Correlazioni parziali e modelli AR e MA (maggio 1997)

Un generatore di numeri casuali normalmente distribuiti

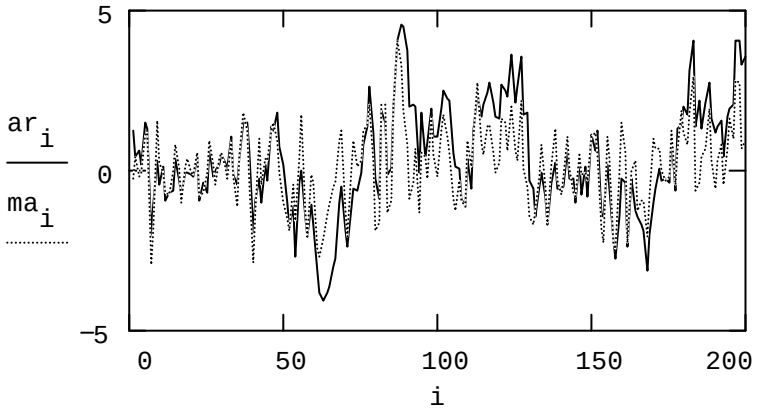
$$Norm(\mu,\sigma) := \mu + \sigma\cdot\sqrt{-2\cdot\ln(rnd(1))}\cdot\cos(2\cdot\pi\cdot rnd(1))$$

$ar_0 := 0$ $\quad n := 200$ $\quad i := 1..n$ $\quad caso_i := Norm(0,1)$

$caso_0 := Norm(0,1)$

$ar_i := 0.8\cdot ar_{i-1} + caso_i$

$ma_i := 0.8\cdot caso_{i-1} + caso_i$



$is := 1..198$

da 3 a 200

$s0ar_{is} := ar_{is+2}$

da 2 a 199

$s1ar_{is} := ar_{is+1}$

da 1 a 198

$s2ar_{is} := ar_{is}$

$s0ma_{is} := ma_{is+2}$

$s1ma_{is} := ma_{is+1}$

$s2ma_{is} := ma_{is}$

$corr(s0ar, s1ar) = 0.806$

$corr(s0ar, s2ar) = 0.687$

$corr(s1ar, s2ar) = 0.803$

$corr(s0ma, s1ma) = 0.439$

$corr(s0ma, s2ma) = -0.042$

$corr(s1ma, s2ma) = 0.438$

Correlazione parziale di a e b, con c costante

$$\mathrm{parz}(a,b,c) := \frac{\mathrm{corr}(a,b) - \mathrm{corr}(a,c)\cdot\mathrm{corr}(b,c)}{\sqrt{\left(1 - \mathrm{corr}(a,c)^2\right)\cdot\left(1 - \mathrm{corr}(b,c)^2\right)}}$$

$\mathrm{parz}(s0ar, s2ar, s1ar) = 0.112$

$\mathrm{parz}(s0ma, s2ma, s1ma) = -0.29$

la prima, in dettaglio è:

$\mathrm{corr}(s0ar, s2ar) = 0.687$

$\mathrm{corr}(s0ar, s1ar)\cdot\mathrm{corr}(s2ar, s1ar) = 0.647$

$1 - \mathrm{corr}(s0ar, s1ar)^2 = 0.35$

$1 - \mathrm{corr}(s2ar, s1ar)^2 = 0.356$

$\sqrt{\left(1 - \mathrm{corr}(s0ar, s1ar)^2\right)\cdot\left(1 - \mathrm{corr}(s2ar, s1ar)^2\right)} = 0.353$

la seconda, in dettaglio è:

$\mathrm{corr}(s0ma, s2ma) = -0.042$

$\mathrm{corr}(s0ma, s1ma)\cdot\mathrm{corr}(s2ma, s1ma) = 0.192$

$1 - \mathrm{corr}(s0ma, s1ma)^2 = 0.807$

$1 - \mathrm{corr}(s2ma, s1ma)^2 = 0.808$

$\sqrt{\left(1 - \mathrm{corr}(s0ma, s1ma)^2\right)\cdot\left(1 - \mathrm{corr}(s2ma, s1ma)^2\right)} = 0.808$