

Decision Trees: From ID3 to J4.8. Prof. Ruiz, Dept. of Computer Science, WPI.

1. Consider the following dataset: Calculate

Entropy of the dataset:

Entropy of Outlook with respect to Target:

Gain of Outlook:

Outlook	Target
sunny	No
sunny	no
overcast	yes
rainy	yes
rainy	yes
rainy	no
overcast	yes
sunny	no
sunny	yes
rainy	yes
sunny	yes
overcast	yes
overcast	yes
rainy	no

2. Consider now the following dataset: Calculate

Entropy of the dataset:

Entropy of Humidity with respect to Target:

Gain of Humidity:

Humidity	Target
65	yes
70	no
70	yes
70	yes
75	yes
80	yes
80	yes
85	no
86	yes
90	no
90	yes
91	no
95	no
96	yes

3. What if a predicting attribute has a missing value?

Entropy of the dataset:

Entropy of Outlook with respect to Target:

Outlook	Target
sunny	No
sunny	no
overcast	yes
?	yes
rainy	yes
rainy	no
overcast	yes
sunny	no
sunny	yes
rainy	yes
sunny	yes
overcast	yes
overcast	yes
rainy	no

Gain of Outlook: