto :- It is an open source sequal engine that supports ~~and~~ interactive analyses on Huge dataset.

(v) Druid :- It is an open source analytical data storage design for queries on event based data
eg Log files.
(Transaction)

Other Technology used :-
(i) Map Reduce
(ii) Cloud Era
(iii) Horton Works
(iv) IBM Big Insights
(v) Oracle Big data Appliance.

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★ Features of Big Data :-

(i) Data Preparation :- It is used before the iterative model.

* It is used during model construction.

(ii) Data Exploration :- Visualize insights through pictorial representation.

ex Stock Market

(iii) Scalability - Efficient Energy Construction.

It should use less Network layer.

(iv) Supports for various types of analytics.
↳ Graph, chart, reviews

(v) Version Control :-
For every versions, the checks are done.
Previous code should be compatible with new version.

(vi) Data Management :-
↳ storing, using data, also bringing security with cost effective way.

(vii) Data Integration :- Collecting different data sets and integrating them.

(viii) Big Data Governance :- Accurate, usable, reliable
↓
Data should be

(ix) Visualization

Applications :-

(i) Monitor User Behaviour

(ii) Recommendations :-

Audits :-

* Advantages of using the big data in auditing system -

1. Reduction in operational cost.
2. Improved decision making.
3. High customer retention.
4. Higher satisfaction rate.
5. Banking → Manufacturing

* If the data is real-time then the growth of the organisation would be very high and sustainability would be high.

* In Big data to give us most accurate results, we should embed
  - AI
  - Automation

  ] → Accuracy will be maximum.

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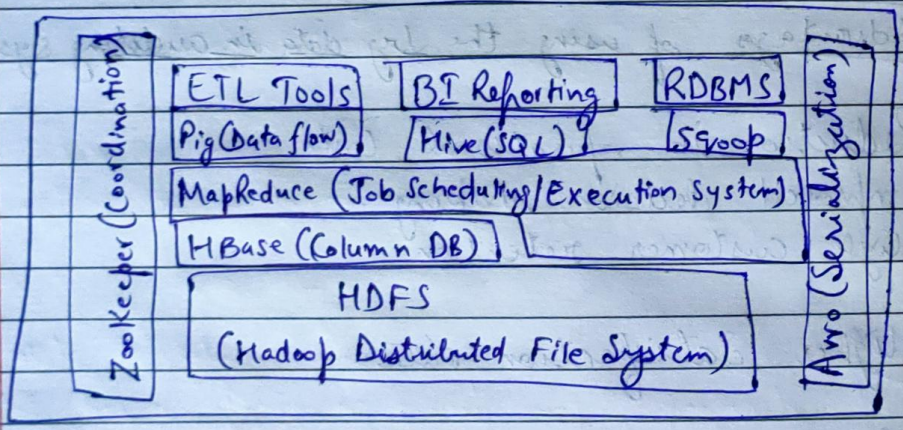
HADOOP TECHNOLOGY :- The most well known technology used for big data in Hadoop.

- It is actually a large scale ~~data~~ batch data processing system.

Hadoop Features :-

- Hadoop provides access to the file systems.
- The hadoop Common package contains the necessary JAR files and scripts.



HADOOP ARCHITECTURE

→ ETL Tools :- Extract & Transform & load

→ BI :- Business Intelligence reporting.

→ Sqoop - Command line Interface (CLI)

→ Pig - Tool which takes data from one phase to another while filtering out data.

→ HBase → may have unstructured. Data stored after processing but we try to have mostly

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structured or semi structured data, as it is easier to store & manage.