Subject: Re: Filtering out noise quickly?
Posted by Craig Markwardt on Thu, 02 Jul 2015 07:59:02 GMT
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On Wednesday, July 1, 2015 at 3:41:28 PM UTC-7, wdo...@oxy.edu wrote:
> So I've got a set of frequency data and a set of 'residual' data, and I am plotting the frequency
on the X and the residual on the Y. We are looking to see if a trough in the residuals at a certain
frequency is present. But there is a whole bunch of noise in the residuals, so I am trying to write a
program which will detect if the trough is there or if it is just noise. As of now I have something that
works ok. It calculates the average and standard deviation for the data set as a whole (not
including the frequency we want), and then calculates the average for the small range of the
frequencies where we are looking for the trough. Next it "buffers" (that probably isn't the right
terminology..), the average for the whole thing with the standard deviation. So if the average value
at the good frequency is less than the average general minus the general standard deviation, we
should have a trough and not noise. Hopefully that makes sense, please ask if you have
questions.
>
> Is there any sort of tool set of procedures that could eliminate the noise in an easier way?

What you want to do is a statistical hypothesis test. This could be a chi-square test. You would
start with an expected signal, i.e. a model of the signal behavior. The null hypothesis is that the
expected signal is not there, i.e. the data set is consistent with random noise.

To say more, one would need to know more about the expected signal, whether it has a width in
frequency or not, whether it has a particular shape, and whether it always comes at a known
frequency or the center frequency could vary. Those criteria, among others would help determine
how sophisticated a process is required.

CM