# AI1110 Assignment 1 in LaTeX

Hima Chandh*

**12.13.2.6**:Let E and F be events with $\Pr(E) = \frac{3}{5}$,$\Pr(F) = \frac{3}{10}$and $\Pr(EF) = \frac{1}{5}$. Are E and F independent?
**Solution**:Given,

$$\Pr(E) = \frac{3}{5} \tag{1}$$

$$\Pr(F) = \frac{3}{10} \tag{2}$$

$$\Pr(EF) = \frac{1}{5} \tag{3}$$

2 events are said to be independent iff the product of probabilities of occurence of the events is equals to the probability of occurence of both events.
i.e, E and F are independent iff,

$$\Pr(E)\,.\,\Pr(F) = \Pr(EF) \tag{4}$$

$$\Pr(E)\,.\,\Pr(F) = \frac{3}{5}.\frac{3}{10} \tag{5}$$

$$\Pr(E)\,.\,\Pr(F) = \frac{9}{50} \tag{6}$$

$$\because \Pr(EF) = \frac{1}{5} \tag{7}$$

$$\Pr(E)\,.\,\Pr(F) \neq \Pr(EF) \tag{8}$$

E and F are not independent events.

*The student is with the Department of Artificial Intelligence, Indian Institute of Technology, Hyderabad 502285 India e-mail: ai22btech11009@iith.ac.in.