

ML Assignment # 1

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Task

Bird features

1. Beak size: long, short
2. Wing Span: long, short
3. Tail length: long, short
4. Body size: long, short

Output:

Type of bird: “Birds of Prey”, “Urban birds”, “Waterfowl”, “Hornbill”, “Flamingoes”, “Hummingbirds”

Instance Space:

Recognition Concept:

- Attributes: Beak size, wing span, tail length and body size
- Each attribute has two values (possibly long or short)
- Size of instance space is $|X| = 2*2*2*2 = 16$

X	Beak size	Wing Span	Tail length	Body size	Bird Specie
X1	Long	Long	Long	Long	-
X2	Long	Long	Long	Short	-
X3	Long	Long	Short	Long	-
X4	Long	Long	Short	Short	-
X5	Long	Short	Long	Long	-
X6	Long	Short	Long	Short	-
X7	Long	Short	Short	Long	-
X8	Long	Short	Short	Short	-
X9	Short	Long	Long	Long	-
X10	Short	Long	Long	Short	-
X11	Short	Long	Short	Long	-
X12	Short	Long	Short	Short	-
X13	Short	Short	Long	Long	-
X14	Short	Short	Long	Short	-
X15	Short	Short	Short	Long	-
X16	Short	Short	Short	Short	-

Concept Space:

$$|C| = 2^{|X|} = 2^{16} = 65536$$

X	Beak size	Wing Span	Tail length	Body size	Bird Specie
X1	Long	Long	Long	Long	C(1)
X2	Long	Long	Long	Short	C(2)
X3	Long	Long	Short	Long	C(3)
X4	Long	Long	Short	Short	C(4)
X5	Long	Short	Long	Long	C(5)
X6	Long	Short	Long	Short	C(6)
X7	Long	Short	Short	Long	C(7)
X8	Long	Short	Short	Short	C(8)
X9	Short	Long	Long	Long	C(9)
X10	Short	Long	Long	Short	C(10)
X11	Short	Long	Short	Long	C(11)
X12	Short	Long	Short	Short	C(12)
X13	Short	Short	Long	Long	C(13)
X14	Short	Short	Long	Short	C(14)
X15	Short	Short	Short	Long	C(15)
X16	Short	Short	Short	Short	C(16)

1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0

1	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0

0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0

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1	1	1	1
1	1	1	1
1	1	1	1
1	1	1	1