Assignment-3

AI1110: Probability and Random Variables

Indian Institute of Technology Hyderabad

Arugonda Srikar
CS22BTECH11008

Question 12.13.1.8: A die is thrown three times, E: 4 appears on third toss, F: 6 and 5 appears respectively on first two tosses. find $\Pr(E \mid F)$?

Solution E: 4 appears on the third toss
F: 6 and 5 appears on first and second toss respectively

$$\Pr(E) = \frac{1}{6}\Pr(F) = \frac{1}{36} \tag{1}$$

E and F are independent events

$$\Pr(EF) = \Pr(E)\Pr(F) \tag{2}$$

Then,

$$\Pr(E \mid F) = \frac{\Pr(EF)}{\Pr(F)} \tag{3}$$

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

$$= \Pr(E) \tag{5}$$

$$= \frac{1}{6} \tag{6}$$

$$\therefore \quad \Pr(E \mid F) = \frac{1}{6} \tag{7}$$