Subject: Re: reading .mat files in IDL
Posted by Nigel Wade on Fri, 06 Oct 2006 14:50:22 GMT
View Forum Message <> Reply to Message

Ulan wrote:

> Dear all,
>
> Recently I had to tranfer some time series plots from Matlab (.mat
> files) into IDL. I have used IDL's "Binary Import" macro and had a few
> problems. I thought, the problems were due to the data type
> miscommunication: when the double data type in Matlab was imported as
> double into IDL the data range was somewhat different (looked rather
> streched like in BYTSCL command). I have expieremented with other data
> types in Matlab (int8, int16, int32) but then IDL's binary template
> complaint of improper data sizes. Finally, I had to make 2D array of my
> time-series in Matlab, copy array cells into Notepad and save it as an
> ASCII. I guess it is not the proper way of transfering data and most
> likely I'll face the same problem when transfering larger 2D or 3D
> data... I searched the forum for the same topics but couldn't find an
> answer. Also a link on one site of 'reading .mat files into IDL' was
> broken. So, if anybody had expierence ...
>
> Regards,
> Ulan

Can you tell us more about what you have actually written into your data files?

A .mat file is not a trivial item. If you look in your documentation tree for MATLAB you will find a document which describes the contents of the .mat files - it is 41 pages long. Attempting to implement a reader for those files is not trivial.

It's unclear to me how IDL's "Binary Import" macro could import a MATLAB .mat file. A MATLAB data file consists of a very complex description of how the data is stored, then there is the actual data which can be in several non-trivial formats. Because of the nature of MATLAB variables the MATLAB V5 data format is also recursive - cells and structures can each contain other cells and structures... Unless you understand exactly how MATLAB has chosen to save your data it's virtually impossible to read it with anything other than MATLAB. It can be done, but not with a simple binary import.

The best way to export data to be read by other applications is to use a simple binary write (fwrite). This limits the type of data you can export, but if it can't be exported by fwrite there's a good chance that the external application wouldn't understand the matrix type anyway (how would IDL interpret a MATLAB structure?). After exporting in binary it should be trivial to import into IDL. You may have to do some work transposing rows/columns as I believe MATLAB and

IDL have different ideas on whether a 2D array should be column-major or row-major.

I did, many eons ago, have some IDL code which would load MATLAB V4 data files into IDL. The V4 data file format is much, much simpler than the V5 format. I think that it's still possible to write data in V4 format from MATLAB by using the -v4 flag to the save command (at least, I think that's how you do it, it's some time since I even ran MATLAB...).

--
Nigel Wade, System Administrator, Space Plasma Physics Group,
University of Leicester, Leicester, LE1 7RH, UK
E-mail : nmw@ion.le.ac.uk
Phone : +44 (0)116 2523548, Fax : +44 (0)116 2523555