Assignment 1

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MACHINE LEARNING

AIMAH SIDDIQUE | FA21-BSE-092

Bird LEARNING CONCEPT

Data: https://en.wikipedia.org/wiki/Bird

Input:

- Images

Output

- Bird or not a bird.

Attributes:

- Feathers: "Yes" or "No"
- Weight: "Heavy" or "Light"
- Flight: "Yes" or "No"

Instance Space:

In bird recognition concept:

- Attributes:- Feather, Weight, and Flight.
- Each attribute has two possible values.
- The size of Instance space would be, $|X| = 2*2*2 = 8$

X	Feathers	Weight	Flight	Bird
X1	Yes	Light	Yes	-
X2	Yes	Light	No	-

X3	Yes	Heavy	Yes	-
X4	Yes	Heavy	No	-
X5	No	Light	Yes	-
X6	No	Light	No	-
X7	No	Heavy	Yes	-
X8	No	Heavy	No	-

Concept Space:

$|C| = 2^{|X|}$

- $|X|$ Represent the size of instance space.
- $|C|$ Represent the size of concept space.

In the bird recognition concept

- $|C| = 2^{|X|} = 2^{|8|} = 256$

X	Feathers	Weight	Flight	Bird
X1	Yes	Yes	Yes	C(1)
X2	Yes	Yes	No	C(2)
X3	Yes	No	Yes	C(3)
X4	Yes	No	No	C(4)
X5	No	Yes	Yes	C(5)
X6	No	No	No	C(6)
X7	No	Yes	Yes	C(7)
X8	No	No	No	C(8)

0	0	0	0
0	0	0	0

0	0	0	0
0	0	1	0

1	0	1	0
1	0	0	0

0	0	0	1
0	1	0	1

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1	1	1	1
1	1	1	1