

Class review questions

Probability and Distributions

CS 700

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- If events A and B are mutually exclusive then what is $P[A \text{ or } B]$?
- If events A_1, \dots, A_N are mutually exclusive and collectively exhaustive then what is $\sum_{i=1}^N P[A_i]$?
- What is $P[A | B]$ = ?
- If A and B are independent what is $P[A \text{ and } B]$?
- If $P[A \text{ and } B] = P[A] \times P[B]$ what can we say about A and B ?
- What is a random variable?
- What is a discrete random variable? Give an example.

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- What is a continuous random variable? Give an example.
- How does one compute the k-th moment of a random variable?
- What is the name of the first moment?
- How does one compute the k-th central moment of a random variable?
- What is the name of the k-th central moment?
- Define Cumulative Distribution Function of a random variable X .
- What are the properties of a CDF?

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- What is the probability density function (pdf) of a random variable X ?
- What are the properties of the pdf?
- What is the expected value of a linear combination of random variables?
- What is the expected value of the product of two random variables X and Y ?
- What is the coefficient of variation of a random variable and what units are used to measure it?
- What is an important property of the exponential distribution?

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- Define the tail of a distribution?
- What is a heavy-tailed distribution?

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