Introduction to Data Analytics

Analytics Framework Case Study and Upcoming Trends

Learning Objectives

By the end of this lesson, you will be able to:

- Explain the customer analytics framework
- Explain the phases of customer analytics framework
- List the latest trends in data analytics

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Case Study: Ernst & Young

Customer Analytics Framework

An analytics framework helps perform data analysis in an organized manner.

The framework allows you to focus on the business outcome.

Case Study: EY

EY created a customer analytics framework for personalized customer experiences to win more business and drive loyalty in a digital world.

Case Study: EY

To create the customer analytics framework, company considered these factors:

- Who are your customers?
- What do they do?
- What do they want?
- How and when to reach them?

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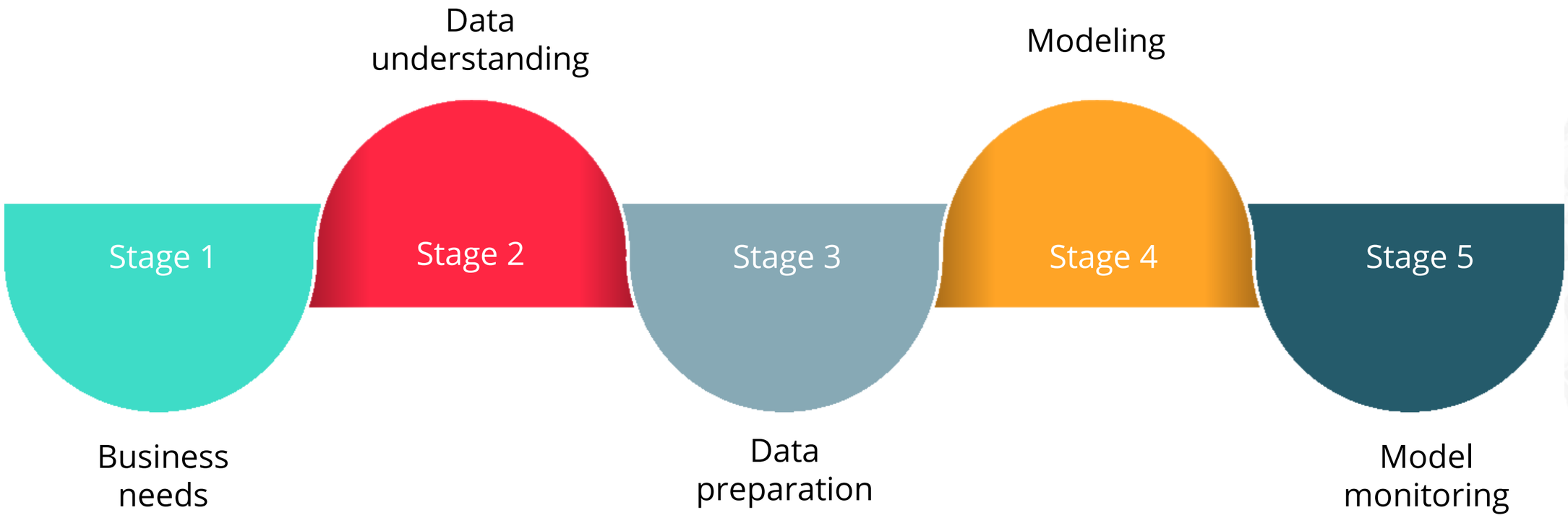
Customer Analytics Framework

Phases of Customer Analytics framework



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Business Needs

Business Needs

Grow

- Acquire new customers
- Understand product life cycle
- Develop new products

Optimize

- Optimize pricing and cost to enhance customer satisfaction

Protect

- Understand how to retain customers
- Perform sentiment analysis

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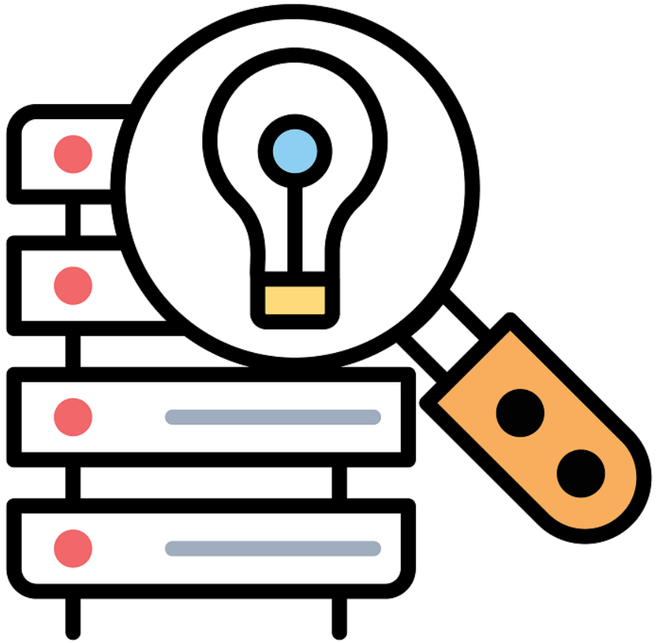
Data Understanding

Data Understanding

Data understanding is the second stage in the customer analytics framework.



This stage helps to draw patterns by gaining insight from the data.

Data Understanding

Data understanding is highly investigative and diagnostic.

Companies look at customer needs and priorities to attract potential customers.

They identify the most valuable customers who aid their growth.

Data Understanding

Perform market segmentation for effective marketing and customer engagement by dividing customers into groups based on:

Age

Gender

Interests

Availability

Spending habits

Data Understanding

Sentiment analysis is important to identify the sentiments of the customer through social media.

Influence score measures the degree of influence of each user.
It can be combined with sentiment measure to identify disgruntled customers.

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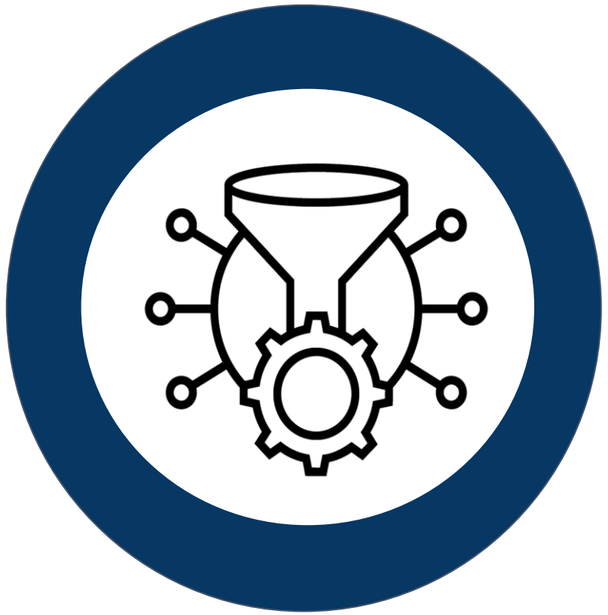
Data Preparation

Data Preparation

Take transformation steps

Determine the data



Collect and consolidate data

Improve data quality and completeness

Standardize data structure

Data Preparation

- Perform data mining
- Work with structured and unstructured data
- Use various tools and software to transform data.
- Integrate data from various sources

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Modeling

Modeling

Modeling stage focuses on developing models and can be based on:

Predictive analytics

Prescriptive analytics

Modeling

Predictive analytics

It helps understand the future and answer *What could happen?*

Prescriptive analytics

It helps predict possible outcomes and answer *What should we do?*

As this phase is iterative, revisiting data preparation phase to refine the data is needed.

Modeling

Price Optimization Model

- Helps calculate how demand varies at different price levels
- Uses data to recommend prices for improving profits

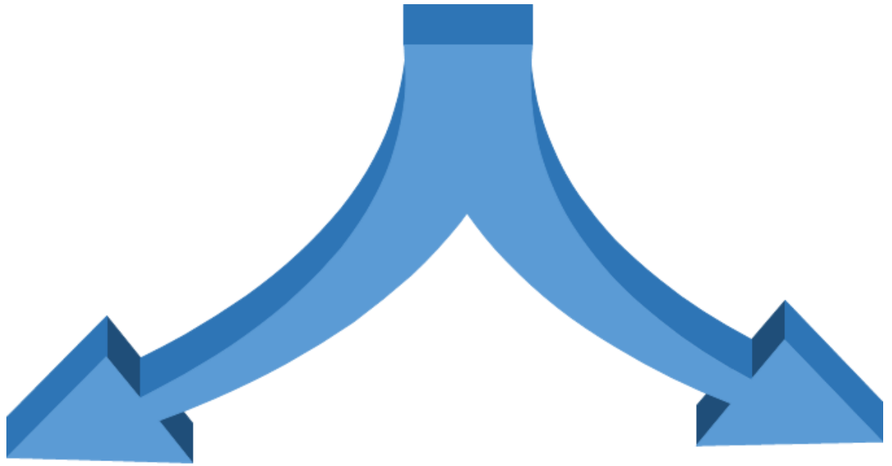
Attrition Model

- Is created through predictive algorithms
- Helps companies gain better understanding and take preventive measures for employee attrition

Models can also be made for web analytics and sentiment analysis.

Modeling

Types of training models



Static

This model is trained offline as the model is trained once and used for a while.

Dynamic

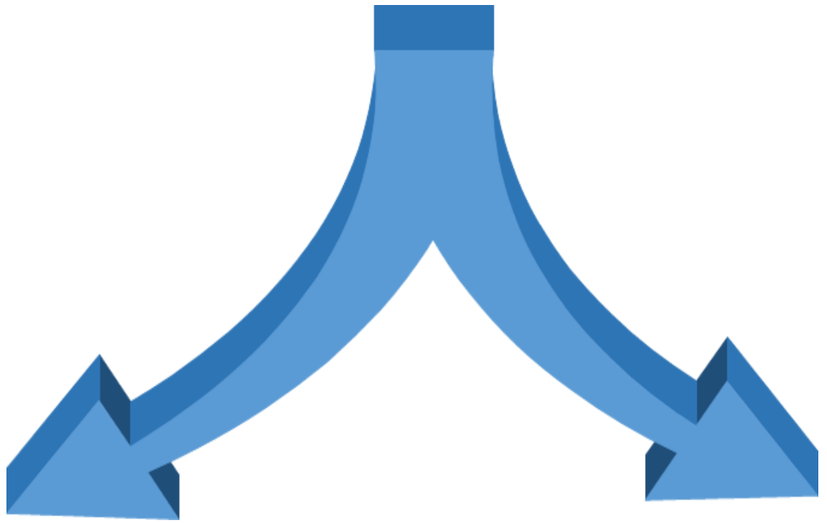
This model is trained online as the data is fed into the model to train continuously.

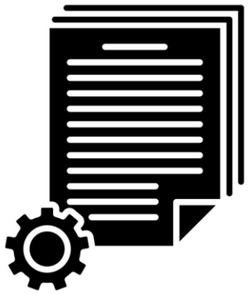
Modeling

Types of predictions from trained models:

Online

It is also called HTTP prediction and is used when timely inference is needed.





Batch

It is used for processing accumulated data when immediate results are not needed.

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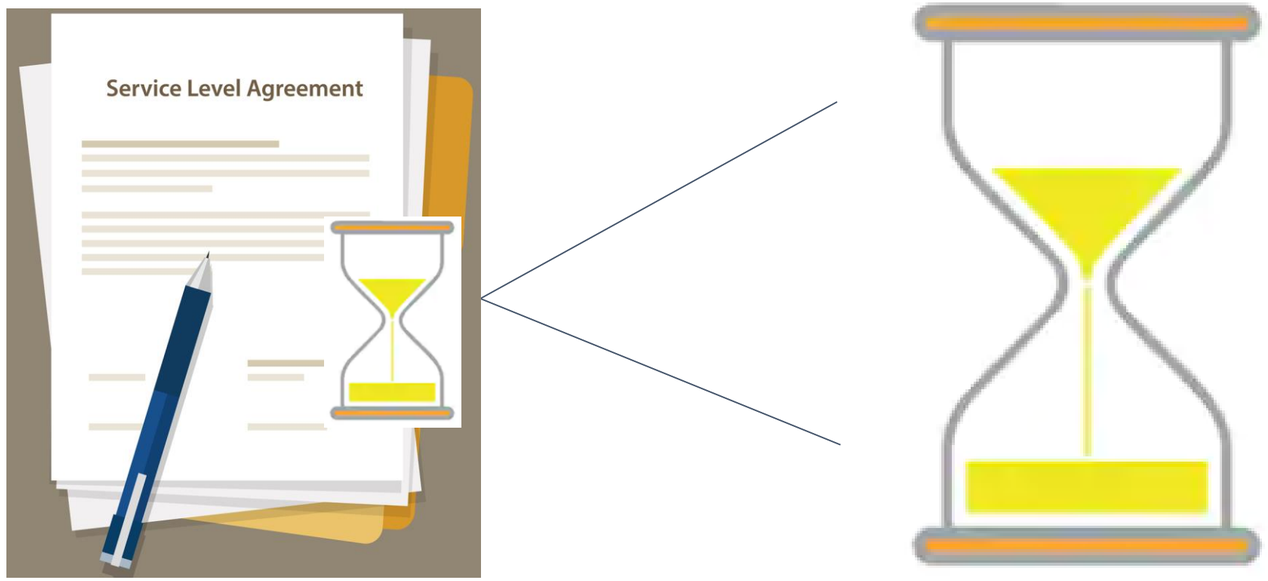
Model Monitoring

Model Monitoring

Model monitoring is the final stage where you need to establish, monitor, and meet service-level agreements.



Example: SLAs for analytics might be the maximum time taken to create or deploy a model.

Model Monitoring

- Data scientists monitor machine learning models for drift.
- Drift means the data is no longer relevant or useful as data is always changing.
- Data scientists ensure that the model inputs look similar to those used in training.

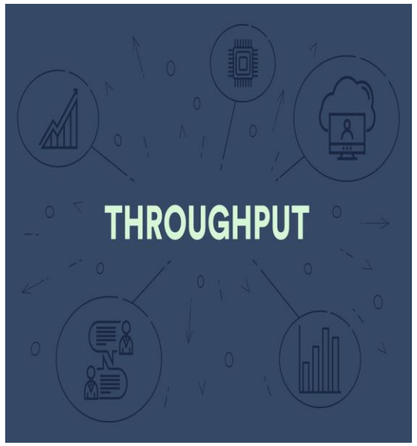
Factors in Model Monitoring

Cost

Model cost needs to analyzed to check whether the value generated from the model is worth the cost.

Latency

It is the delay between the data transfer instruction and the actual data transfer.



Throughput

It is the amount of data successfully moved from one place to another in a given time period.

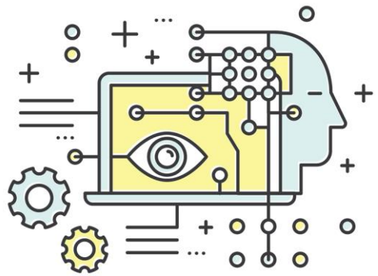
Latest Trends in Data Analytics

Latest Trends in Data Analytics

Cognitive Computing

Augmented Reality

Graph Analytics



Automated Machine Learning

Open Source AI

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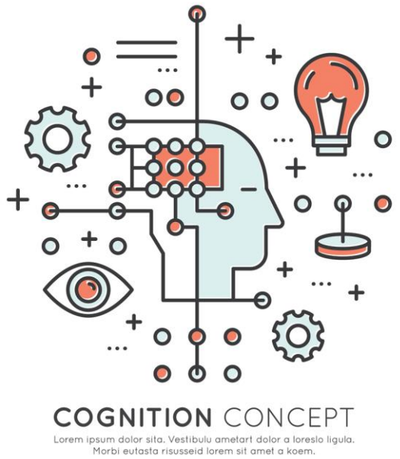
Cognitive Computing

Cognitive Computing

Cognitive computing is an advanced type of artificial intelligence in the cybersecurity domain.



It uses machine learning algorithms and deep learning networks to learn from human interactions and provides actionable insights.

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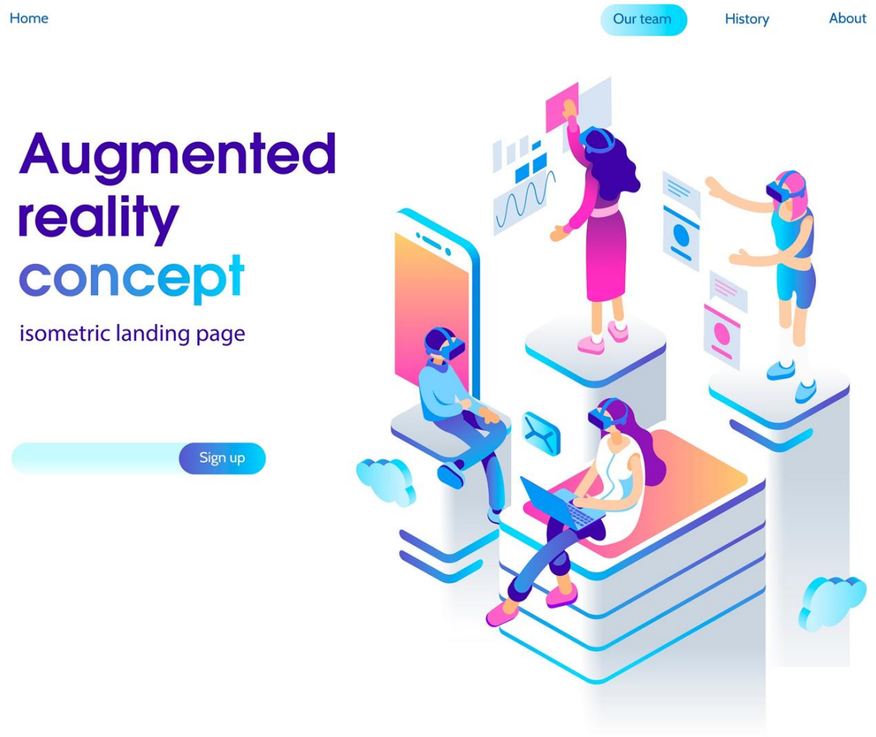
Augmented Reality

Augmented Reality

According to Gartner Inc., augmented analytics will be the dominant driver of new purchases of business intelligence and analytics by 2020.

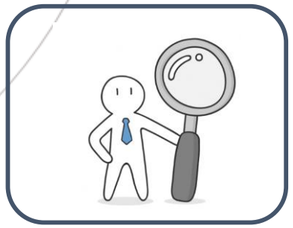


Augmented Reality

Augmented analytics

Preparing data

Building models



Analyzing data

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Graph Analytics

Graph Analytics

Graph analytics is also known as network analytics and uses graphs to analyze data.

It is used for detecting crimes, spotting frauds, and applying influencer analysis in social network communities.

Graph Analytics

Graph analytics highlights dominant edges.

Example: A large number of payments between bank accounts may indicate a money laundering activity.

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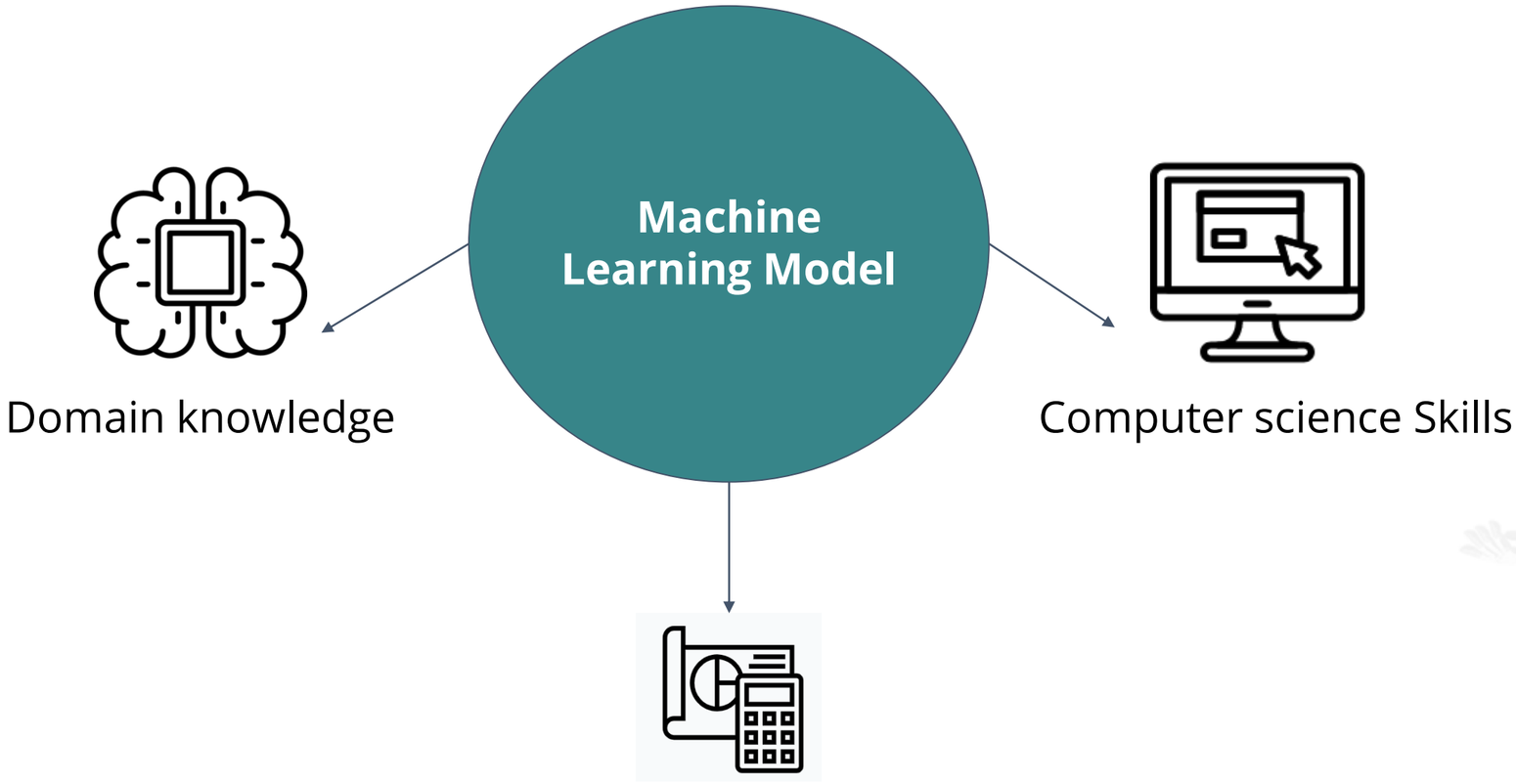
Automated Machine Learning



It involves a lot of tasks and it is prone to human errors and bias.

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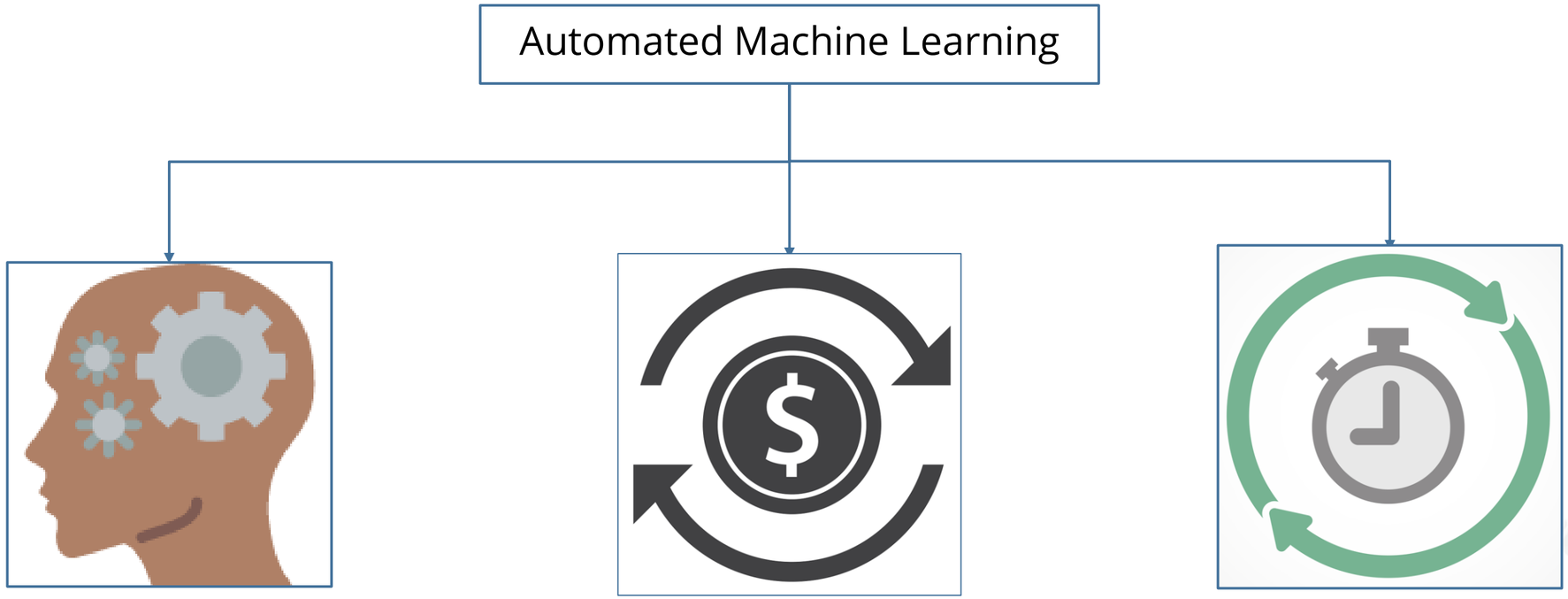
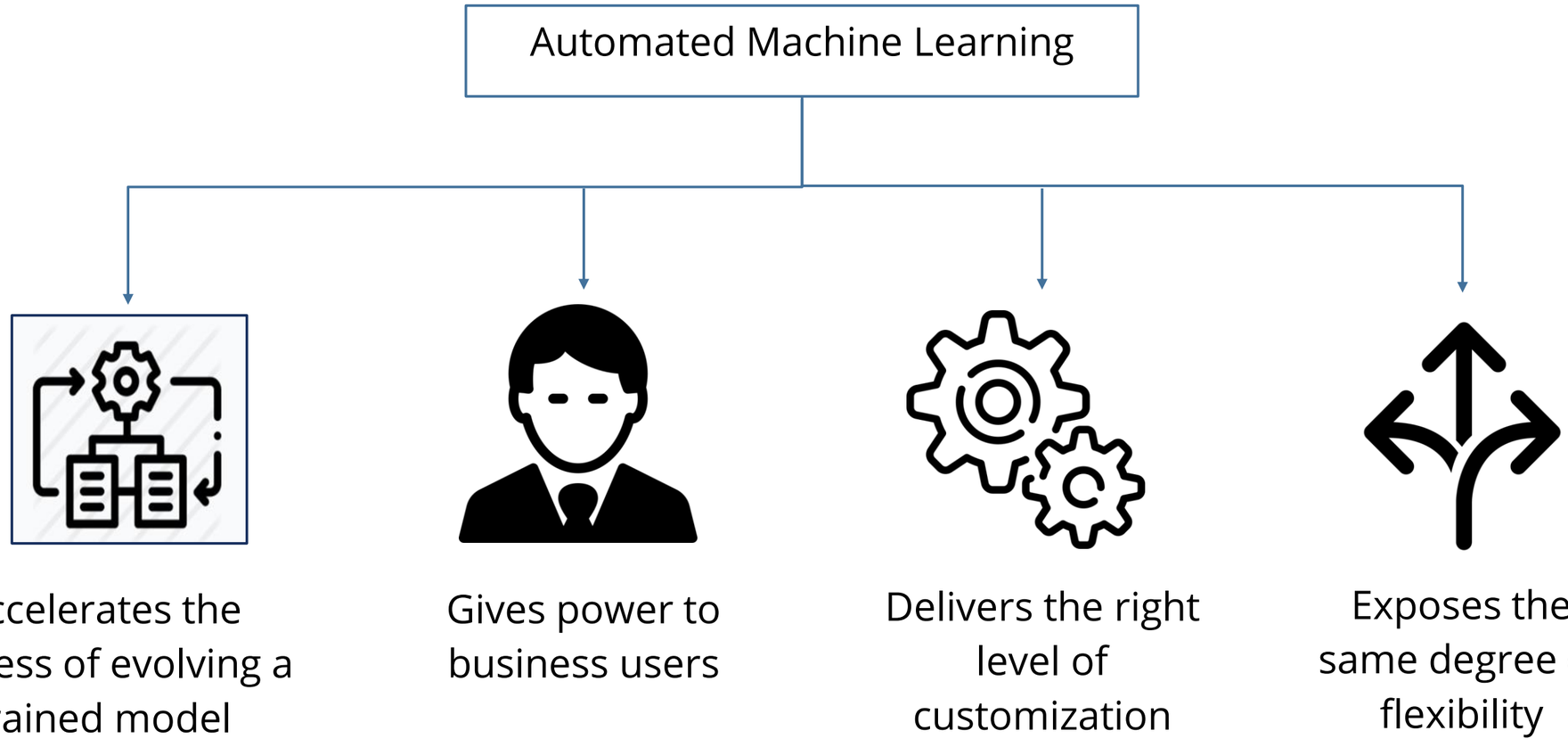


Automated Machine Learning



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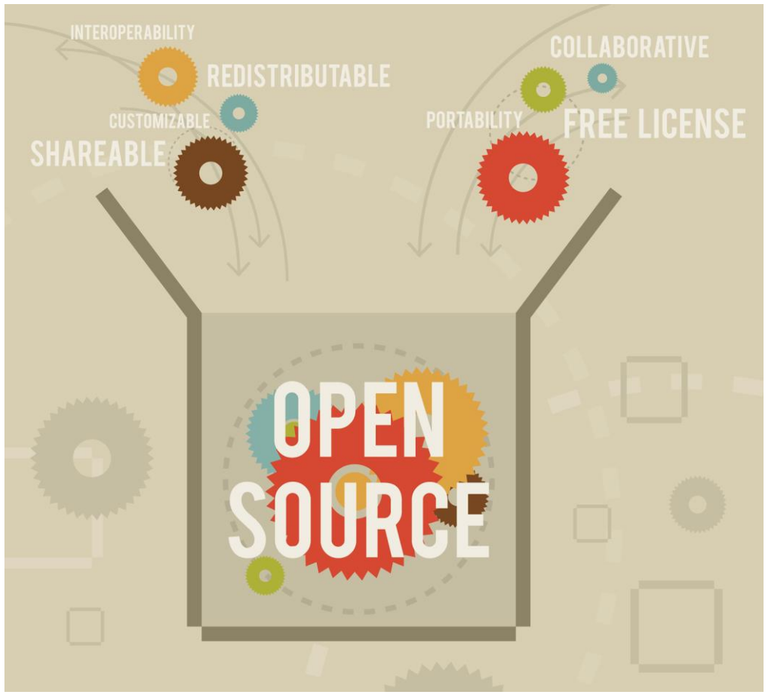
Open Source AI

Open Source AI

Open source software has produced iconic innovations like the Firefox web browser, Apache server software, and the Linux OS.



In open source AI, AI software libraries and algorithms are freely available to developers and entrepreneurs.

Open Source AI

Many cloud-based technologies have their roots in open-source projects.

AI is expected to follow the trend as companies seek collaboration and knowledge sharing.

Key Takeaways

- Customer analytics framework helps perform data analysis in an organized way and allows to focus on the business outcome.
- Business needs, data understanding, data preparation, modeling, and model monitoring are the different phases of the analytics framework.
- Cognitive computing, augmented reality, graph analytics, automated machine learning, and open source AI are some of the latest trends.