GammaLib - Support #2784

compile gammalib/ctools against anaconda python

01/12/2019 10:51 PM - Kelley-Hoskins Nathan

Status:	Closed	**Start date:**	01/12/2019
Priority:	Normal	**Due date:**	
Assigned To:	Knödlseder Jürgen	**% Done:**	100%
Category:		**Estimated time:**	0.00 hour
Target version:	1.6.0		

Description

I'm in a situation where I can get access to ~1000 cpu cores, but to do so I need to compile gammalib and ctools against anaconda python. The situation is:

- I have my own veritas python package that depends on 10ish other anaconda python packages, so I can't go without anaconda
- I need to manually compile gammalib and ctools devel, which have a bugfix that the anaconda gammalib releases dont have yet, so I can't use anaconda gammalib/ctools

When I configure+make gammalib against the system python with the following command, leaving out all anaconda stuff, gammalib+ctools compile fine.

```
./configure --prefix=$PWD LDFLAGS=-L$SOFTWARE/cfitsio/lib CPPFLAGS=-I$SOFTWARE/cfitsio/include/
```

When I try to make this with anaconda python, I get many errors like:

```
...
creating build/temp.linux-x86_64-3.6/gammalib
gcc -Wsign-compare -DNDEBUG -g -fwrapv -O3 -Wall -Wstrict-prototypes -fPIC -I../include
 -I/nv/hp11/nkelleyh3/data/software/cfitsio/include/ -I/gpfs/pace2/project/pc1/nkelleyh3/software/miniconda3/include/python3.6m
 -I/gpfs/pace2/project/pc1/nkelleyh3/software/miniconda3/include/python3.6m -I../inst/mwl/include -I../inst/cta/include
 -I../inst/lat/include -I../inst/com/include -I/nv/hp11/nkelleyh3/data/software/miniconda3/include/python3.6m -c
 gammalib/app_wrap.cpp -o build/temp.linux-x86_64-3.6/gammalib/app_wrap.o -fopenmp
cc1plus: warning: command line option ‘-Wstrict-prototypes’ is valid for C/ObjC but not for C++
gammalib/app_wrap.cpp: In function ‘swig_module_info* SWIG_Python_GetModule()’:
gammalib/app_wrap.cpp:2452:51: error: ‘PyCObject_Import’ was not declared in this scope
        (char*)"type_pointer" SWIG_TYPE_TABLE_NAME);
                                                   ^
gammalib/app_wrap.cpp: In function ‘void SWIG_Python_SetModule(swig_module_info*)’:
gammalib/app_wrap.cpp:2521:92: error: ‘PyCObject_FromVoidPtr’ was not declared in this scope
   PyObject *pointer = PyCObject_FromVoidPtr((void *) swig_module, SWIG_Python_DestroyModule);
                                                                                            ^
gammalib/app_wrap.cpp:2512:22: warning: unused variable ‘swig_empty_runtime_method_table’ [-Wunused-variable]
   static PyMethodDef swig_empty_runtime_method_table[] = { {NULL, NULL, 0, NULL} };/* Sentinel */
                     ^
gammalib/app_wrap.cpp: In function ‘swig_type_info* SWIG_Python_TypeQuery(const char*)’:
gammalib/app_wrap.cpp:2544:60: error: ‘PyCObject_AsVoidPtr’ was not declared in this scope
     descriptor = (swig_type_info *) PyCObject_AsVoidPtr(obj);
                                                         ^
gammalib/app_wrap.cpp:2549:51: error: ‘PyCObject_FromVoidPtr’ was not declared in this scope
       obj = PyCObject_FromVoidPtr(descriptor, NULL);
                                                   ^

...

gammalib/app_wrap.cpp:17046:59: error: ‘PyString_AsString’ was not declared in this scope
       temp2 = GFilename(std::string(PyString_AsString(obj1)));
                                                           ^
gammalib/app_wrap.cpp:17050:106: error: ‘PyString_AsString’ was not declared in this scope
       temp2 = GFilename(std::string(PyString_AsString(PyUnicode_AsEncodedString(obj1, "utf-8", "Error ~"))));
```

```
                                                                                        ^
gammalib/app_wrap.cpp: In function ‘PyObject* _wrap_GApplicationPar_filename(PyObject*, PyObject*)’:
gammalib/app_wrap.cpp:17847:35: error: ‘PyString_Check’ was not declared in this scope
        if (PyString_Check(argv[1]) ||
                                   ^
error: command 'gcc' failed with exit status 1
make[3]: *** [build] Error 1
make[3]: Leaving directory `/gpfs/pace2/project/pc1/nkelleyh3/software/gammalib-devel/pyext'
make[2]: *** [all] Error 2
make[2]: Leaving directory `/gpfs/pace2/project/pc1/nkelleyh3/software/gammalib-devel/pyext'
make[1]: *** [all-recursive] Error 1
make[1]: Leaving directory `/gpfs/pace2/project/pc1/nkelleyh3/software/gammalib-devel'
make: *** [all] Error 2
```

I've found python has a python-config, which spits out various flags, but anaconda version doesn't symlink it very well:

```
$ cd /nv/hp11/nkelleyh3/data/software/miniconda3/bin
 $ ls -l py*config
lrwxrwxrwx 1 nkelleyh3 phy-otte   17 Jan  6 08:19 python3.6-config -> python3.6m-config
-rwxrwxr-x 1 nkelleyh3 phy-otte 3428 Jan  6 08:18 python3.6m-config
lrwxrwxrwx 1 nkelleyh3 phy-otte   17 Jan  6 08:19 python3-config -> python3.6m-config
```

I tried adding the include flags from this python-config into the gammalib configure command, like:

```
./configure --prefix=$PWD LDFLAGS=-L$SOFTWARE/cfitsio/lib CPPFLAGS="-I$SOFTWARE/cfitsio/include/ $(python3.6m-config
 --includes)"
```

But I get the same above errors. I've also added miniconda/lib to LD_LIBRARY_PATH, but no luck that way either.

I realize that if this build is successful, and anaconda updates any part of itself, this gammalib/ctools will probably break and need to be recompiled, but thats acceptable price for 1000 cpu cores.

Does anyone know the right configure commands to compile gammalib/ctools against anaconda python?

History

#1 - 01/13/2019 09:38 PM - Knödlseder Jürgen

Here is how GammaLib and ctools are built for anaconda. You may check if this also works for you:

```
# Setup environment
export PATH="$HOME/miniconda3/bin:$PATH"
source activate build

# Clean conda source and build cache
conda clean -s
rm -rf $HOME/miniconda3/conda-bld/*-64/*
rm -rf $HOME/miniconda3/conda-bld/src_cache/*

# Create conda recipe
./autogen.sh
./configure

# Build conda packages
conda-build dev/conda.recipe
```

```
# Setup environment
export PATH="$HOME/miniconda3/bin:$PATH"
source activate build
```

```
# Clean conda source and build cache
conda clean -s
rm -rf $HOME/miniconda3/conda-bld/*-64/*
rm -rf $HOME/miniconda3/conda-bld/src_cache/*

# Create conda recipe
export GAMMALIB=$HOME/jenkins/install/release/gammalib
./autogen.sh
./configure

# Build conda packages
conda-build dev/conda.recipe
```

#2 - 01/18/2019 05:12 PM - Kelley-Hoskins Nathan

- Status changed from New to Resolved

I've got it working. I think the trick is that gcc, swig, and cfitsio must all be installed via anaconda, rather than using other (system or manual) installations.

The commands I used to install them are:

```
$ conda install gcc swig
$ conda install -c conda-forge cfitsio
```

Then configuring gammalib and ctools was just like normal (no extra lib or include flags):

```
$ cd gammalib
$ ./autogen.sh
$ ./configure --prefix=$PWD
$ make
$ make install
```

My current package list is (most packages came by default with anaconda):

```
# packages in environment at /nv/hp11/nkelleyh3/data/software/anaconda:
#
# Name                    Version                   Build  Channel
_ipyw_jlab_nb_ext_conf    0.1.0                     py36_0
alabaster                 0.7.12                    py36_0
anaconda                  custom                    py36hbbc8b67_0
anaconda-client           1.7.2                     py36_0
anaconda-navigator        1.9.6                     py36_0
anaconda-project          0.8.2                     py36_0
asn1crypto                0.24.0                    py36_0
astroid                   2.1.0                     py36_0
astropy                   3.1.1                     py36h7b6447c_0
atomicwrites              1.2.1                     py36_0
attrs                     18.2.0                    py36h28b3542_0
babel                     2.6.0                     py36_0
```

backcall	0.1.0	py36_0	
backports	1.0	py36_1	
backports.os	0.1.1	py36_0	
backports.shutil_get_terminal_size	1.0.0	py36_2	
beautifulsoup4	4.6.3	py36_0	
bitarray	0.8.3	py36h14c3975_0	
bkcharts	0.2	py36_0	
blas	1.0	mkl	
blaze	0.11.3	py36_0	
bleach	3.0.2	py36_0	
blosc	1.14.4	hdbcaa40_0	
bokeh	1.0.3	py36_0	
boto	2.49.0	py36_0	
bottleneck	1.2.1	py36h035aef0_1	
bzip2	1.0.6	h14c3975_5	
ca-certificates	2018.11.29	ha4d7672_0	conda-forge
cairo	1.14.12	h8948797_3	
certifi	2018.11.29	py36_1000	conda-forge
cffi	1.11.5	py36he75722e_1	
cfitsio	3.430	hc04bd9f_1001	conda-forge
chardet	3.0.4	py36_1	
click	7.0	py36_0	
cloog	0.18.0	0	
cloudpickle	0.6.1	py36_0	
clyent	1.2.2	py36_1	
colorama	0.4.1	py36_0	
conda	4.5.12	py36_1000	conda-forge
conda-build	3.17.6	py36_0	
conda-env	2.6.0	1	
conda-verify	3.1.1	py36_0	
contextlib2	0.5.5	py36_0	
cryptography	2.3.1	py36hdffb7b8_0	conda-forge
cryptography-vectors	2.3.1	py36_1000	conda-forge
curl	7.63.0	h74213dd_0	conda-forge
cycler	0.10.0	py36_0	
cython	0.29.2	py36he6710b0_0	
cytoolz	0.9.0.1	py36h14c3975_1	
dask	1.0.0	py36_0	
dask-core	1.0.0	py36_0	
datashape	0.5.4	py36_1	
dbus	1.13.2	h714fa37_1	
decorator	4.3.0	py36_0	
defusedxml	0.5.0	py36_1	
distributed	1.25.2	py36_0	
docutils	0.14	py36_0	
entrypoints	0.2.3	py36_2	
et_xmlfile	1.0.1	py36_0	
expat	2.2.6	he6710b0_0	
fastcache	1.0.2	py36h14c3975_2	
filelock	3.0.10	py36_0	
flask	1.0.2	py36_1	
flask-cors	3.0.7	py36_0	
fontconfig	2.13.0	h9420a91_0	
freetype	2.9.1	h8a8886c_1	
fribidi	1.0.5	h7b6447c_0	
future	0.17.1	py36_0	
gcc	4.8.5	7	
get_terminal_size	1.0.0	haa9412d_0	
gevent	1.4.0	py36h7b6447c_0	
glib	2.56.2	hd408876_0	
glob2	0.6	py36_1	
gmp	6.1.2	h6c8ec71_1	
graphite2	1.3.13	h23475e2_0	
greenlet	0.4.15	py36h7b6447c_0	
gst-plugins-base	1.14.0	hbbd80ab_1	
gstreamer	1.14.0	hb453b48_1	
h5py	2.9.0	py36h7918eee_0	
harfbuzz	1.8.8	hffaf4a1_0	
hdf5	1.10.4	hb1b8bf9_0	
heapdict	1.0.0	py36_2	
html5lib	1.0.1	py36_0	
icu	58.2	h9c2bf20_1	
idna	2.8	py36_0	
imageio	2.4.1	py36_0	
imagesize	1.1.0	py36_0	

importlib_metadata	0.6	py36_0	
intel-openmp	2019.1	144	
ipykernel	5.1.0	py36h39e3cac_0	
ipython	7.2.0	py36h39e3cac_0	
ipython_genutils	0.2.0	py36_0	
ipywidgets	7.4.2	py36_0	
isl	0.12.2	0	
isort	4.3.4	py36_0	
itsdangerous	1.1.0	py36_0	
jbig	2.1	hdba287a_0	
jdcal	1.4	py36_0	
jedi	0.13.2	py36_0	
jeepney	0.4	py36_0	
jinja2	2.10	py36_0	
jpeg	9b	h024ee3a_2	
jsonschema	2.6.0	py36_0	
jupyter	1.0.0	py36_7	
jupyter_client	5.2.4	py36_0	
jupyter_console	6.0.0	py36_0	
jupyter_core	4.4.0	py36_0	
jupyterlab	0.35.3	py36_0	
jupyterlab_server	0.2.0	py36_0	
keyring	17.1.1	py36_0	
kiwisolver	1.0.1	py36hf484d3e_0	
krb5	1.16.2	hbb41f41_0	conda-forge
lazy-object-proxy	1.3.1	py36h14c3975_2	
libarchive	3.3.3	h823be47_0	conda-forge
libcurl	7.63.0	hbdb9355_0	conda-forge
libedit	3.1.20170329	h6b74fdf_2	
libffi	3.2.1	hd88cf55_4	
libgcc-ng	8.2.0	hdf63c60_1	
libgfortran-ng	7.3.0	hdf63c60_0	
libiconv	1.15	h470a237_4	conda-forge
liblief	0.9.0	h7725739_1	
libpng	1.6.36	hbc83047_0	
libsodium	1.0.16	h1bed415_0	
libssh2	1.8.0	h5b517e9_3	conda-forge
libstdcxx-ng	8.2.0	hdf63c60_1	
libtiff	4.0.9	he85c1e1_2	
libtool	2.4.6	h7b6447c_5	
libuuid	1.0.3	h1bed415_2	
libxcb	1.13	h1bed415_1	
libxml2	2.9.8	h26e45fe_1	
libxslt	1.1.32	h1312cb7_0	
llvmlite	0.27.0	py36hd408876_0	
locket	0.2.0	py36_1	
lxml	4.3.0	py36hefd8a0e_0	
lz4-c	1.8.1.2	h14c3975_0	
lzo	2.10	h49e0be7_2	
markupsafe	1.1.0	py36h7b6447c_0	
matplotlib	3.0.2	py36h5429711_0	
mccabe	0.6.1	py36_1	
mistune	0.8.4	py36h7b6447c_0	
mkl	2019.1	144	
mkl-service	1.1.2	py36he904b0f_5	
mkl_fft	1.0.10	py36ha843d7b_0	
mkl_random	1.0.2	py36hd81dba3_0	
more-itertools	5.0.0	py36_0	
mpc	1.0.3	hec55b23_5	
mpfr	3.1.5	h11a74b3_2	
mpmath	1.1.0	py36_0	
msgpack-python	0.5.6	py36h6bb024c_1	
multipledispatch	0.6.0	py36_0	
navigator-updater	0.2.1	py36_0	
nbconvert	5.3.1	py36_0	
nbformat	4.4.0	py36_0	
ncurses	6.1	hfc679d8_2	conda-forge
networkx	2.2	py36_1	
nltk	3.4	py36_1	
nose	1.3.7	py36_2	
notebook	5.7.4	py36_0	
numba	0.42.0	py36h962f231_0	
numexpr	2.6.9	py36h9e4a6bb_0	
numpy	1.15.4	py36h7e9f1db_0	
numpy-base	1.15.4	py36hde5b4d6_0	

numpydoc	0.8.0	py36_0	
odo	0.5.1	py36_0	
olefile	0.46	py36_0	
openpyxl	2.5.12	py36_0	
openssl	1.0.2p	h14c3975_1002	conda-forge
packaging	18.0	py36_0	
pandas	0.23.4	py36h04863e7_0	
pandoc	2.2.3.2	0	
pandocfilters	1.4.2	py36_1	
pango	1.42.4	h049681c_0	
parso	0.3.1	py36_0	
partd	0.3.9	py36_0	
patchelf	0.9	he6710b0_3	
path.py	11.5.0	py36_0	
pathlib2	2.3.3	py36_0	
patsy	0.5.1	py36_0	
pcre	8.42	h439df22_0	
pep8	1.7.1	py36_0	
pexpect	4.6.0	py36_0	
pickleshare	0.7.5	py36_0	
pillow	5.4.1	py36h34e0f95_0	
pip	18.1	py36_0	
pixman	0.34.0	hceecf20_3	
pkginfo	1.4.2	py36_1	
pluggy	0.8.0	py36_0	
ply	3.11	py36_0	
prometheus_client	0.5.0	py36_0	
prompt_toolkit	2.0.7	py36_0	
psutil	5.4.8	py36h7b6447c_0	
ptyprocess	0.6.0	py36_0	
py	1.7.0	py36_0	
py-lief	0.9.0	py36h7725739_1	
pycodestyle	2.4.0	py36_0	
pycosat	0.6.3	py36h14c3975_0	
pycparser	2.19	py36_0	
pycrypto	2.6.1	py36h14c3975_9	
pycurl	7.43.0.2	py36hb7f436b_0	
pyflakes	2.0.0	py36_0	
pygments	2.3.1	py36_0	
pylint	2.2.2	py36_0	
pyodbc	4.0.25	py36he6710b0_0	
pyopenssl	18.0.0	py36_0	
pyparsing	2.3.0	py36_0	
pyqt	5.9.2	py36h05f1152_2	
pysocks	1.6.8	py36_0	
pytables	3.4.4	py36h71ec239_0	
pytest	4.0.2	py36_0	
pytest-arraydiff	0.3	py36h39e3cac_0	
pytest-astropy	0.5.0	py36_0	
pytest-doctestplus	0.2.0	py36_0	
pytest-openfiles	0.3.1	py36_0	
pytest-remotedata	0.3.1	py36_0	
python	3.6.6	h5001a0f_3	conda-forge
python-dateutil	2.7.5	py36_0	
python-libarchive-c	2.8	py36_6	
pytz	2018.7	py36_0	
pywavelets	1.0.1	py36hdd07704_0	
pyyaml	3.13	py36h14c3975_0	
pyzmq	17.1.2	py36h14c3975_0	
qt	5.9.6	h8703b6f_2	
qtawesome	0.5.3	py36_0	
qtconsole	4.4.3	py36_0	
qtpy	1.5.2	py36_0	
readline	7.0	h7b6447c_5	
requests	2.21.0	py36_0	
rope	0.11.0	py36_0	
ruamel_yaml	0.15.46	py36h14c3975_0	
scikit-image	0.14.1	py36he6710b0_0	
scikit-learn	0.20.2	py36hd81dba3_0	
scipy	1.1.0	py36h7c811a0_2	
seaborn	0.9.0	py36_0	
secretstorage	3.1.0	py36_0	
send2trash	1.5.0	py36_0	
setuptools	40.6.3	py36_0	
simplegeneric	0.8.1	py36_2	

singledispatch	3.4.0.3	py36_0
sip	4.19.8	py36hf484d3e_0
six	1.12.0	py36_0
snappy	1.1.7	hbae5bb6_3
snowballstemmer	1.2.1	py36_0
sortedcollections	1.0.1	py36_0
sortedcontainers	2.1.0	py36_0
sphinx	1.8.2	py36_0
sphinxcontrib	1.0	py36_1
sphinxcontrib-websupport	1.1.0	py36_1
spyder	3.3.2	py36_0
spyder-kernels	0.3.0	py36_0
sqlalchemy	1.2.15	py36h7b6447c_0
sqlite	3.26.0	h7b6447c_0
statsmodels	0.9.0	py36h035aef0_0
swig	3.0.12	h38cdd7d_3
sympy	1.1	py36_0
tblib	1.3.2	py36_0
terminado	0.8.1	py36_1
testpath	0.4.2	py36_0
tk	8.6.8	hbc83047_0
toolz	0.9.0	py36_0
tornado	5.1.1	py36h7b6447c_0
tqdm	4.28.1	py36h28b3542_0
traitlets	4.3.2	py36_0
typed-ast	1.1.0	py36h14c3975_0
unicodecsv	0.14.1	py36_0
unixodbc	2.3.7	h14c3975_0
urllib3	1.24.1	py36_0
wcwidth	0.1.7	py36_0
webencodings	0.5.1	py36_1
werkzeug	0.14.1	py36_0
wheel	0.32.3	py36_0
widgetsnbextension	3.4.2	py36_0
wrapt	1.10.11	py36h14c3975_2
wurlitzer	1.0.2	py36_0
xlrd	1.2.0	py36_0
xlsxwriter	1.1.2	py36_0
xlwt	1.3.0	py36_0
xz	5.2.4	h14c3975_4
yaml	0.1.7	had09818_2
zeromq	4.2.5	hf484d3e_1
zict	0.1.3	py36_0
zlib	1.2.11	h7b6447c_3
zstd	1.3.7	h0b5b093_0

#3 - 03/06/2019 12:35 PM - Knödlseder Jürgen

- Status changed from Resolved to Closed

- Assigned To set to Knödlseder Jürgen

- Target version set to 1.6.0

- % Done changed from 0 to 100

I added some text to the Known issues section of GammaLib and ctools.