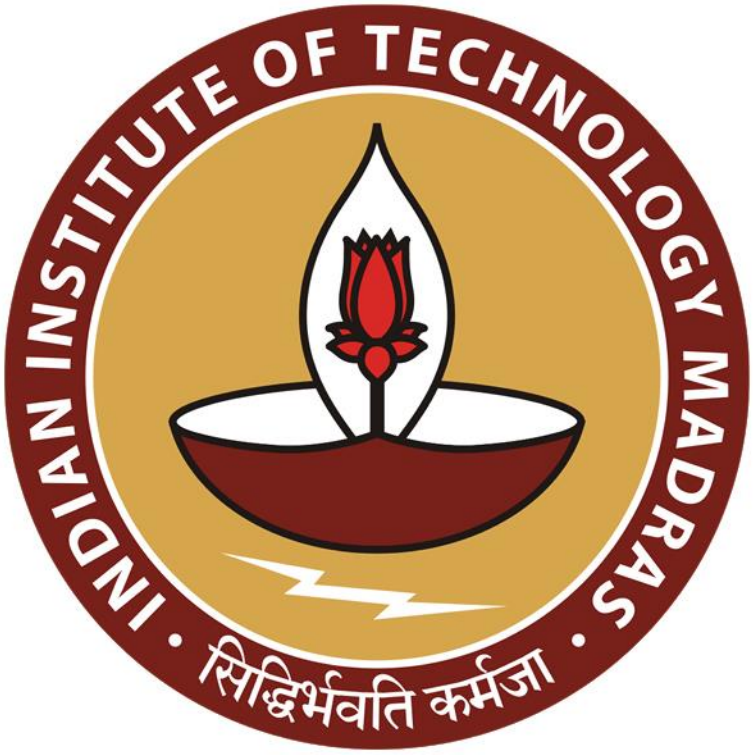

IIT Madras

ONLINE DEGREE

Statistics for Data Science-1
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Prathyush P (Support Team)
Department of Management Studies
Indian Institute of Technology, Madras
Week 7 Tutorial 2

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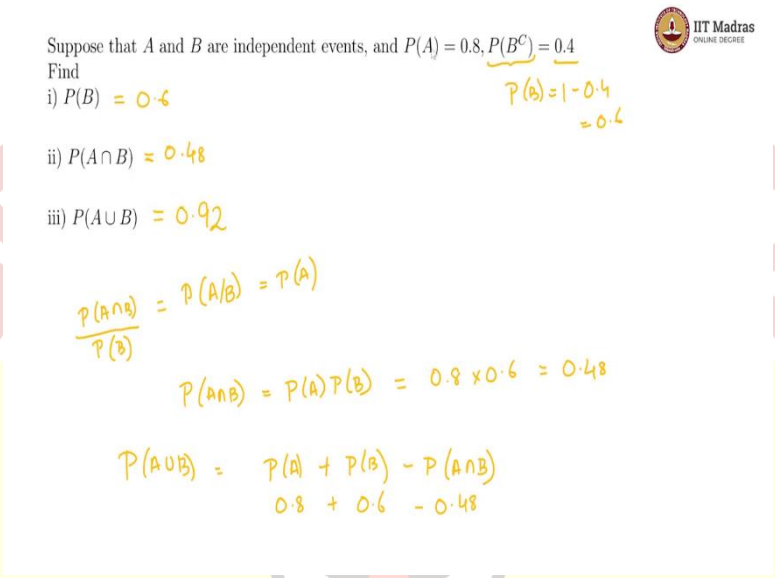

Suppose that A and B are independent events and P(A)=0.8 and P(B^c)=0.4, then find these particular probabilities. Now what are independent events? Independent events are those whose probability is not affected by the other event happening, so P(A| B) should be the same thing as P(A).

Now this is basically P(A∩B) that is the probability of A occurring with B within the space of B. So, divided by P(B) this is what happens for independent events alone. Now we know from P(B^c)=0.4 that P(B)=1 - 0.4 which is equal to 0.6.

So first we have found out that P(B) = 0.6 then P(A∩B) for independent events would be just the product of these two and that is 0.8×0.6 which is equal to 0.48. So, this is equal to 0.48 and now the in probability of the union would be the sum of the independent probabilities minus the sum of the intersection that is P(A) + P(B) – P(A∩B) this is because the intersection is added twice once in A and once in B so we have to subtract it once, so here we will get it as 0.8+ 0.6-0.48 = 0.92.