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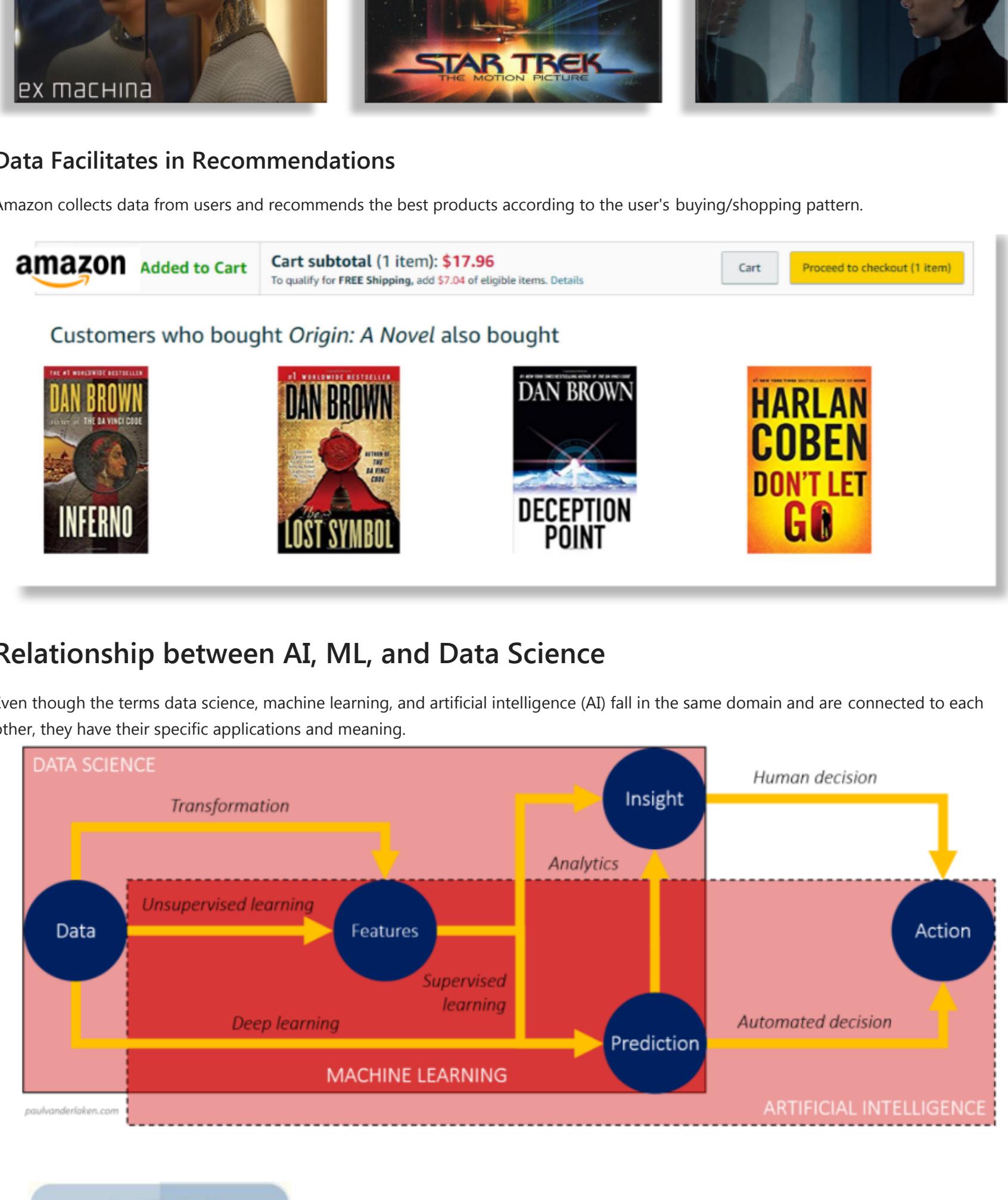
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## Emergence of Artificial Intelligence

### Data Economy

It refers to how much data has grown over the past few years and how much more it can grow in the coming years.

#### Data Economy



## Emergence of Artificial Intelligence

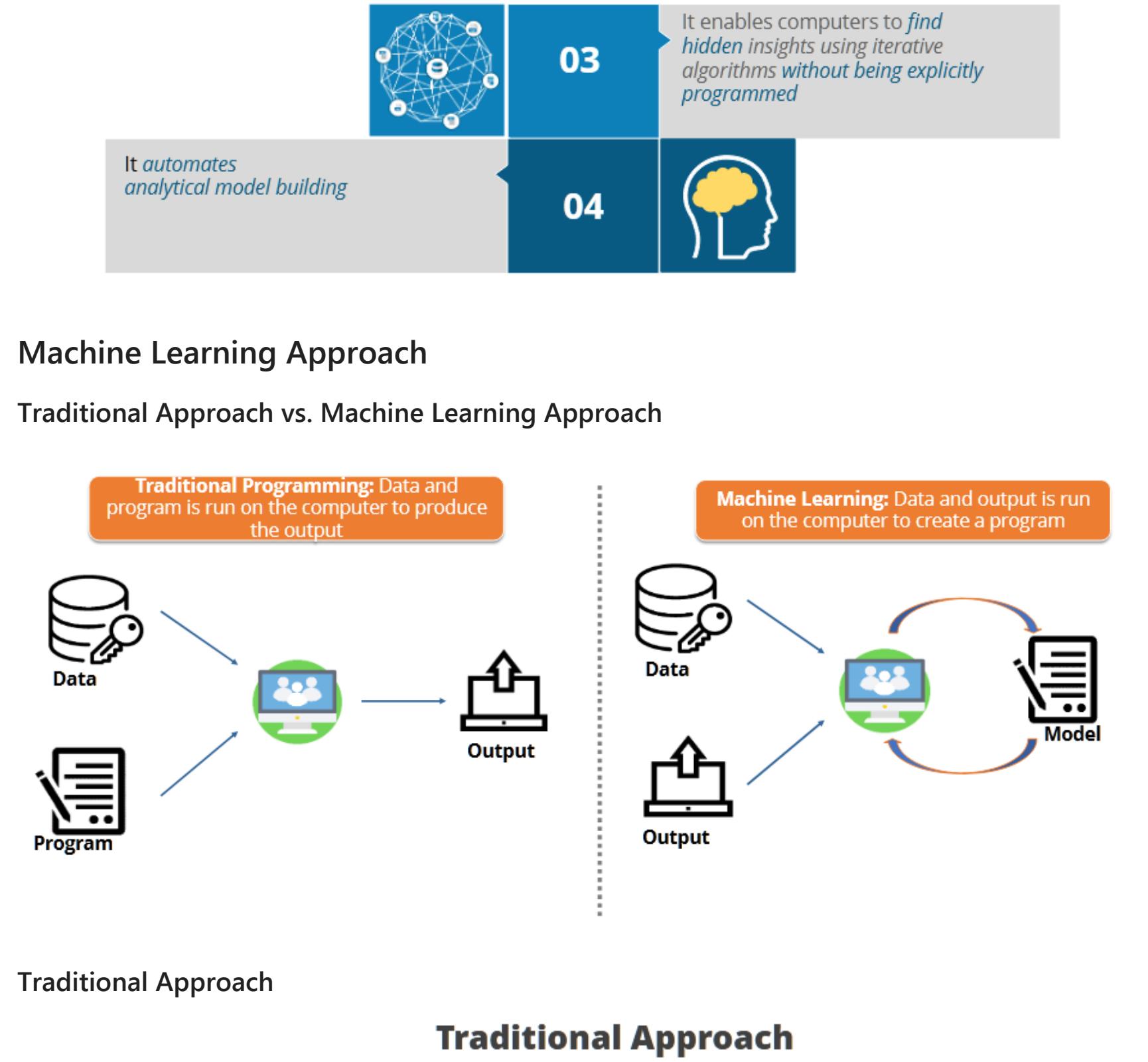
Science associated with data is going toward a new paradigm where one can teach machines to learn from data and derive a variety of useful insights giving rise to Artificial Intelligence.

### Definition of Artificial Intelligence

Artificial Intelligence refers to intelligence displayed by machines that simulates human and animal intelligence.

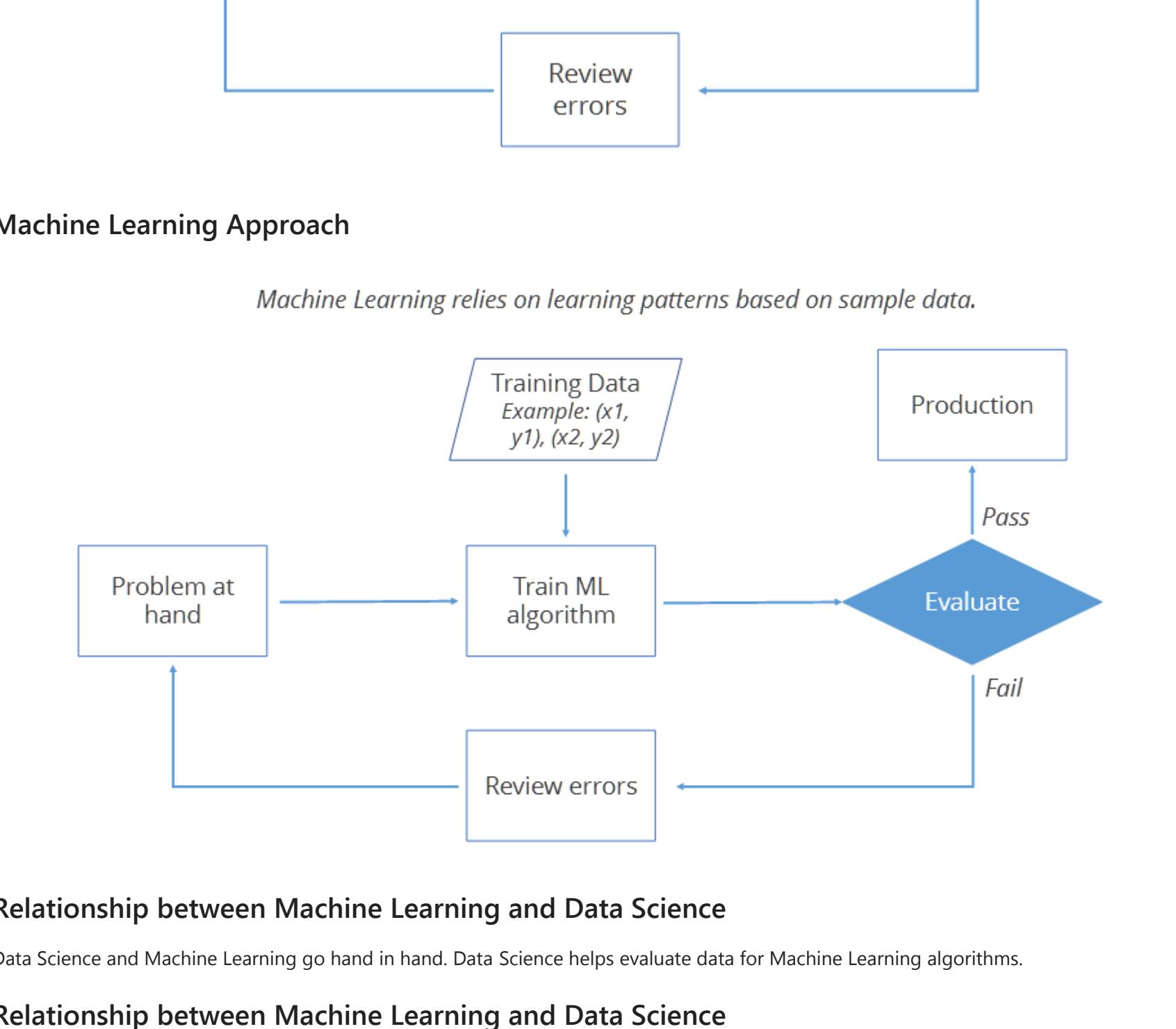
### Artificial Intelligence in Practice

AI is redefining industries by providing greater personalization to users and automating processes.



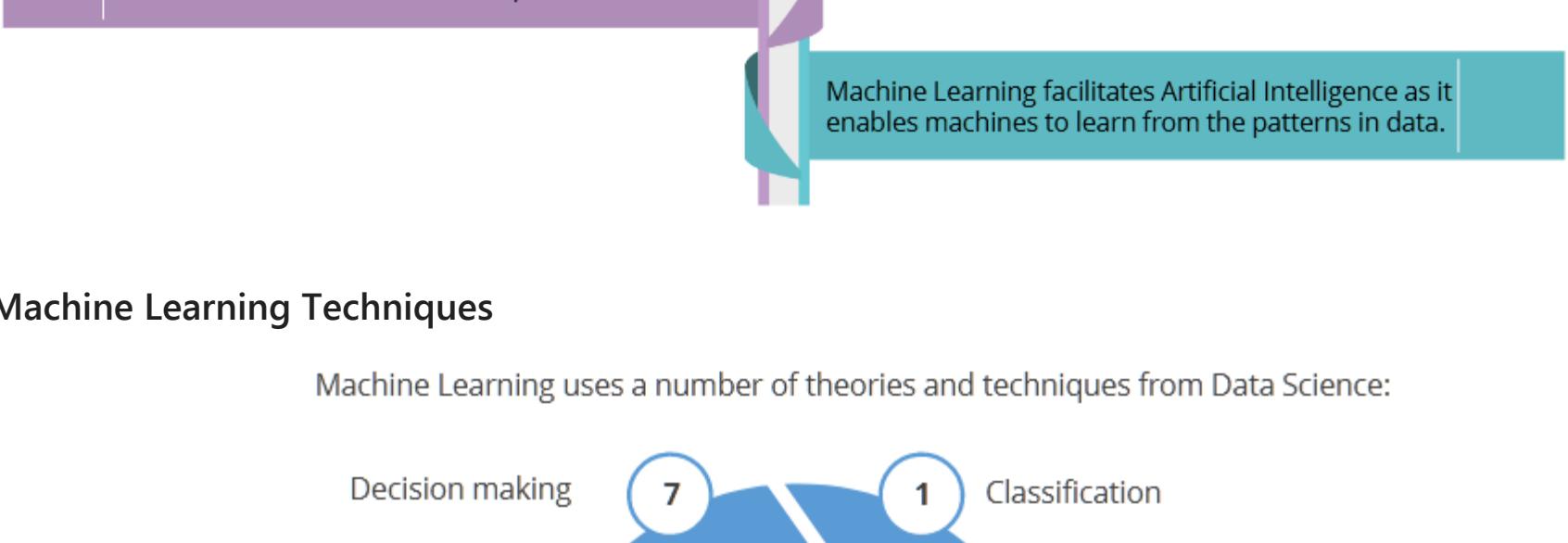
## Sci-Fi Movies with the Concept of AI

Few AI films spanned through the decades that reflect the everchanging spectrum of our emotions regarding the machines we have created.



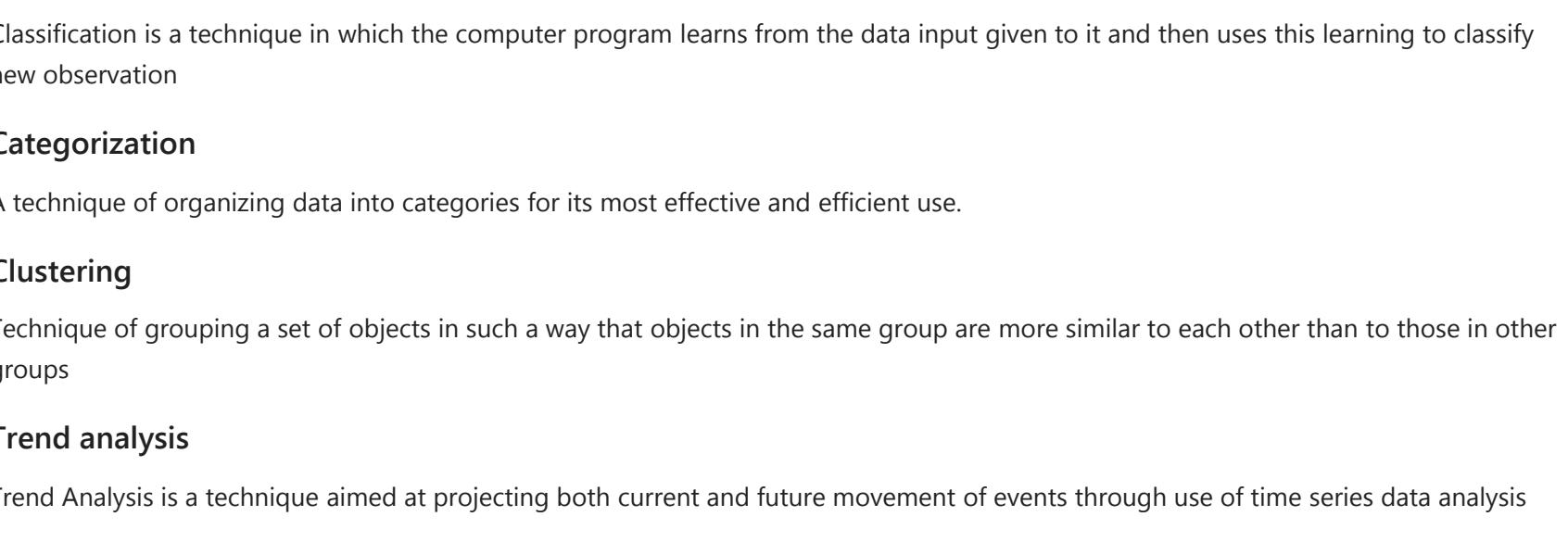
## Data Facilitates in Recommendations

Amazon collects data from users and recommends the best products according to the user's buying/shopping pattern.



## Relationship between AI, ML, and Data Science

Even though the terms data science, machine learning, and artificial intelligence (AI) fall in the same domain and are connected to each other, they have their specific applications and meaning.



### Definition of Machine Learning

The capability of Artificial Intelligence systems to learn by extracting patterns from data is known as Machine Learning.

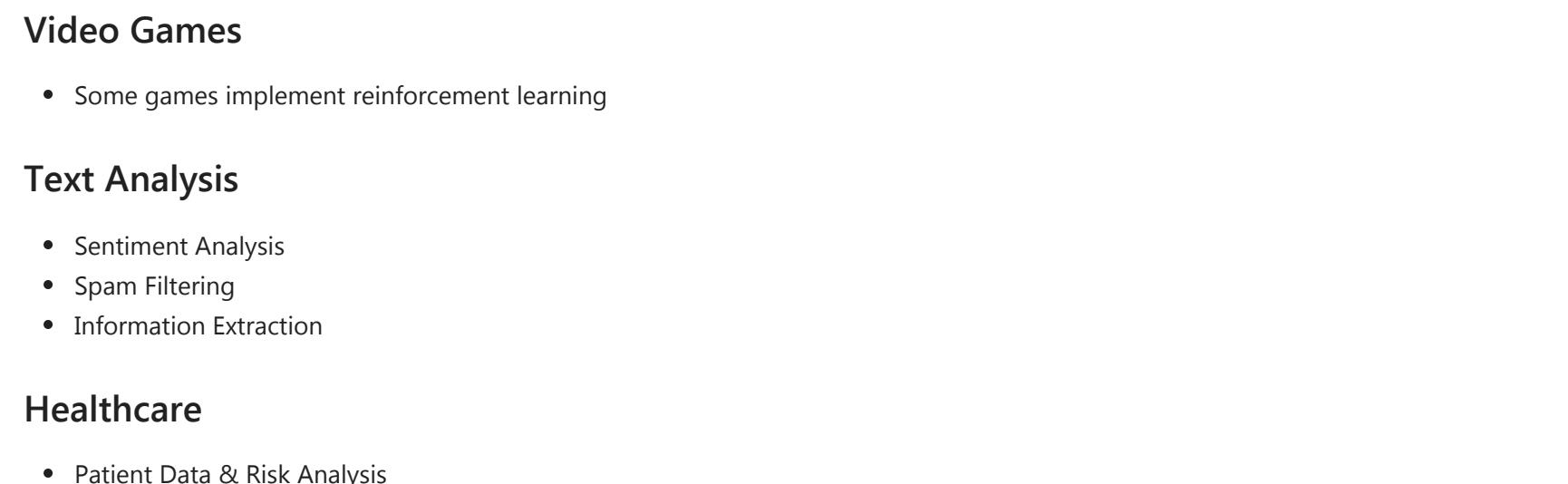
### Features of Machine Learning

- |  |           |  |
|--|-----------|--|
|  | <b>01</b> | It uses the data to <b>detect patterns</b> in a dataset and <b>adjust program actions accordingly</b> .                          |
|  | <b>02</b> | It <b>focuses on the development of computer programs</b> that can teach themselves to grow and change when exposed to new data. |
|  | <b>03</b> | It enables computers to <b>find hidden insights</b> using iterative algorithms without being explicitly programmed.              |
|  | <b>04</b> | It <b>automates analytical model building</b> .  |

- |  |           |  |
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### Machine Learning Approach

#### Traditional Approach vs. Machine Learning Approach



### Traditional Approach

#### Traditional Approach

Traditional programming relies on hard-coded rules.



### Machine Learning Approach

Machine Learning relies on learning patterns based on sample data.



### Relationship between Machine Learning and Data Science

Data Science and Machine Learning go hand in hand. Data Science helps evaluate data for Machine Learning algorithms.

### Relationship between Machine Learning and Data Science



### Machine Learning Techniques

Machine Learning uses a number of theories and techniques from Data Science:



#### Classification

Classification is a technique in which the computer program learns from the data input given to it and then uses this learning to classify new observation.

#### Categorization

A technique of organizing data into categories for its most effective and efficient use.

#### Clustering

Technique of grouping a set of objects in such a way that objects in the same group are more similar to each other than to those in other groups.

#### Trend analysis

Trend Analysis is a technique aimed at projecting both current and future movement of events through use of time series data analysis.

#### Anomaly detection

Anomaly detection is a technique to identify cases that are unusual within data that is seemingly homogeneous.

#### Visualization

Technique to present data in a pictorial or graphical format. It enables decision makers to see analytics presented visually.

#### Decision making

A technique/skill which provides you with the ability to influence managerial decisions with data as evidence for those possibilities.

### Applications of Machine Learning

Artificial intelligence and Machine learning are being increasingly used in various functions such as:

- |  |                         |
|--|-------------------------|
|  | <b>Image Processing</b> |
|  | <b>Healthcare</b>       |
|  | <b>Text Analysis</b>    |
|  | <b>Video Games</b>      |
|  | <b>Robotics</b>         |
|  | <b>Data Mining</b>      |

### Image Processing

- Image tagging and recognition
- Self-driving cars
- Optical Character Recognition (OCR)

### Robotics

- Human simulation
- Humanoid Robot
- Industrial robotics

### Data Mining

- Anomaly detection
- Grouping and Predictions
- Association rules in e-commerce websites

### Video Games

- Some games implement reinforcement learning

### Text Analysis

- Sentiment Analysis

- Span Filtering

- Information Extraction

### Healthcare

- Patient Data & Risk Analysis

- Virtual Assistance

- Drug Discovery

- Medical Imaging and Diagnosis

- Wearables

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