Re: Independent Random Variables

Source: http://sci.tech−archive.net/Archive/sci.math/2007−04/msg01087.html

- *From*: hrubin@xxxxxxxxxxxxxxxxxxx (Herman Rubin)

- *Date*: 8 Apr 2007 21:15:31 −0400

In article <qque13d5pjr851gqg0avk8ic7chka536ng@xxxxxxx>,
David C. Ullrich <ullrich@xxxxxxxxxxxxxxxx> wrote:

> On 6 Apr 2007 16:47:47 −0700, albert.koltai@xxxxxxxxx wrote:

<> I am now taking a course in Probability Theory, and I am having
<>trouble "visualizing" what do two independent random variables look
<>like. The definition in terms of the cumulative distribution function
<>or in terms of probability densities is clear enough, but when I am
<>trying to imagine say, two or more real valued independent variables
<>defined on the reals (with Borel sets as the sigma alegbra) I am
<>drawing a blank.

<> Could someone give me nontrivial examples of a set of real valued
<>defined of the reals independent random variables?
<>A general method of obtaining such −− nice enough to graph them −−
<>random variables would be better.

> I once read in some book that the notion of "independent variables"
> in probability has nothing to do with the "independent variables"
> that you find in calculus books. That was a lie − the two concepts
> are very closely related.

> Assuming that you're talking about probability theory based
> on measure theory: Two random variables X and Y are independent
> if and only if the sample space can be realized as a _product_
> space, where the distribution of X is a measure depending only
> on one variable and the distribution of Y is a measure depending
> only on the other variable.

In general, a family of random variables are independent if,
given any information about some of them, there is no information
about the probabilities of events involving the others. This is

how it is used; the usual characterization reduces the conditions
which need to be checked.

−−

This address is for information only. I do not claim that these views
are those of the Statistics Department or of Purdue University.
Herman Rubin, Department of Statistics, Purdue University
hrubin@xxxxxxxxxxxxxx Phone: (765)494−6054 FAX: (765)494−0558

.