COMP9417 – Machine Learning

Tutorial: Tree Learning

z5325987 – WanqingYang

Question 1. Expression of Trees

(a) $A \wedge \neg B$

$A = t$:
| $B = t: false$
| $B = f: true$
$A = f: false$

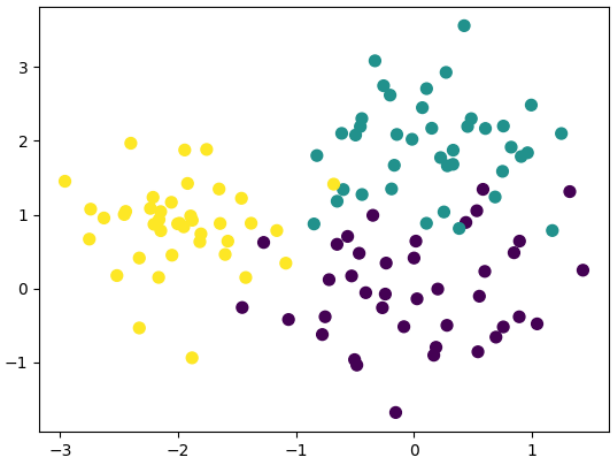
(d) $[A \wedge B] \vee [C \wedge D]$

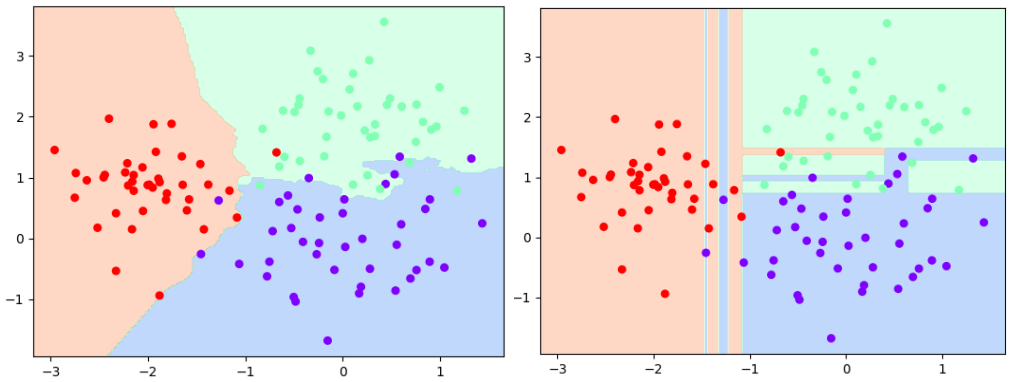
$A = t$:
| $B = t: true$
| $B = f$:
| | $C = t$:
| | | $D = t: true$
| | | $D = f: false$
| | $C = f: false$
$A = f: false$

As the complexity of the function increases, the branches of the decision tree increase.

Question 4. Working with Decision Trees

(a) The decision boundary of KNN algorithm is irregular. With the increase of k, the boundary becomes smoother.
The decision boundary of decision tree algorithm consists of straight lines perpendicular to x and y axes.





(b) The decision tree is generated in the resulting plot.

The 3 colors represent different classes (t1, t2, t3).

The 3 values of value represent the number of samples classified as t1, t2 and t3 respectively.

Entropy is gini.