Assignment 2

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Questions solved in this Assignment.

① → 2 Examples of KNN
② → write basic M/c Learning/AI Theory

Ques1 KNN Example 1

	height	weight	Class
①	162	66	NR
②	171	62	NR
③	166	51	UW
④	150	110	OW
⑤	157	67	NR
⑥	163	61	UW
⑦	170	101	OW

Query → 165 , 91 , ? using Eucledian dist.
k = 5

d① $\sqrt{(165-162)^2 + (91-66)^2} = \sqrt{9+625} = 25.17$
d② $\sqrt{(165-171)^2 + (91-62)^2} = 29.61$
d③ $\sqrt{(165-166)^2 + (91-51)^2} = 40.01$
d④ $\sqrt{(165-150)^2 + (91-110)^2} = 25$
d⑤ $\sqrt{(165-157)^2 + (91-67)^2} = 25.29$
d⑥ $\sqrt{(165-163)^2 + (91-61)^2} = 30.06$
d⑦ $\sqrt{(165-170)^2 + (91-101)^2} = 11.18$

4 nearest neighbours = d1 , d4, d5, d7, d2
NR , OW, NR, OW , NR

⇒ 165 , 91 , NR is Answer.

Ques2 KNN Example 2

	Blood Sugar level	Age	D/ND
d1	100	31	ND
d2	125	35	D
d3	112	38	D
d4	176	41	D
d5	79	15	ND
d6	92	19	ND

here k = 3 ((140, 35), ?) Eucledian

d1 $\sqrt{(140-100)^2 + (35-31)^2} = 40.19$
d2 $\sqrt{(140-125)^2 + (35-35)^2} = 15$
d3 $\sqrt{(140-112)^2 + (35-38)^2} = 28.16$
d4 $\sqrt{(140-176)^2 + (35-41)^2} = 36.49$
d5 $\sqrt{(140-79)^2 + (35-15)^2} = 64.19$
d6 $\sqrt{(140-92)^2 + (35-19)^2} = 50.59$

3 NN are d2, d3, d4
D, D, D

∴ (140, 35, D) is the Answer.

• Basics of AI & Machine learning. Theory.

Artificial Intelligence is m/c Ability to observe, think & react like human beings. Its grounded in the Idea that human Intelligence can be broken down into precise ability which computers can be programmed to mimic. AI is an umbrella term that Incompasses a wide Variety of concept & technologies including machine learning.

AI Consist of many subfields that uses technique to mimic specific behaviours we associate with human Intellegence. for example, humans can speak, hear read & write language & glean meaning from it. the field of speech recognition & NLP mimic these abilities by converting raw audio signals into text & processing that text to extract meaning from it. other sub fields are also building Intellegent Systems that replicate human behaviours such as:

→ Robotics.
→ Pattern Recognition.
→ Computer Vision.