Trends in Computer Science

4COSC008C

Overview of Machine Learning. Describe and compare two different machine learning techniques.

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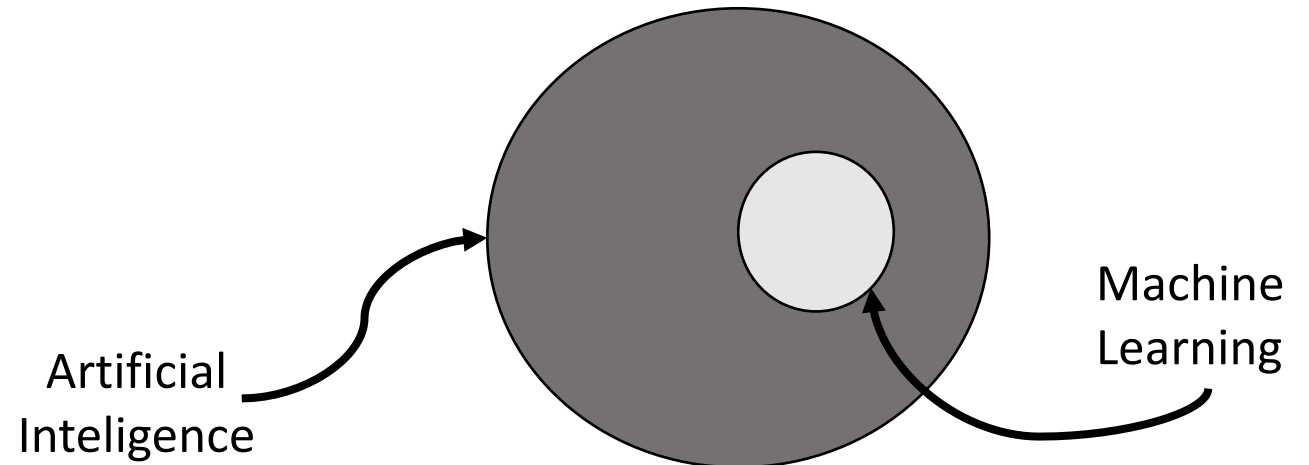IIT Number: 20231158
Group Number: G5-2

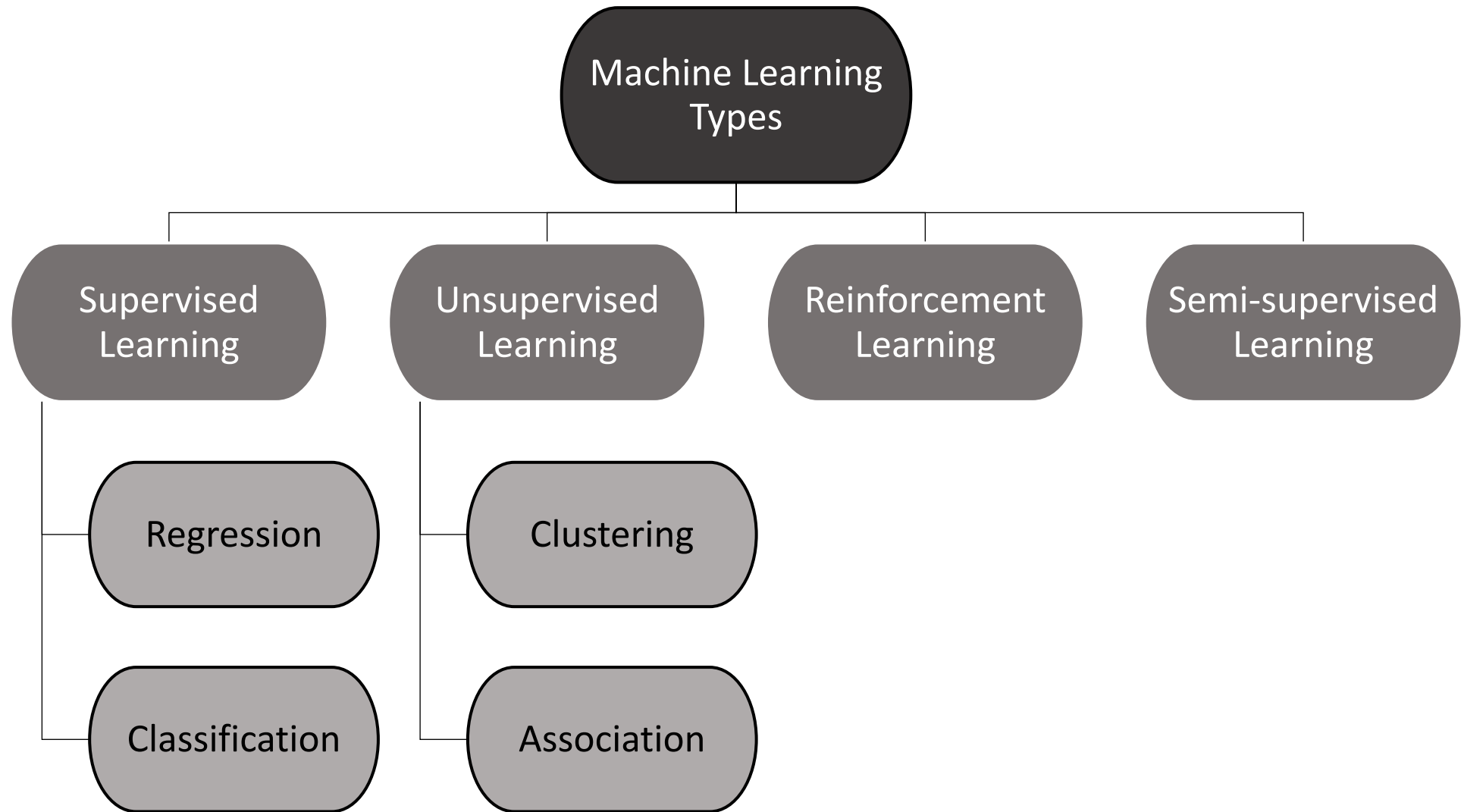| Name	UOW Number	IIT Student Number
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Overview of Machine Learning

- Machine Learning (ML) is the art of empowering machines to learn and make decisions from data, without explicit programming.
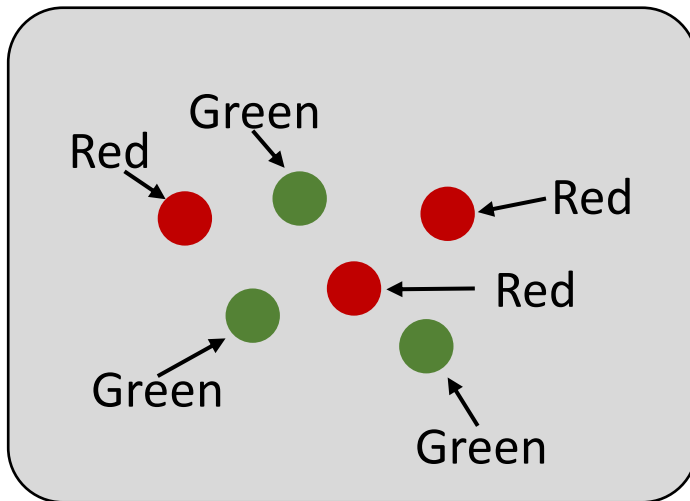
Data Collection	Pre-processing	Training	Evaluation	Deployment
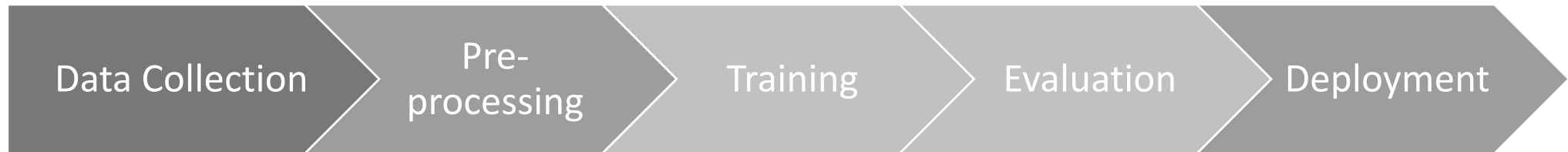
Process of the machine learning

Artificial Inteligence

Machine Learning

Supervised learning

- Labelled data

- Given input(x) and output(y) pairs
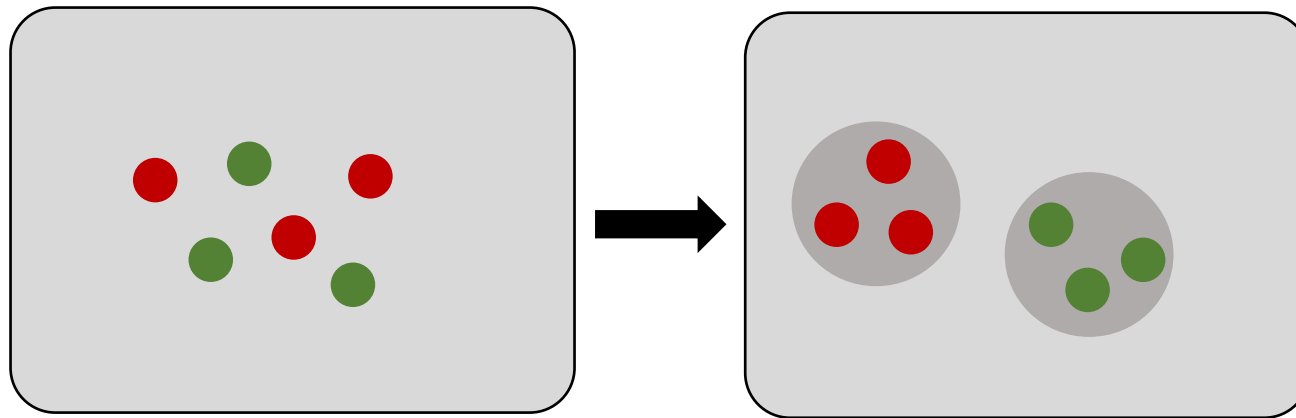
- Learn a function f(*x*) to predict *y* given *x*

X : 🟢 / 🔴
Y : Green / Red

Types of Supervised learning,
1. Classification: Sorting data by defined classes
2. Regression: Forecasting continuous values

Unsupervised learning

- Extracting patterns and relationships from unlabelled data without predefined outputs.

- Given only input(x) data

Types of Unsupervised learning,
1. Clustering: Grouping similar objects
2. Assosiation: Identifyng relationships among given data

X : 🟢 / 🔴

Unsupervised learning vs Supervised learning

Supervised Learning	Unsupervised Learning
Labelled Data	Unlabelled Data
Data set contains input (x) and output data (y)	Only have input data (x)
Learns a mapping between input and output pair and enables prediction on unseen data.	Discovers hidden patterns and structures within the data.
Spam Filtering, Fraud detection, Machine translation	Market segmentation, Music recommendation, Outlier detection

Conclusion

- Machine learning(ML) is a rapidly growing field that helps people be productive.

- Supervised, Unsupervised and Reinforcement learning are the main types of ML.

- When we know the inputs and output pairs and when we need to predict something we use Supervised learning.

- When we need to discover new patterns only with the input variables we use Unsupervised learning.

References

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