

ARTIFICIAL INTELLIGENCE & CYBER SECURITY

MACHINE LEARNING ITERATIVE DICHOTOMISER

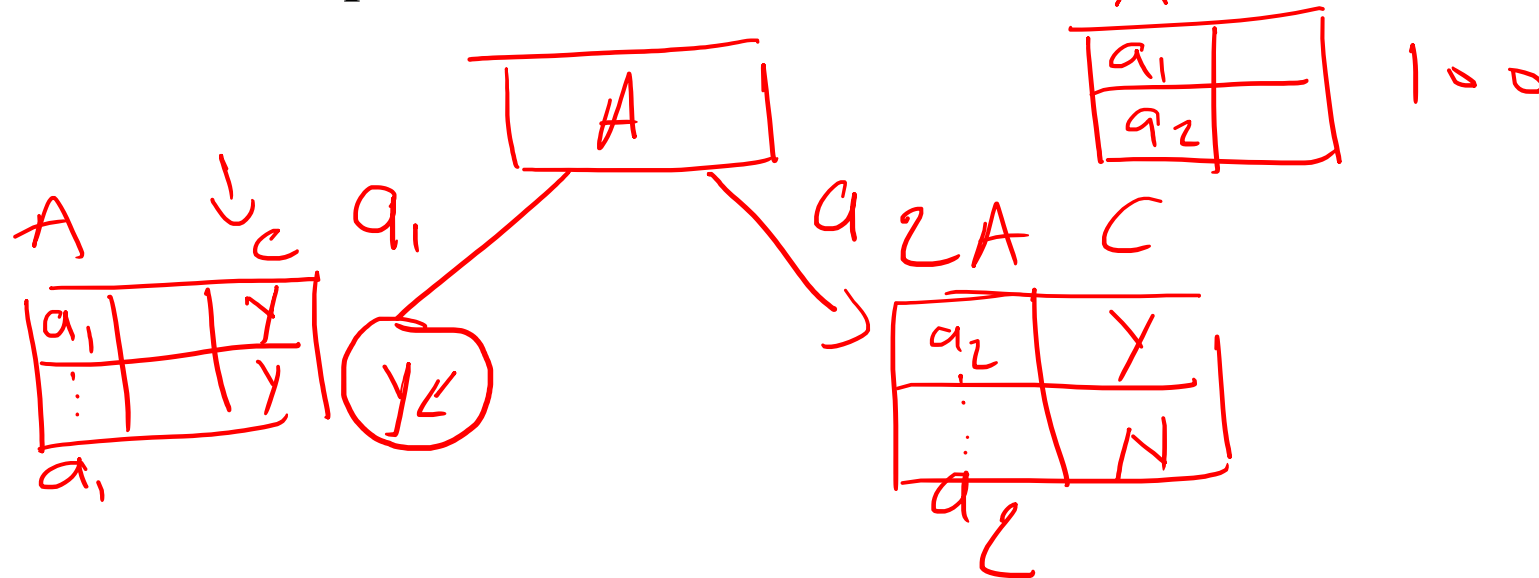
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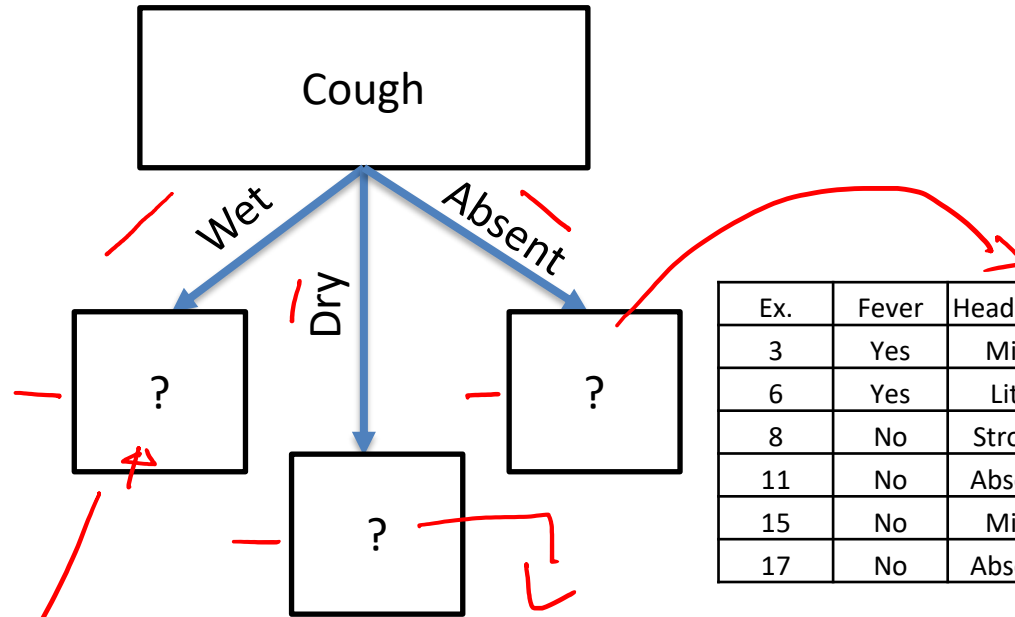
ITERATIVE DICHOTOMISER

- The algorithm goes as follows;
 - Find the attribute/feature that provides the highest information gain. —
 - Create a node using the feature (provides the highest inf. gain). —
 - Sort out the examples to the corresponding split.
 - If all data points belong to the same class, create a leaf node. —
 - If the data points have different classes, ~~recurse~~.



ITERATIVE DICHOTOMISER

Ex.	Fever	Headache	Fatigue	Cough	TasteSmell Loss	Covid
1	Yes	Mild	No	Wet	Taste	Yes
2	No	Strong	No	Wet	Both	Yes
3	Yes	Mild	No	Absent	Taste	No
4	No	Mild	No	Wet	Smell	Yes
5	No	Mild	Yes	Wet	Taste	Yes
6	Yes	Lite	No	Absent	Smell	Yes
7	No	Lite	No	Dry	Smell	No
8	No	Strong	No	Absent	Taste	Yes
9	No	Absent	Yes	Wet	Both	No
10	No	Mild	No	Wet	Smell	Yes
11	No	Absent	Yes	Absent	Taste	No
12	No	Lite	No	Dry	Both	No
13	Yes	Strong	No	Wet	Both	Yes
14	No	Absent	Yes	Wet	Both	No
15	No	Mild	No	Absent	Taste	Yes
16	Yes	Lite	No	Dry	Smell	No
17	No	Absent	No	Absent	Taste	Yes
18	No	Absent	No	Wet	Smell	Yes
19	No	Lite	No	Dry	Both	No
20	No	Lite	No	Dry	Smell	No



Ex.	Fever	Headache	Fatigue	Cough	TasteSmell Loss	Covid
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6	Yes	Lite	No	Absent	Smell	Yes
8	No	Strong	No	Absent	Taste	Yes
11	No	Absent	Yes	Absent	Taste	No
15	No	Mild	No	Absent	Taste	Yes
17	No	Absent	No	Absent	Taste	Yes

Ex.	Fever	Headache	Fatigue	Cough	TasteSmell Loss	Covid
7	No	Lite	No	Dry	Smell	No
12	No	Lite	No	Dry	Both	No
16	Yes	Lite	No	Dry	Smell	No
19	No	Lite	No	Dry	Both	No
20	No	Lite	No	Dry	Smell	No

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5	No	Mild	Yes	Wet	Taste	Yes
9	No	Absent	Yes	Wet	Both	No
10	No	Mild	No	Wet	Smell	Yes
13	Yes	Strong	No	Wet	Both	Yes
14	No	Absent	Yes	Wet	Both	No
18	No	Absent	No	Wet	Smell	Yes



BASE CASES

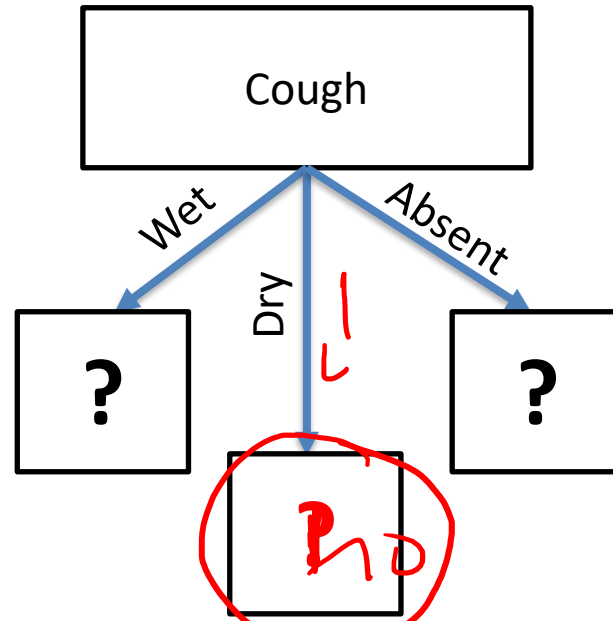
- BC 1: If all records in current data subset have the same output then don't recurse -
- BC 2: If all records have exactly the same set of input attributes then don't recurse

A	B	C
a_1	b_1	y
a_1	b_1	x



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15	No	Mild	No	Absent	Taste	Yes
16	Yes	Lite	No	Dry	Smell	No
17	No	Absent	No	Absent	Taste	Yes
18	No	Absent	No	Wet	Smell	Yes
19	No	Lite	No	Dry	Both	No
20	No	Lite	No	Dry	Smell	No



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