CSE3013 – Artificial Intelligence (ETP)

(C2+TC2)

<u>Digital Assignment – 2</u>

Under the guidance of -

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Presented By -

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Question 1:

On an airport all passengers are checked carefully. Let T with t ϵ {0, 1} be the random variable indicating whether somebody is a terrorist (t = 1) or not (t = 0) and A with a ε {0, 1} be the variable indicating arrest. A terrorist shall be arrested with probability P(A = 1 | T = 1) = 0.98, a non-terrorist with probability P(A = 1 | T = 0) = 0.001. One in hundred thousand passengers is a terrorist, P(T = 1) = 0.00001. What is the probability that an arrested person actually is a terrorist?

<u>Ans.</u>

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A	· Criva.
=	Radio A war falls laticating whether
	some body is tourprist or not = T, t e 10, 14; (t=1) (t=0)
	(t=1)
- OR	Random Variable inticating arrest = A, ac 10,11;
all l	P(timerist shall be arrested) = P(A=1)[=1]
an s	(9 mila) 9 (9 gg) 10 mildarg 10 7 0.98 .
01/0	P(non-tornoriet shall be annuled) = P(A = 1/7=0)
	= 0.001.
	P(a turorist among passungus) = P(7=1)
	= 0.00001
	of front that to my come on world (1)
239611	Now, P(artisted person is actually a turiorist) = P(T=1 A=1)
	(A=1)
	$P(T= A=1) = P(A= T=1) \cdot P(T=1)$
7	$P(T=1 A=1) = \frac{P(A=1 T=1) \cdot P(T=1)}{P(A=1)}$
	= 001 P(A=1/7=) P(T=1)001
	P(A=1 T=1).P(T=1)+P(A=1 T=0).P(T=0)
	Terminal Control of the Control of t
	(10000.0 × 80.0)
	((10000.0-1) x 1000.0) + (10000.0 x 84.0)
	1.Woz 19:

	(10000.0 × 86.0)
	((10000.0-1) x 1000.0 + (10000.0 x 80.0)
300	(b, War 1/9)
Ly Table	7,0000
(9/0) 1 (9	1000 280 (NOS × C). NEW YELL OF
	≈ 0.00001 = 0.01
	0.001
	Even though for any passenger it can be decided with
	high reliability (98%, and 98.9%) whether she/he is a
10	terroriet or not, if somebody acts arrested as a
1,16.1	terrorist helpho is most likely Not a terrorist
6,000	demorist, help is most likely Not a terrorect (Cwith a probability of 99%).
in A	and a full

Question 2:

In an oral exam you have to solve exactly one problem, which might be one of three types, A, B, or C, which will come up with probabilities 30%, 20%, and 50%, respectively. During your preparation you have solved 9 of 10 problems of type A, 2 of 10 problems of type B, and 6 of 10 problems of type C.

Ans.

Am (2)	Calver 198080028-Kumar Sparch
	P(getting a problem of type A) = P(A) = 30%. P(getting a problem of type B) = P(B) = 20%.
	P(getting a problem of type c) = P(c) = SO1.
, (1, 0)	P(solving a problem of typeA) = P(solved A) = 9/10
(P(solving a problem of type B)=P(solvet(B) = 2/10 P(solving a problem of type B)=P(solvet(C) = 6/10

. 100.0
(a) P(solving the problem in exam)
= IP (getting a problem of coulaintype) x
P (solving a problem of that type)
= P(solved/A).P(A) + P(solved/B)P(B)+P(solved/c).P(c)
= (9 × 30 1.) + (2 × 201) + (6 × 50 1)
= 27 . 4 . 30·A) 7 61
= 27 4 30 A) 61 100/11/100/11/00 A) 9 100
10. 12 (solving the problem in warm) = 0.61
(b) el solved optoblem frot type A)
(b) P(solved oproblem is of type A) (100000) (100000) (100000) (1000000) = P(A solved) = P(solved)
$= \frac{9}{4} \times 30\%$ 27/100 27
$= \frac{4 \times 30\%}{1000} = \frac{27}{61}$ $= \frac{4 \times 30\%}{1000} = \frac{27}{61}$
P(solved problem is of type A) = 0.442
AND TARRACTURE TO THE TARRACTU
Criver, we've solved the problem, problem of posteriori probability that priori problity type A are the problem was of type-A of 30%. I to solve a
posteriori probability that priori problity type A are
thy problem was of type n . of so during - a