
Subject: Re: Can IDL calculate the confidence level about correlation

Posted by [yp](#) on Fri, 23 Nov 2007 12:06:09 GMT

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Not exactly what you want... but this might give you some idea.

```
;+
; PRO: sig_test
; Significance Test of correlation for a sample size = N
;
; N:   Number of observations
; r:   Correlation coefficient
; Pr:  Probaility that random noise could produce the result
(correlation) with N samples
;   Pr=ERFC(r*sqrt(N/2))
; ERFC: Complementary Error Function
; rsig: At which we have 100*(1-limit) chance that random data would
produce this result (r)
;   rsig=INVERF(limit)*sqrt(2/N)

; Interpretation:
;   Any "r" value greater than "rsig" are significant at "limit*100"
level
; Modification: Yaswant Pradhan 10/6/05
;-
```

PRO sig_test

r=0D

N=0D

Pr=0D

rsig=0D

i=0.99

```
input: read,'Input Correlation coefficint and Number of samples [r,
N]',r,N
```

```
if (r gt 1.0 or r lt -1.0) then begin
```

```
    err=widget_message('r value should be between -1.0 and 1.0. Input
r, N again!','Error)
```

```
    goto, input
```

```
endif
```

```
r=abs(r)
```

```
Pr= ERFC(r*sqrt(N/2.))
```

```
while (inverf(i)*sqrt(2./N) gt r) do begin
```

```
    i=i-0.01
```

```
    rsig=inverf(i)*sqrt(2./N)
```

endwhile

```
print,'Correlation Significance Test Result:'
print,'=====
print,'Correlation coefficient: ',r
print,'Number of samples: ',N
print,'Confidence Limit: '+string(9b)+string(i*100,format='(i2.2)')
+'%'
print,'Probability (Pr): ',Pr
print,'=====
END
```

On Nov 23, 1:51 am, Lin Wang <wanglin1...@gmail.com> wrote:

```
> I found a code which can calculate the confidence level using pvalue
> method (see below). It works well, but usually I use the Student's t-
> test method. So can anyone help?
>
> Thanks!
>
> r=correlate(x,y)
> var=1/(n-3.0)
> zvalue = 0.5*alog((1+r)/(1-r))/sqrt(var)
> if (zvalue lt 0) then pvalue = 2*(gauss_pdf(zvalue)) $
> else pvalue = 2*(1-gauss_pdf(zvalue))
```
