Machine Learning In Python

Subject : Classification Using Decision Tree, Regression in Supervised Learning

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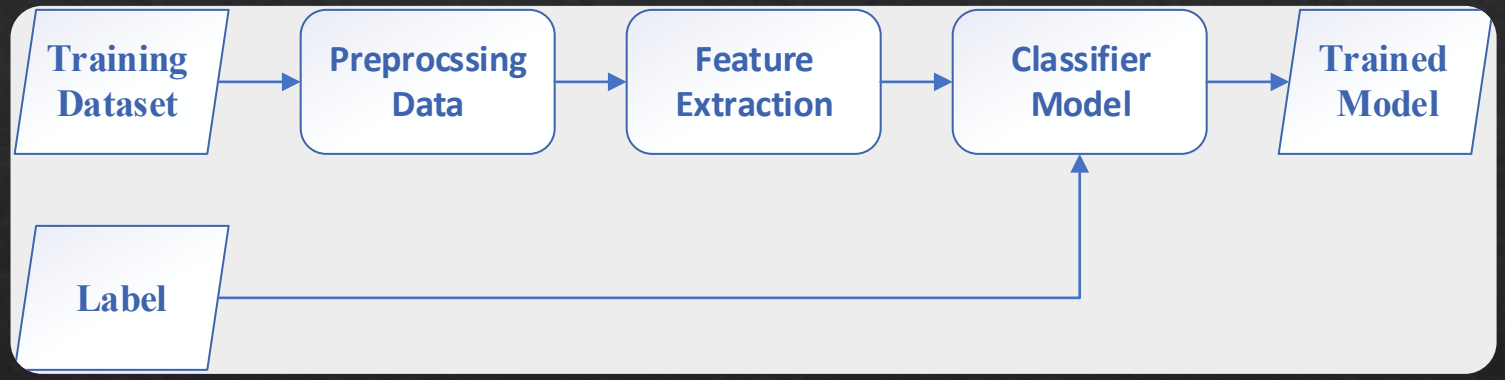
Classification Using Decision Tree

Classification In Supervised Learning Framework

Training Phase



Testing Phase

Classification Using Decision Tree

Classifier Models :

Decision Tree

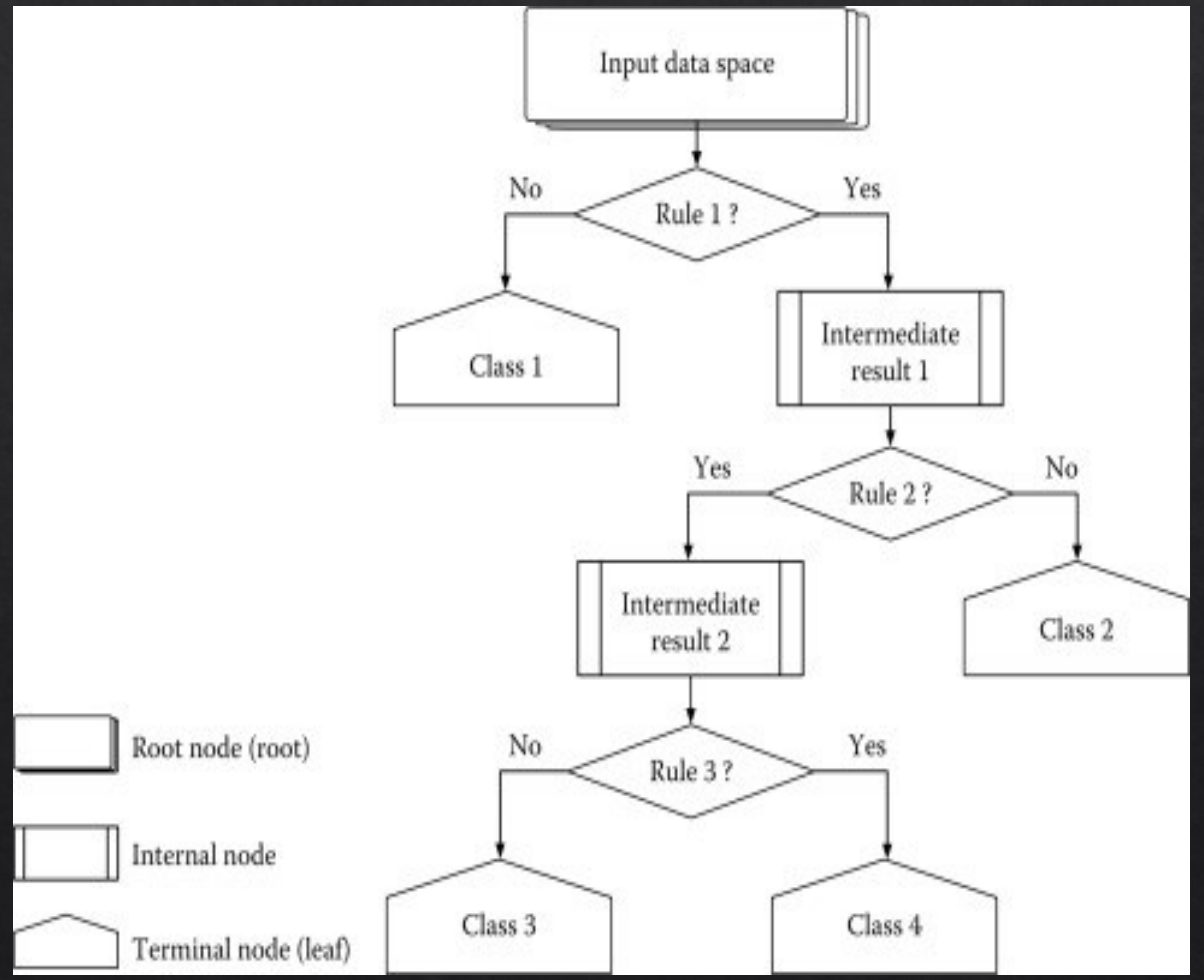
- Decision Tree is a supervised classifier model which is used in machine learning applications.
- Decision Tree is a nonparametric supervised classifier model.
- It uses a decision tree (as a predictive model) to go from observations about an item (represented in the branches) to conclusions about the item's label value.
- Generally, a decision tree comprises of two basic parts including nodes and branches

Classification Using Decision Tree

Decision Tree for multiclass problems

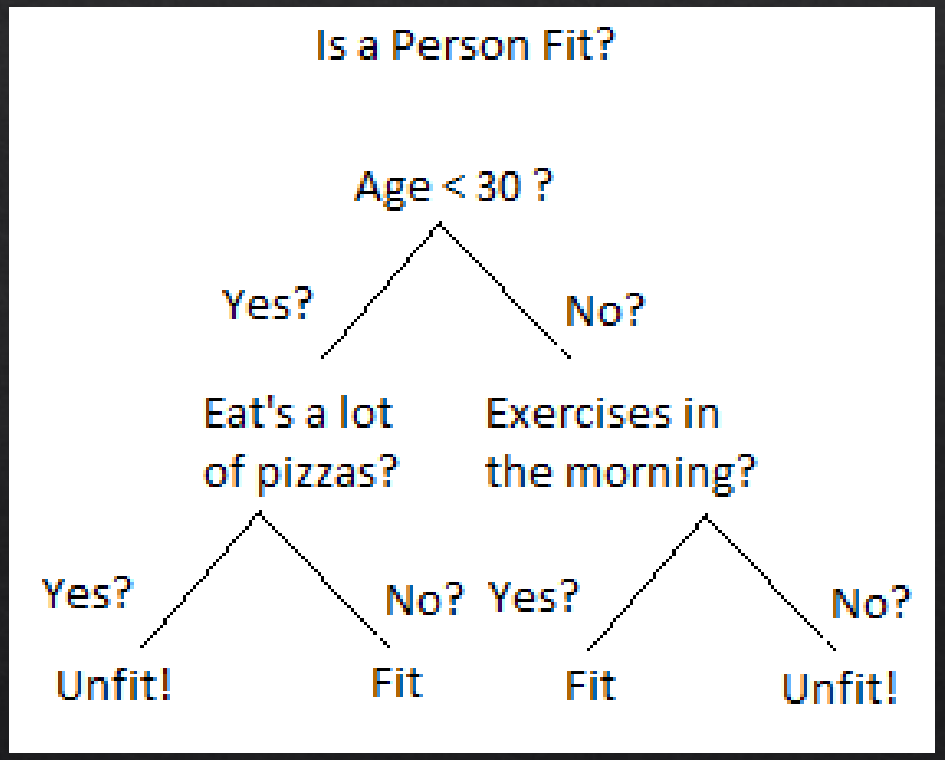
Training: The tree and the rules are constructed

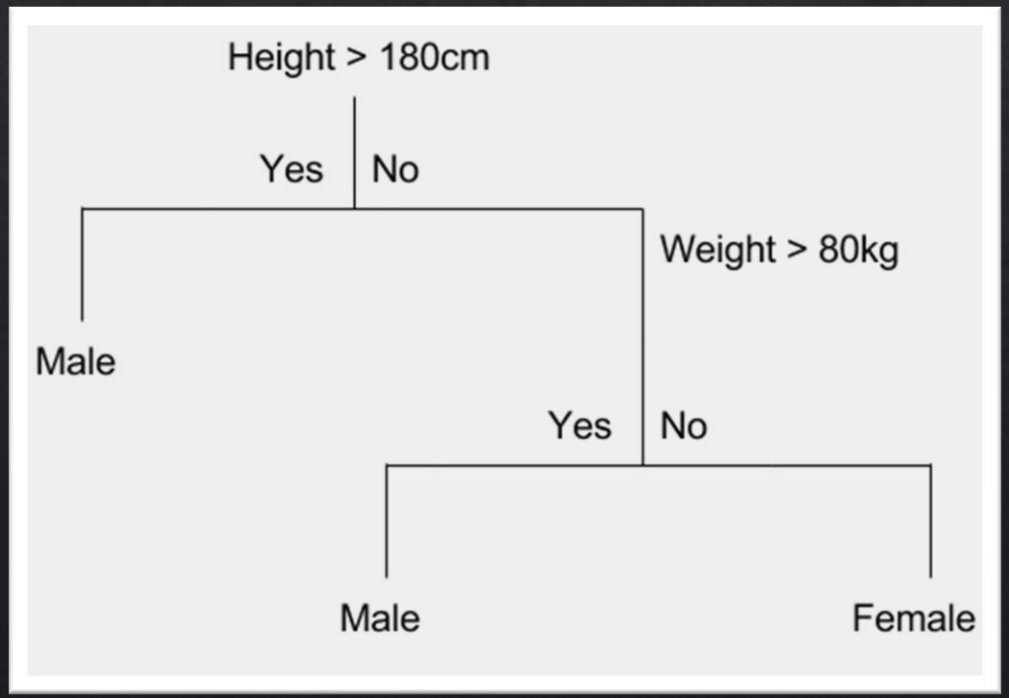
Testing: The sample test is applied to the tree and Its rules.



Classification Using Decision Tree

Decision Tree for binary class problems





Classification Using Decision Tree

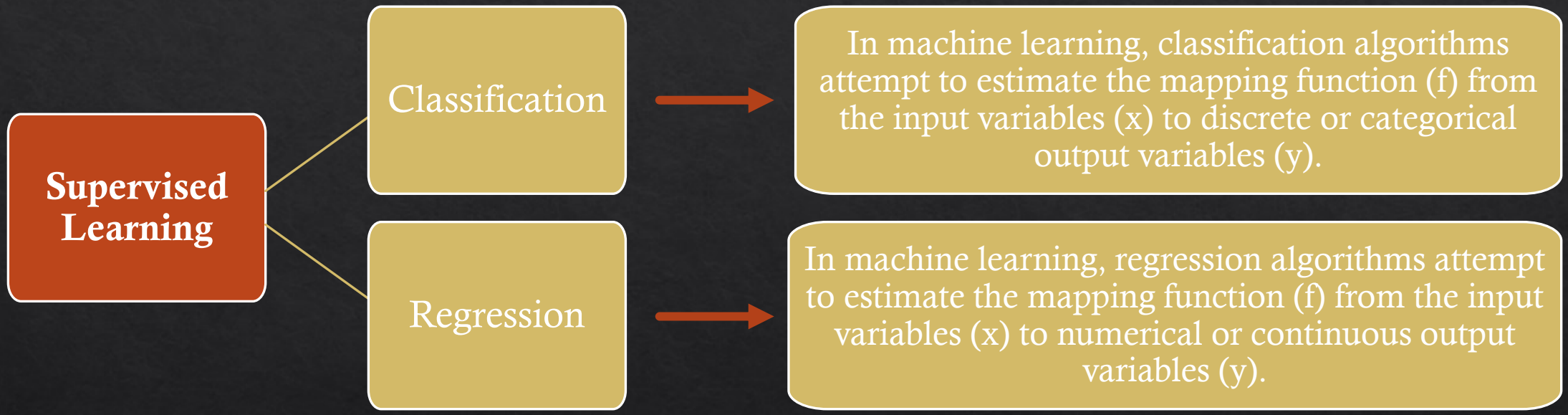
Advantageous of Decision Tree

- Inexpensive to construct.
- Extremely fast at classifying unknown records.
- Easy to interpret for small-sized trees
- Accuracy comparable to other classification techniques for simple data sets.
- Excludes unimportant features.

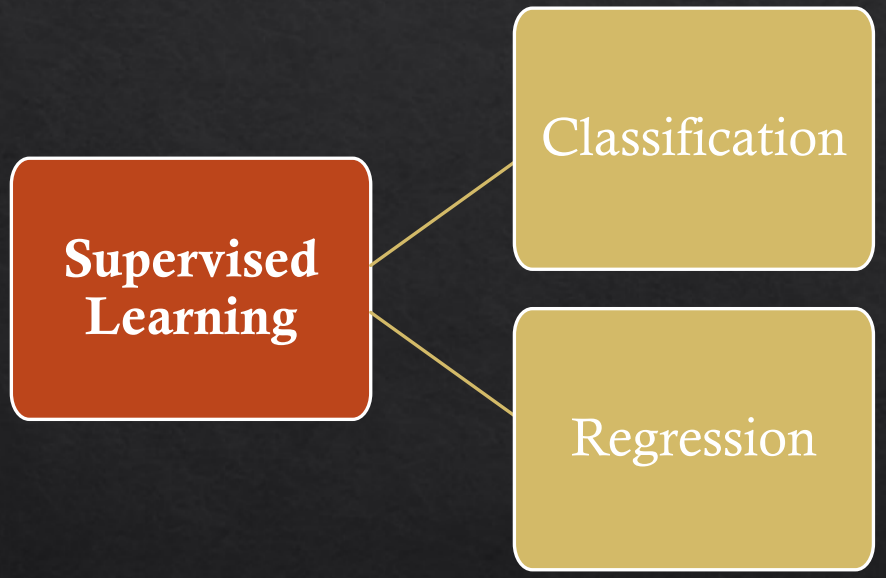
Disadvantageous of Decision Tree

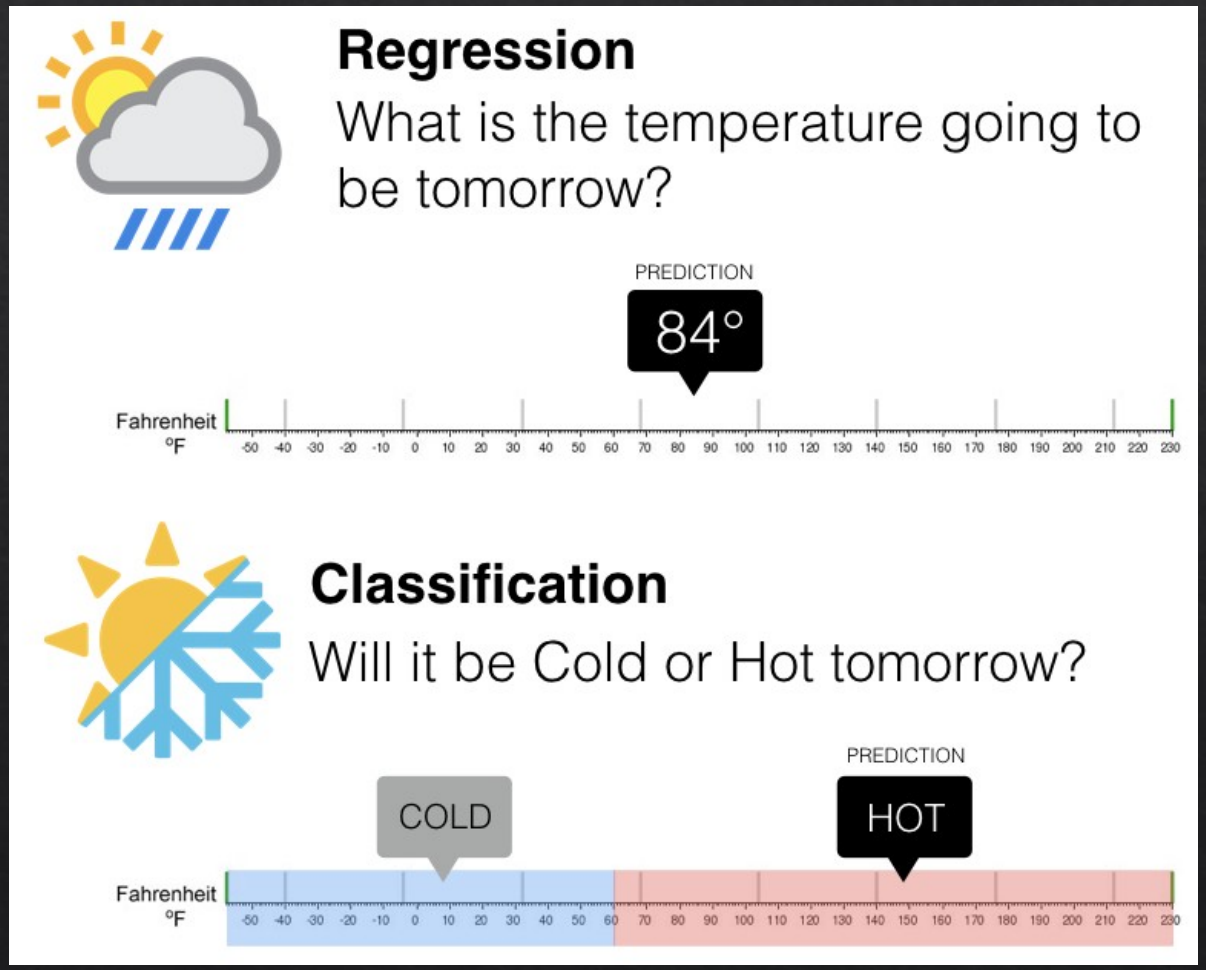
- Easy to overfit.
- Decision Boundary restricted to being parallel to attribute axes.
- Decision tree models are often biased toward splits on features having a large number of levels.
- Small changes in the training data can result in large changes to decision logic.
- Large trees can be difficult to interpret and the decisions they make may seem counter intuitive.

Regression in Supervised Learning

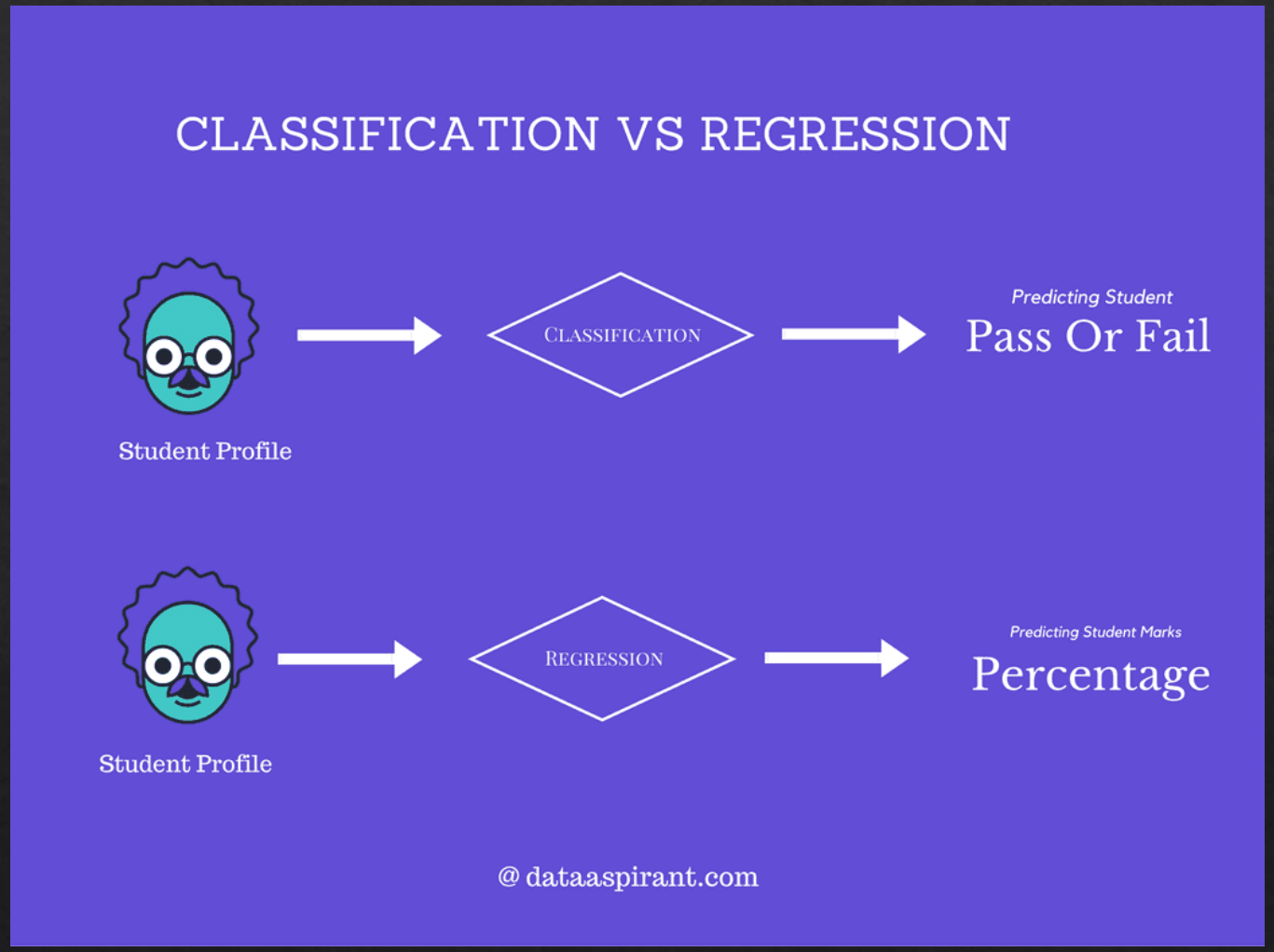


Regression in Supervised Learning

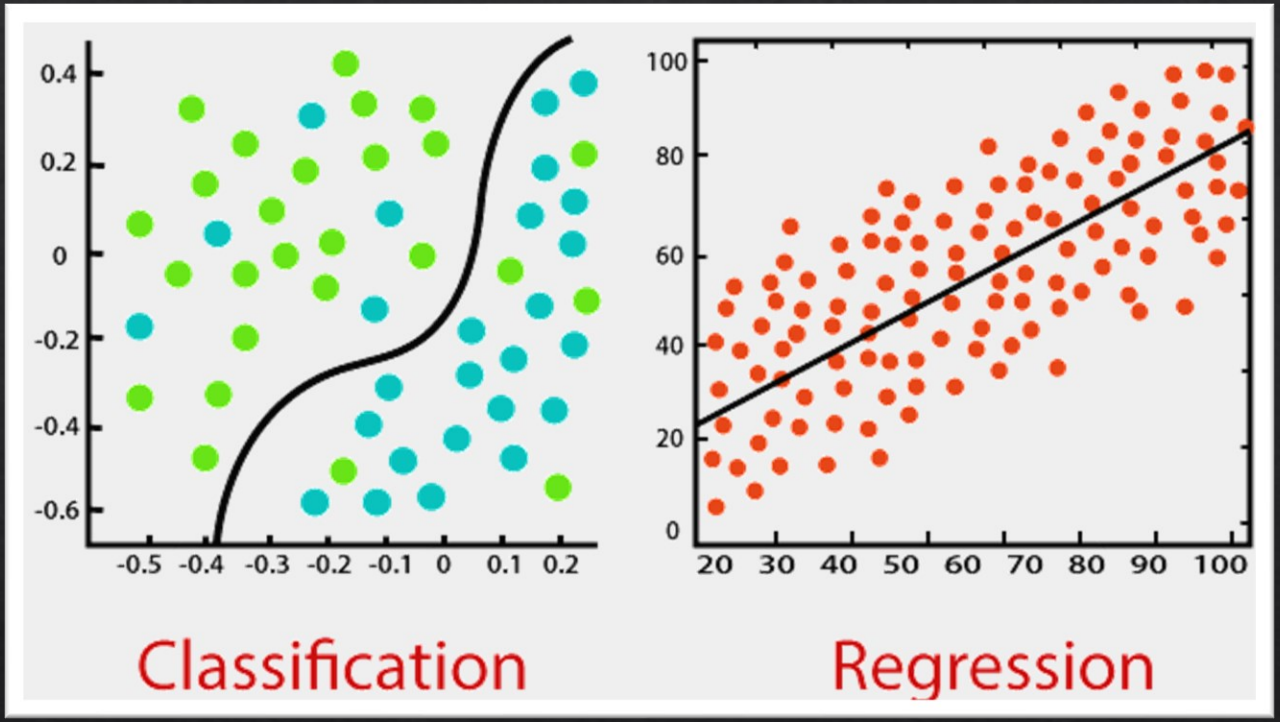




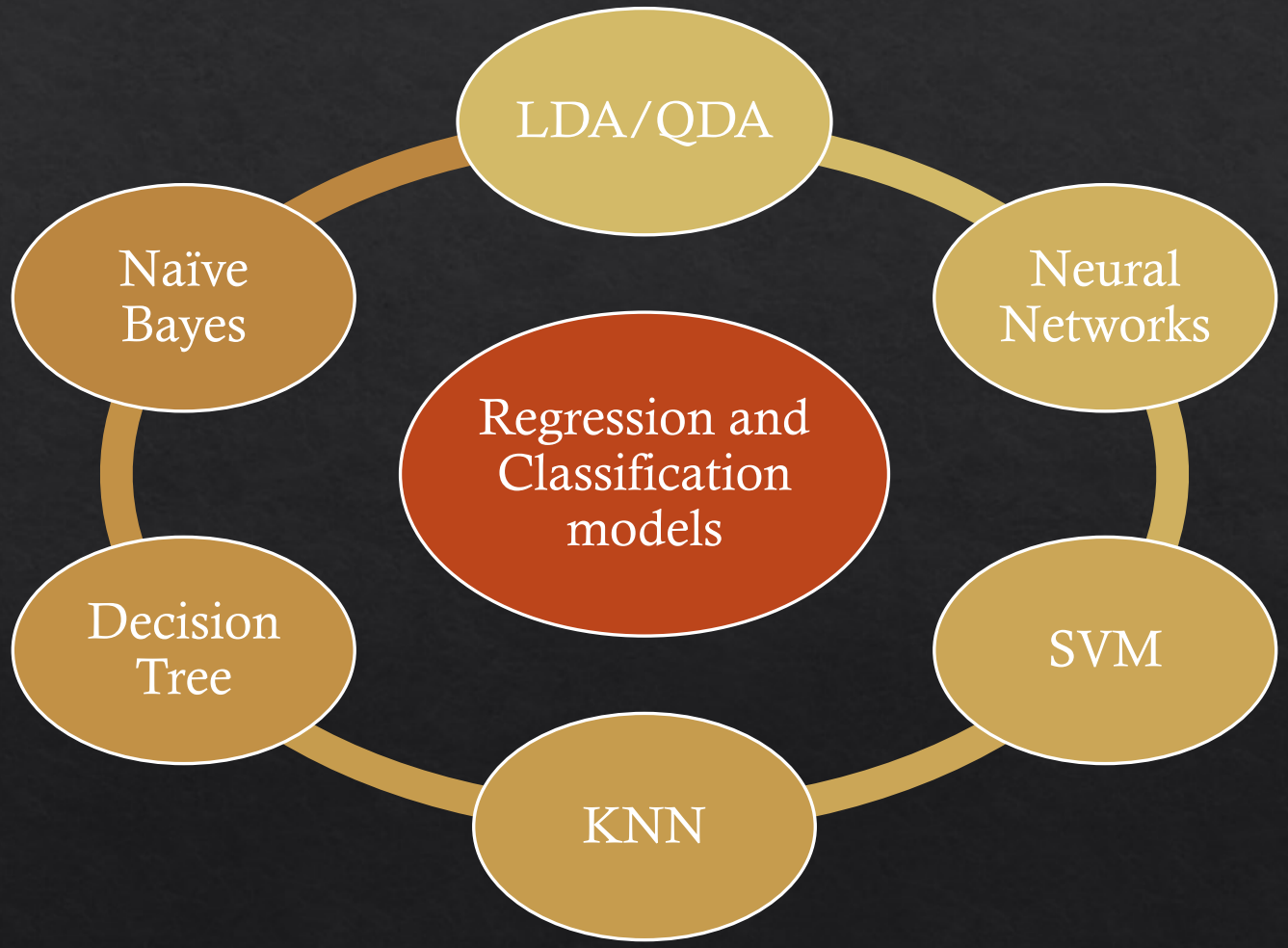
Regression in Supervised Learning



Regression in Supervised Learning



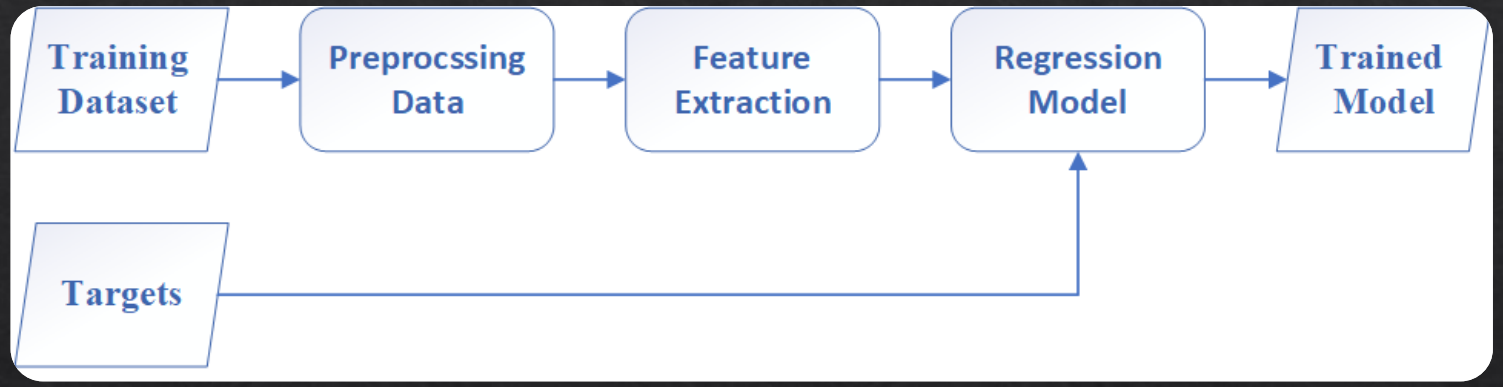
Regression in Supervised Learning



Regression Framework

Regression In Supervised Learning Framework

Training Phase



Testing Phase