



# Information Sheet

## Machine Learning

Tags: Artificial Intelligence, AI, Machine Learning



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*Machine Learning (ML) is a component of Artificial intelligence whereby computer systems are able to ingest large amounts of data and learn from that information to continuously improve and support decision-making. It is a data science technique that allows computers to use existing data to forecast future behaviours, outcomes, and trends.*

Machine Learning is an effective way of improving decision-making, but comes with its own risks and limitations.

### Machine Learning Techniques

Different Machine Learning algorithms use different techniques to learn, and broadly fit within three types:

Supervised Learning	Unsupervised Learning	Reinforcement Learning
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**Supervised Learning** uses a set of labelled examples from data provided to the system on which to base predictions. It's useful where the outcome is generally understood.

**Unsupervised Learning** works without any catalyst for how data should be labelled or classified. It attempts to organise and structure the data by looking for similarities and differences between individual pieces of data. It's useful where the outcome is completely unknown.

**Reinforcement Learning** uses algorithms that learn from outcomes and decide which action to take next. It involves iteratively testing whether the model's predictions are correct, and adjusting accordingly. It's useful where automated systems need to make many small decisions to optimise a system.

There are in fact, many different models available such as:

Text analytics	Deriving information from plain text data
Regression	Making forecasts by estimating the relationship between values
Recommenders	Predicting what someone will be interested in
Clustering	Separating data into different groups
Anomaly detection	Identifying rare or unusual data points
Multiclass classification	Answering complex questions with multiple possible answers
Binary classification	Answering simple questions with yes/no or true/false answers
Image classification	Image processing to classify visual data

### Machine Learning Risks

It's important to understand that Machine Learning Algorithms can suffer from different data biases. Systems trained on a particular dataset may not be able to accurately predict situations outside of the training data.

Choosing appropriate training data is key to ensuring models are free of bias. Ensuring fairness and eliminating bias is a key area of concern for data scientists as well as those charged with the responsibility to oversee the application of Machine Learning and other forms of Artificial Intelligence used in organisations today.

### Cognitive Services

Machine Learning algorithms often utilise other services to assist with decision-making, language interpretation, search capabilities and speech and vision processing. [See Information Sheet: Cognitive Services.](#)

#### About us

365 Architechs is a technology company based in Brisbane, Australia. We deliver solutions to support organisations on their digital transformation including cloud, modern applications, cybersecurity and artificial intelligence to drive profitability, growth and achievement of strategic objectives.  
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