Assignment 1

AI1110: Probability and Random Variables

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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)

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

$$= \frac{0.2}{0.3} \tag{5}$$

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

(b)

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

$$= \frac{0.2}{0.6} \tag{8}$$

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