



ECAP470: CLOUD COMPUTING

Dr. Tarandeep Kaur
Assistant Professor

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.

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.

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.

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.

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.

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.

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.**

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

Big Data Analytics Cycle

Business Problem Definition

Research

Human Resources Assessment

Data Acquisition

Data Munging

Big Data Analytics Cycle

Business Problem Definition

Research

Human Resources Assessment

Data Acquisition

Data Munging

Big Data Analytics Cycle

Business Problem Definition

Research

Human Resources Assessment

Data Acquisition

Data Munging

Big Data Analytics Cycle

Business Problem Definition

Research

Human Resources Assessment

Data Acquisition

Data Munging

Big Data Analytics Cycle

Data Storage

Exploratory Data Analysis

Data Preparation for Modelling and Assessment

Modelling

Implementation

Big Data Analytics Cycle

Data Storage

Exploratory Data Analysis

Data Preparation for Modelling and Assessment

Modelling

Implementation

Big Data Analytics Cycle

Data Storage

Exploratory Data Analysis

Data Preparation for Modelling and Assessment

Modelling

Implementation

Big Data Analytics Cycle

Data Storage

Exploratory Data Analysis

Data Preparation for Modelling and Assessment

Modelling

Implementation

Big Data Analytics Cycle

Data Storage

Exploratory Data Analysis

Data Preparation for Modelling and Assessment

Modelling

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

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

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

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

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

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

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

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**

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

Big Data Analytics- Data Analysis Tools

R Programming Language

Python For Data Analysis

Julia

SAS

SPSS

Matlab/ Octave

Big Data Analytics- Data Analysis Tools

R Programming Language

Python For Data Analysis

Julia

SAS

SPSS

Matlab/ Octave

Big Data Analytics- Data Analysis Tools

R Programming Language

Python For Data Analysis

Julia

SAS

SPSS

Matlab/ Octave

Big Data Analytics- Data Analysis Tools

R Programming Language

Python For Data Analysis

Julia

SAS

SPSS

Matlab/ Octave

Big Data Analytics- Data Analysis Tools

R Programming Language

Python For Data Analysis

Julia

SAS

SPSS

Matlab/ Octave

That's all for now...