what is ⚙ machine learning?

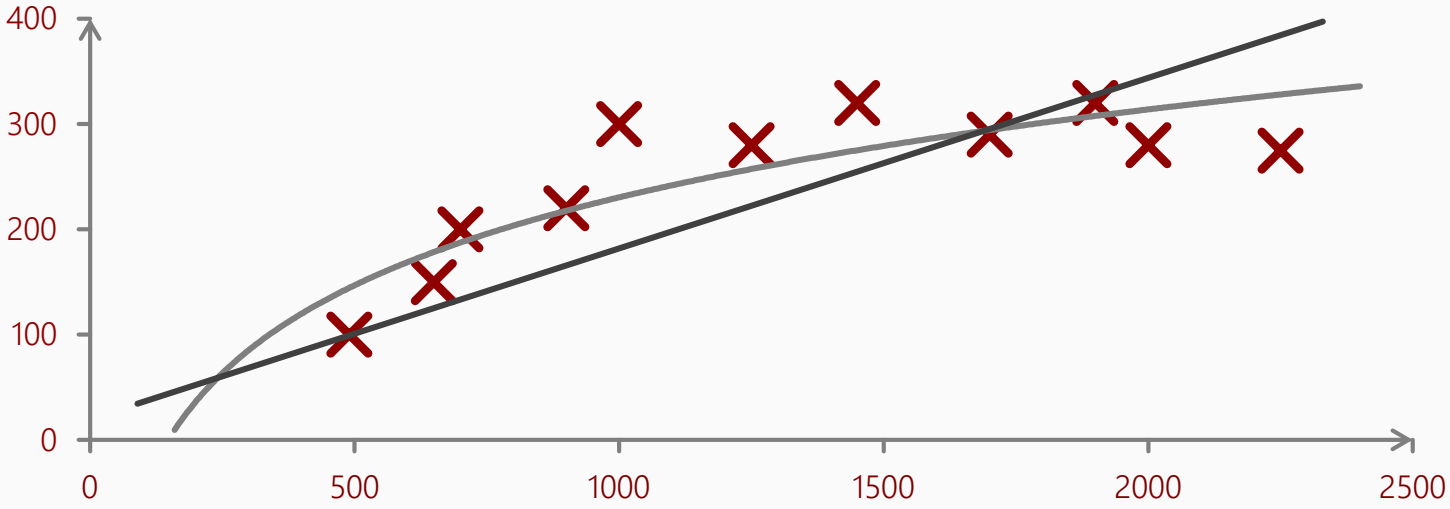
machine learning defined

Arthur Samuel (1959): Machine learning is a field of study that gives computers the ability to learn without being explicitly programmed.

Tom Mitchell (1998): Well- posed learning problem is defined as a computer program set to learn from experience E with respect to some task T and some performance measure P, it its performance on T, as measured by P, improves with experience.

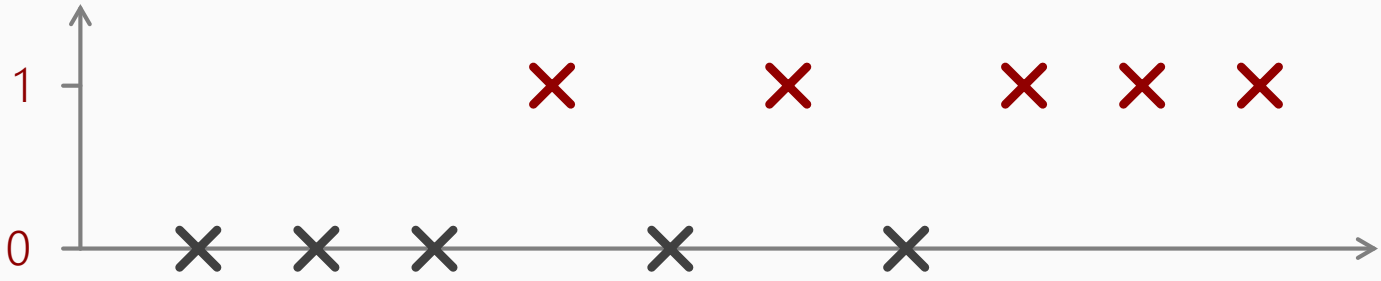
supervised learning

supervised learning gives a learning an algorithm the correct predicted values of the target feature. The following illustration is a regression example of the latter:



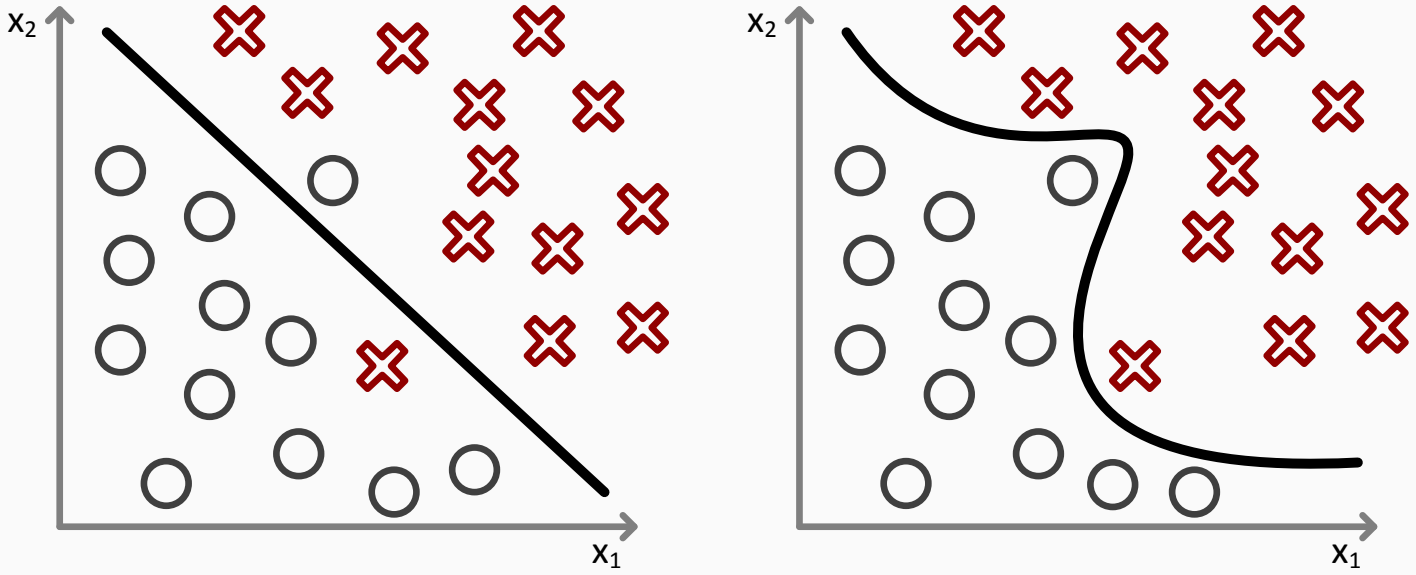
The illustration includes both a linear regressive model fitting the data and a quadratic equation fitting the data above. The model predicts the output of continuous variables

Another supervised learning example is displayed as a classification problem below:



Discrete values plotting the training examples seen above are plotted differently below:

The data is alternatively plotted on a single lined with their values denoted in shapes Other machine learning algorithms will often processes multiple features seen below:



The illustration displays a multivariate logistic regression equation with both linear decision boundaries and more complex decision boundaries commonly used

Complex decision boundaries in learning algorithms are more accurate in classifying examples that contain more extreme features prone to linear misclassification

unsupervised learning

Unsupervised learning applies learning algorithms to unlabeled datasets in order to discover patterns amongst the unlabeled examples within the dataset

The illustration below visually compares the difference between supervised and unsupervised learning situations: