AI1110 Assignment 1 in LaTeX

Chakka Surya Saketh*

Assignment 1

11.16.3.19: Question. In an entrance test that is graded on the basis of two examinations, the probability of a randomly chosen student passing the first examination is 0.8 and the probability of passing the second examination is 0.7. The probability of passing atleast one of them is 0.95. What is the probability of passing both?
Answer: 0.55
Solution:
Let :
A : Probability of random student passing the first exam
B : Probability of random student passing the second exam
Given

$$\Pr(A) = 0.8$$

and

$$\Pr(B) = 0.7$$

It is also given that

$$\Pr(A + B) = 0.95$$

Now we have to find

$$\Pr(AB)$$

We know that

$$\Pr(A + B) = \Pr(A) + \Pr(B) - \Pr(AB)$$

On rearranging the above equation we get,

$$\Pr(AB) = \Pr(A) + \Pr(B) - \Pr(A + B)$$

Substituting all the given values in the above equation

$$\Pr(AB) = 0.8 + 0.7 - 0.95$$

$$\Pr(AB) = 1.5 - 0.95$$

$$\Pr(AB) = 0.55$$

$\therefore$ The probability of a randomly chosen student passing both is 0.55.

*The student is with the Department of Artificial Intelligence, Indian Institute of Technology, Hyderabad 502285 India e-mail: ai22btech11005@iith.ac.in.