Cheatography

Lotte's Probability Cheat Sheet

by Lotte via cheatography.com/68104/cs/17151/

Discrete Distributions

Name	pmf	cdf	E(V);Var
Bernoulli(p)	P(1)=p; P(0)=1-p	F(1)=1, F(0)=1-p	p;p(1-p)
Binomial(n,p)	P(k)=(NchooseK) p^k $(1-p)^{(n-k)}$	-	np;np(1-p)
Geometric(p)	P(k)=$(1-p)^{k-1}$ p	1 - $(1-p)^k$	(1-p)/p; (1-p)/p^2
Poisson(λ)	P(k)=$e^{-\lambda}$ λ^k/k!	-	λ;λ

Continuous Distributions

Name	pdf	cdf	EV;Var
Uniform[a,b]	f(x)= 1/(b-a) on [a,b]	F(x)=(x-a)/(b-a) on [a,b]	(b-a)/2; (b-a)^2/12
Normal(μ,σ^2)	-	-	μ;σ^2
Exponential(λ)	f(x)=$\lambda e^{-\lambda x}$	1 - $e^{-\lambda x}$	1/λ;1/λ^2

Set theory

De Morgan's laws

$(A \cup B)^c = A^c \cap B^c$ &&&& $(A \cap B)^c = A^c \cup B^c$

Distributive laws:

$(A \cup B) \cap C = (A \cap C) \cup (B \cap C)$ &&&& $(A \cap B) \cup C = (A \cup C) \cap (B \cup C)$

Probability

$P(A \cup B) = P(A) + P(B) - P(A \cap B)$

NchooseK = n!/(k)!(n-k)!

De totale kans is altijd 1! I.h.b. $P(A)+P(A^c)=1$

Conditional Probability

$P(A|B) = P(A \cap B)/P(B)$

A&B independent $\Rightarrow$ $P(A \cap B) = P(A)P(B)$ & $P(A|B)=P(A)$

Bayes' Theorem: $P(A|B) = P(B|A)P(A)/P(B)$

Er zijn n kleuren, ik kies er k. Ik heb ... opties

-	Volgorde maakt uit	Volgorde maakt niet uit
Kleuren mogen dubbel	n^k	(n-1+k)!/(n-1)!k!
Kleuren mogen niet dubbel	n!/(n-k)!	n!/k!(n-k)!

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