

Re: Compound Distributions?

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- *From:* andre <andrevh@xxxxxxxxxxx>
 - *Date:* Thu, 23 Jun 2005 16:53:47 +0000 (UTC)
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Carsten Steinhoff <carsten.steinhoff@xxxxxxxxxxxxxxxxxxxxxxxxxxxx> wrote:

>
>Hello,
>
>I want to fit some distributions on a dataset. My tests up to now
>resulted in something like:
>
>Distribution A fits very well from 0 to K
>Distribution B fits very well above K
>
>In a second step I have to draw random numbers from the chosen
>distribution (drawing uniform distr. rn and put them into the F^{-1}).
>
>Now the Problem is ... : I want to put distr A and B together.
>
>Its not sure that K is identical to the point of intersection! So it
>might be that the combination of A and B is not stetic in K.
>
>So how to draw my random numbers??? If I put e.g a 0.88 into the
>"common" inverse in some cases not necessarily a value results – in
>other cases there could result two (depending whether the intersection
>is left or right from K).
>
>I think there should be something to google about, but when I search for
>"compound distributions" I find what I would call "mixing" (e.g. $F = F_A$
>+ F_B)
>
>Who can help?
>
>Thanks a lot!!!

Let p_A and p_B be the probability densities you are talking about,
and let

$$I_A = \int_0^K p_A(x) dx,$$
$$I_B = \int_K^{\text{upper_border}} p_B(x) dx$$

The density you want to generate is

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$p_A(x)/(I_A+c*I_B)$ if x in $[0,K]$
 $c*p_B(x)/(I_A+c*I_B)$ if x in $[K,upper_border]$

for some positive number c .

Right?

Generate a rn .

If $rn < I_A/(I_A+c*I_B)$ then

generate a new rn to construct x in $[0,K]$ following p_A

else

generate a new rn to construct x in $[K,upper_border]$ following p_B

endif

.

- *Follow-Ups:*

- ◆ *Re: Compound Distributions?*

- ◇ *From:* Carsten Steinhoff

- *References:*

- ◆ *Compound Distributions?*

- ◇ *From:* Carsten Steinhoff

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