Distribuzioni discrete

Distribuzioni	parametri	$\mathbb{P}(X=k)$	media	varianza	funz. caratteristica $\varphi(t)$
$B(n,p)$	$n \geq 1,\ p \in [0,1]$	$\binom{n}{k} p^k (1-p)^{n-k},\ k=1,..,n$	np	$np(1-p)$	$(1-p+pe^{it})^n$
$G(p)$	$p \in (0,1)$	$p(1-p)^{k-1},\ k=1,2,...$	$\frac{1}{p}$	$\frac{1}{p^2}$	$\frac{pe^{it}}{(1-[1-p]e^{it})}$
$P(\lambda)$	$\lambda > 0$	$e^{-\lambda}\frac{\lambda^k}{k!},\ k=0,1,...$	λ	λ	$e^{\lambda(e^{it}-1)}$

e

Distribuzioni assolutamente continue

Distribuzioni	parametri	densità $f(t)$	media	varianza	funzione caratteristica $\varphi(t)$
$exp(\lambda)$	$\lambda > 0$	$\lambda e^{-\lambda t} 1_{[0,+\infty)}(t)$	$\frac{1}{\lambda}$	$\frac{1}{\lambda^2}$	$\frac{\lambda}{\lambda - it}$
$\Gamma(\alpha,\lambda)$	$\alpha > 0,\ \lambda > 0$	$\frac{\lambda^\alpha}{\Gamma(\alpha)} t^{\alpha-1} e^{-\lambda t} 1_{[0,+\infty)}(t)$	$\frac{\alpha}{\lambda}$	$\frac{\alpha}{\lambda^2}$	$\left(\frac{\lambda}{\lambda - it}\right)^\alpha$
$\mathcal{N}(\mu,\sigma^2)$	$\mu \in \mathbb{R},\ \sigma^2 > 0$	$\frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(t-\mu)^2}{2\sigma^2}}$	μ	σ^2	$e^{\mu i t - \frac{\sigma^2 t^2}{2}}$
$U([a,b])$	$a,b \in \mathbb{R},\ a < b$	$\frac{1}{b-a} 1_{[a,b]}(t)$	$\frac{a+b}{2}$	$\frac{(b-a)^2}{12}$	$\frac{\sin bt}{bt}$ se $b > 0$ e $a = -b$
$\mathcal{N}(\mu,\sigma^2)$	$\mu \in \mathbb{R},\ \sigma^2 > 0$	$\frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(t-\mu)^2}{2\sigma^2}}$	μ	σ^2	$e^{\mu i t - \frac{\sigma^2 t^2}{2}}$

Vettori Gaussiani

$\mathcal{N}(\underline{\mu}, Q), \underline{\mu} \in \mathbb{R}^n$, vettore delle medie, $Q \in Mat(n \times n)$, $Q \geq 0$ matrice di covarianza

$$f_{\underline{X}}(\underline{x}) = \frac{1}{(2\pi)^{n/2}\sqrt{\det(Q)}} e^{-\frac{<Q^{-1}(\underline{x}-\underline{\mu}),<\underline{x}-\underline{\mu}>}{2}},\ \text{se } \det(Q) > 0,$$

$$\varphi_{\underline{X}}(\underline{t}) = e^{i<\underline{\mu},\underline{t}> - \frac{1}{2}<\underline{t},Q\underline{t}>}$$