
Subject: Re: Normal Distributed Random Numbers
Posted by [Craig Markwardt](#) on Tue, 04 Sep 2001 21:04:13 GMT
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"Kay Bente" <KBente@lycos.de> writes:

> Hi
> I have to create arrays with normal distributed random numbers, but with
> variable FWHM (Full width half max/standard deviation sigma?).
> I want to add normal distributed noise to an image, so that the values
> differ around a mean value.

> has.

From the IDL Reference Guide:

> The RANDOMN function returns one or more normally-distributed,
> floating-point, pseudo-random numbers with a mean of zero and a
> standard deviation of one.

So there you go, the deviates produced by RANDOMN have a gaussian sigma of 1, like this:

```
S = RANDOMN(SEED, 1000)
```

And then it's well established for a gaussian distribution that if you want a new mean, MU, and new gaussian sigma, SIG, then you would apply the following formula:

```
SPRIME = S*SIG + MU
```

And, knowing that gaussian sigma is approximately $SIG = FWHM / 2.35$, you are set. The key here is that SIG can be an array, not just a scalar, so you can have a different value of SIG (and hence FWHM) for each pixel.

Good luck,
Craig

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