Lecture 3: Discrete Random Variables

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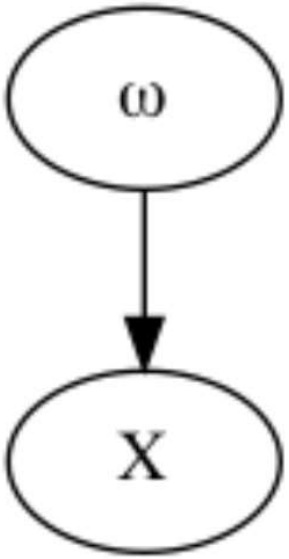
What is a random variable?

mathematical idealization of the result of a random experiment

Mathematical definition of random variables

in coin toss: ω was the initial conditions of the toss



A discrete random variable is a function $X(\omega)$ giving the result of an uncertain experiment.

- *Discrete random* variable if takes values 0, 1, …
- *Continuous random* variable if it takes real values.

Even though a random variable is always a function of some ω, we can often get away with not explicitly showing it.

Mathematical notation

- Upper case letters to represent random variables, like X, Y, Z.
- Lower case letters to represent the values of random variables, like x, y, z. (states)
- But we are not going to be too strict about this if there is no danger of ambiguity.