

**University of West London**  
**School of Computing and Engineering**  
**CP60034E - Artificial Intelligence**

**Seminar Week-8: Probability**

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- 1) What are causes of uncertainty in an AI system?
- 2) What is the probability of any of the following events?

P(X,Y)		
X	Y	P
True	True	0.2
True	False	0.3
False	True	0.4
False	False	0.1

$P(X=\text{true}, Y=\text{true})$  ?

$P(X=\text{true})$  ?

$P(Y=\text{false OR } X=\text{true})$  ?

- 3) Using the same table above, work out the following conditional probabilities:

$P(X=\text{true} \mid Y=\text{true})$  ?

$P(X=\text{false} \mid Y=\text{true})$  ?

$P(Y=\text{false} \mid X=\text{true})$  ?

- 4) Using the probability distribution table below, work out the following probabilities:

$P(W = \text{sun})$ ?

$P(W = \text{rain})$ ?

$P(W=\text{sun} \mid S=\text{winter})$ ?

$P(W=\text{sun} \mid S=\text{winter}, T=\text{hot})$ ?

S	T	W	P
summer	hot	sun	0.30
summer	hot	rain	0.05
summer	cold	sun	0.10
summer	cold	rain	0.05
winter	hot	sun	0.10
winter	hot	rain	0.05
winter	cold	sun	0.15
winter	cold	rain	0.20