
Subject: Re: correlation coefficient and confidence level

Posted by [David Fanning](#) on Mon, 10 Feb 2014 02:35:57 GMT

[View Forum Message](#) <> [Reply to Message](#)

sid writes:

- > I tried idl routines correlate and coyote's cgscatter2d, but both doesn't give, confidence level for the correlation coefficient.
- > Then I tried r_correlate, which gives significance level, but I guess significance level is different from confidence level.
- > So I have no idea how to do this.

The first article that appears when I use Google to search "confidence correlation coefficient" is this article:

<http://www2.sas.com/proceedings/sugi31/170-31.pdf>

Low and behold, there is code in there that calculates the confidence level of the correlation coefficient! Lucky! But, you know, sometimes it happens. :-)

Simply translating the SAS code to IDL (I'm pretty sure you could have done this, if I managed it), I get this:

```
n = 101
data_1 = cgDemoData(1)+ RandomU(-3L, n) * 10
data_2 = cgDemoData(1)+ RandomU(-5L, n) * 10
cgScatter2D, data_1, data_2

rho = Correlate(data_1, data_2)
fisherTransform = 0.5*(alog(1+rho) - alog(1-rho))
sigmaz = 1.0 / Sqrt(n-3)
l_95 = fisherTransform - (1.96 * sigmaz)
h_95 = fisherTransform + (1.96 * sigmaz)

lo95 = (exp(2*l_95)-1)/(exp(2*l_95)+1)
hi95 = (exp(2*h_95)-1)/(exp(2*h_95)+1)
Print, 'Low 95% Confidence Level: ', lo95
Print, 'High 95% Confidence Level: ', hi95
END
```

For a sanity check, I used another page from my Google search to find a confidence level calculator. I plugged my numbers in and they matched more or less:

<http://vassarstats.net/rho.html?>

I spent about 45 minutes on this, if you feel like you want to make a

contribution to the work.

Cheers,

David

--

David Fanning, Ph.D.

Fanning Software Consulting, Inc.

Coyote's Guide to IDL Programming: <http://www.idlcoyote.com/>

Sepore ma de ni thue. ("Perhaps thou speakest truth.")
