



# ECAP470: CLOUD COMPUTING

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# Learning Outcomes



**After this lecture, you will be able to,**

- understand Big Data Analytics and its role.
- explore different Data Analysis Techniques, data management tools and techniques.

# Big Data Analytics

- Global big data market revenues for software & services are expected to increase from \$42 billion to \$103 billion by the year 2027.
- Every day, 2.5 quintillion bytes of data are created, and it's only in the last two years that 90% of the world's data has been generated.
- In fact, if we predict correctly, there's likely much more to come.

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# Big Data Analytics

- **World is driven by data,**
- Data is unavoidable,
- Business world looks to data for market insights,
- Data is becoming a game changer.

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# Where Role of Big Data Analytics Comes into Play

- Volume of data.
- Private companies and research institutions.
- Global survey from McKinsey.

# Where Role of Big Data Analytics Comes Into Play

Incentive for investing and **implementing data analysis tools and techniques** is huge, and businesses will need to adapt, innovate, and strategize for evolving digital marketplace.

# Big Data Analytics

## Data Analysis, or Analytics (DA)

Process of examining data sets (**within the form of text, audio and video**), and drawing conclusions about the information they contain, more commonly through specific systems, software, and methods.

# Big Data Analytics

## Data analysis, or analytics (DA)

Process of converting large amounts of unstructured raw data, retrieved from different sources to a data product useful for organizations.

# Big Data Analytics

## Data Analytics Technologies

Used on an industrial scale, across commercial business industries, as they enable organisations to make calculated, informed business decisions.

# Big Data Analytics Cycle

**Business Problem Definition**

Research

Human Resources Assessment

Data Acquisition

Data Munging

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# Big Data Analytics Cycle

**Data Storage**

Exploratory Data Analysis

Data Preparation for Modelling and Assessment

Modelling

Implementation

# Big Data Analytics Cycle

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**Implementation**



# Big Data Analysis Techniques

Big data is characterised by 3 V's:

- Major **volume** of data,
- the **velocity** at which it's processed,
- and the wide **variety** of data.

# Big Data Analysis Techniques

**Velocity** pertains that data analytics has expanded into technological fields of machine learning & AI.

# Big Data Analysis Techniques

Alongside evolving computer-based analysis techniques and data harnesses, analysis also relies on the traditional statistical methods.

# Big Data Analysis Techniques

Ultimately, how data analysis techniques function within an organisation is twofold; big data analysis is processed through streaming of data as it emerges, & then performing batch analysis' of data as it builds– to look for **behavioural patterns** & trends.

# Big Data Analysis Techniques

1. **A/B Testing**
2. Data Fusion and Data Integration
3. Data Mining
4. Machine Learning
5. Natural Language Processing (NLP)
6. Statistics
7. Other data analysis techniques
8. Use of technologies

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# Big Data Analysis Techniques

What does the future of data analysis look like?

It's hard to say with the tremendous pace **analytics & technology** progresses, but undoubtedly data innovation is changing face of **business & society** in its holistic entirety.

# Big Data Analytics– Methodology

**Statistical modelling:** One of the most important tasks in big data analytics.

- Supervised and unsupervised classification or regression problems.

# Big Data Analytics- Methodology

**Statistical modelling:** One of the most important tasks in big data analytics.

- Once data is cleaned & pre-processed, available for modelling, evaluating the different models with reasonable loss metrics is important & then once model is implemented, further evaluation & results should be reported.

# Big Data Analytics- Data Analysis Tools

**R Programming Language**

Python For Data Analysis

Julia

SAS

SPSS

Matlab/ Octave



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**That's all for now...**