Subject: Re: Help with MNF in ENVI
Posted by Zhihong Pan on Wed, 21 Apr 2004 01:08:25 GMT
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You are the man, Peter.

You got it all correct (it's ## if you want to know). I was messing with evec but no luck. Thanks again.

Pan

PS, just read your reply again. Found a minor bug, for AVG, it's only computed for the selected bands but stored in original order. So the non-selected bands have zero in the array.

On Wed, 21 Apr 2004, Peter Mason wrote:

> Zhihong Pan wrote:
>> Hi, All
>>
>> First post here, need help for MNF transformation in ENVI program.
>>
>> I can use MNF_DOIT for transformation of an image. But now I want to
>> apply the existing MNF transformation to a few spectra but ENVI
>> doesn't support it. I assume the transformation matrix is saved in the
>> MNF statistics file but not sure about the details. Any comments
>> appreciated.
>>
>> BTW, this might not be the correct forum for ENVI question. Any
>> recommends of forums for ENVI program?
>>
>> Thanks
>
>
> It seems to be okay to post ENVI questions here. <cringes>
> Anyway... I was also faced with this issue a few years ago. I did some
> experiments and, IIRC, in an MNF stats file the forward transformation
> matrix is saved in the spot where the *covariance* matrix is usually saved.
> The MNF eigenvalues are saved in the eigenvalue spot. Not sure about the
> eigenvectors spot - possibly the reverse transformation matrix.
> It has been some time since I checked this and things might have changed,
> but assuming they haven't, this is how you'd get the goodies to do your own
> MNF transform:
> envi_get_statistics, stats_file_name, cpos=cpos, mean=avg, cov=fmnf,
> eval=mnfeval
> (You don't actually need MNFEVAL for the transform but it's handy for a
> plot.)
> More detail:

> The image mean (AVG) is always computed for all bands while the MNF stats
> can be computed for a subset. CPOS is an index array showing which bands
> were used. Last I checked, an ENVI stats file doesn't contain band
> wavelengths so the only check that you can do to see if the stats file
> *might* be spectrally compatible with your spectra is along these lines:
> Compare your full number of bands against N_ELEMENTS(AVG) and the size and
> contents of your selected-bands index array against CPOS.
> In order to do the transform you will have to extract the MNF's input
> channel subset from AVG:
> AVG_SUB=AVG[CPOS]
> The transform for a spectrum SPEC then goes something like this:
> (SPEC-AVG_SUB) ## FMNF
> ( # or ##? You ask too much of me :-) FMNF or TRANSPOSE(FMNF)? Again,
> you ask too much :-) A couple of experiments with an image and you'll be
> there.)
>
> BTW, if you are thinking of transforming, say, resampled spectral-library
> spectra using MNF stats calculated for an image, remember that it'll only
> work if the spectra are of the same kind as what's in the image (e.g., both
> reflectance) and are scaled the same (e.g., both 0 to 10000). (This in
> addition to having the same #bands and wavelengths.)
>
>
> HTH
> Cheers
> Peter Mason
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