Modelos Probabilísticos Comunes

Nombre	Distribuciones de Probabilidad	Media	Varianza
Discretas Uniforme	$\frac{1}{b-a}, \quad a \le b$	$\frac{(b+a)}{2}$	$\frac{(b-a+1)^2-1}{12}$
Binomial	$\binom{n}{x} p^x (1-p)^{n-x}$ $x = 0,1,\ldots,n,\ 0 \le p \le 1$	np	$\sigma^2 = np(1-p)$ $\alpha_3 = \frac{q-p}{\sqrt{npq}}$ $\alpha_4 = 3 + \frac{1-6pq}{npq}$
Geométrica	$(1-p)^{x-1} p$ $x = 1,2,\ldots, 0 \le p \le 1$	$1/p$	$(1-p)/p^2$
Binomial negativa	$\binom{x-1}{r-1}(1-p)^{x-r} p^r$ $x = r, r+1, r+2, \ldots$	r/p	$r(1-p)/p^2$ $x =$ núm. de intentos $r =$ éxitos
Hipergeométrica	$\frac{\binom{k}{x}\binom{N-k}{n-x}}{\binom{N}{n}}$ $x = \text{máx}(0, n-N+k), 1, \ldots$ $\text{mín}(k,n), k \le N, n \le N$	np donde $p = \frac{k}{N}$	$np(1-p)\left(\frac{N-n}{N-1}\right)$
Poisson	$\frac{\lambda^x e^{-\lambda}}{x!}, \ x = 0,1,\ldots, \lambda > 0$	λ	$\sigma^2 = \lambda$ $\alpha_3 = 1/\sqrt{\lambda}$ $\alpha_4 = 3 + 1/\lambda$
Continuas Uniforme	$\frac{1}{b-a}, \quad a \le x \le b$	$\frac{(b+a)}{2}$	$\frac{(b-a)^2}{12}$
Normal	$\frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2} \quad -\infty < x < \infty$	μ	σ^2 $\alpha_3 = 0$ $\alpha_4 = 3$
Exponencial	$\lambda e^{-\lambda x}, \ x \ge 0, \ \lambda > 0$	$1/\lambda$	$1/\lambda^2$
Erlang	$\frac{\lambda^r x^{r-1} e^{-\lambda x}}{(r-1)!}, \ x > 0, \ r = 1,2,\ldots$	r/λ	r/λ^2
Gamma	$\frac{(\lambda x)^{r-1} e^{-\lambda x}}{\Gamma(r)}, x > 0, r > 0, \lambda > 0$	$E(x) = r/\lambda$ $Mo = \frac{(r-1)}{\lambda}$	r/λ^2
Weibull	$\frac{1}{\lambda r}\left(\frac{x}{r}\right)^{\frac{1}{\lambda}-1} e^{-\left(\frac{x}{r}\right)^{\frac{1}{\lambda}}} \ ; x > 0, \ \lambda > 0, r > 0$	$\mathrm{E(T)} = \frac{1}{\lambda}\, \Gamma\left(1 + \frac{1}{r}\right)$ $\mathrm{F_T(t)} = 1 - \mathrm{e}^{-(\lambda\, t)^r}$	$r^2\{\Gamma(2\lambda+1) - [\Gamma(\lambda+1)]^2\}$