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Assignment 1

AI1110: Probability and Random Variables INDIAN INSTITUTE OF TECHNOLOGY, HYDERABAD

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12.13.1.1: Given that E and F are events such that Pr(E) = 0.6, Pr(F) = 0.3 and Pr(EF) = 0.2, find Pr(E|F) and Pr(F|E)

Solution: Given,

$$\Pr(E) = 0.6 \tag{1}$$

$$\Pr(F) = 0.3 \tag{2}$$

$$Pr(EF) = 0.2 \tag{3}$$

(a)

$$Pr(E|F) = \frac{Pr(EF)}{Pr(F)}$$
 (4)

$$=\frac{0.2}{0.3}$$
 (5)

$$=\frac{2}{3}\tag{6}$$

(b)

$$\Pr(F|E) = \frac{\Pr(FE)}{\Pr(E)} \tag{7}$$

$$=\frac{0.2}{0.6}$$
 (8)

$$=\frac{1}{3}\tag{9}$$