

Compiling LSMLIB MATLAB Toolbox with CMake and Visual Studio

Platform: Windows XP SP2 Visual Studio.net 2003 MATLAB 2008b gfortran

Step 1 : Compiling the fortran subroutines in the ./src subdirectory in the command line.

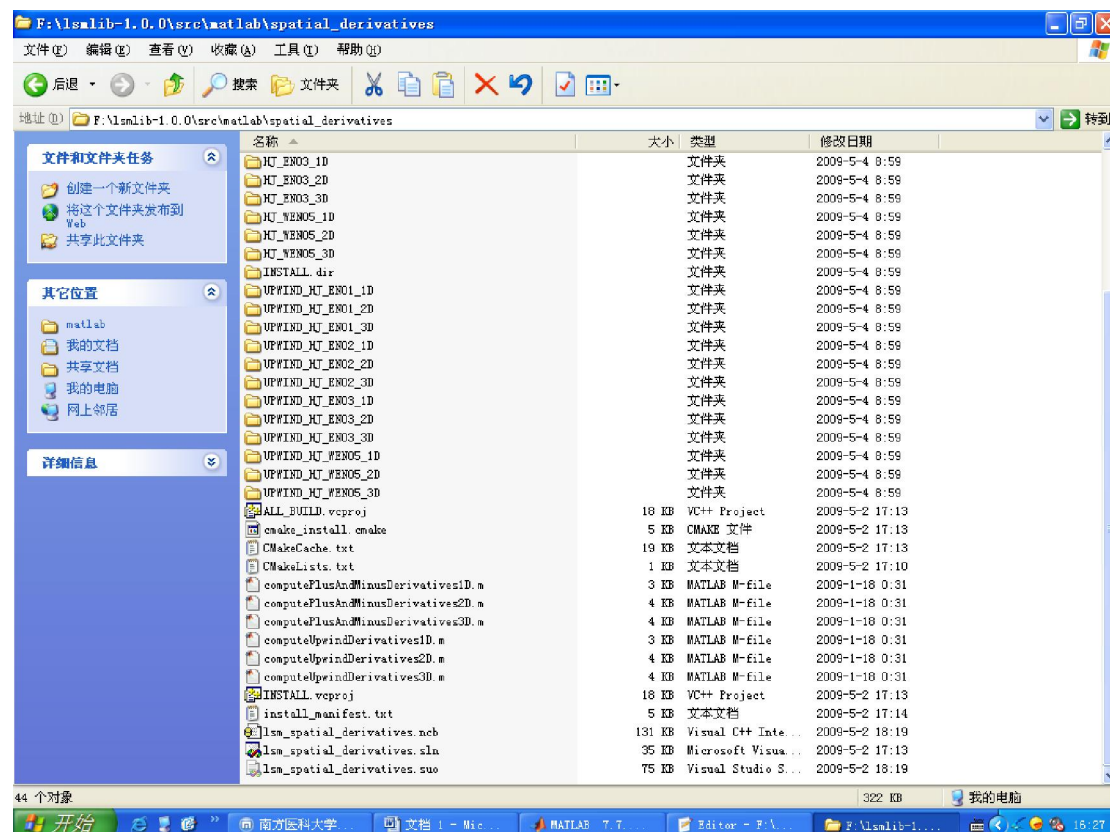
For examples, if one want to compile the fortran subroutines in the ./src/spatial_derivatives directory, He can input the following command in the command line.

```
gfortran -c -fdefault-real-8 *.f  
ar -cru liblsm_spatial_derivatives.a *.o
```

Then rename the file liblsm_spatial_derivatives.a into liblsm_spatial_derivatives.lib

Step 2 : Regrouping and files in the directory ./src/matlab/spatial_derivatives and writing

CMakeLists.txt



The CmakeLists.txt in the top-level directory :

```
cmake_minimum_required( VERSION 2.6 )
```

```
project( lsm_spatial_derivatives )
```

```
add_subdirectory( HJ_ENO1_1D )
add_subdirectory( HJ_ENO1_2D )
add_subdirectory( HJ_ENO1_3D )
add_subdirectory( HJ_ENO2_1D )
add_subdirectory( HJ_ENO2_2D )
add_subdirectory( HJ_ENO2_3D )
add_subdirectory( HJ_ENO3_1D )
add_subdirectory( HJ_ENO3_2D )
add_subdirectory( HJ_ENO3_3D )
add_subdirectory( HJ_WENO5_1D )
add_subdirectory( HJ_WENO5_2D )
add_subdirectory( HJ_WENO5_3D )
add_subdirectory( UPWIND_HJ_ENO1_1D )
add_subdirectory( UPWIND_HJ_ENO1_2D )
add_subdirectory( UPWIND_HJ_ENO1_3D )
add_subdirectory( UPWIND_HJ_ENO2_1D )
add_subdirectory( UPWIND_HJ_ENO2_2D )
add_subdirectory( UPWIND_HJ_ENO2_3D )
add_subdirectory( UPWIND_HJ_ENO3_1D )
add_subdirectory( UPWIND_HJ_ENO3_2D )
add_subdirectory( UPWIND_HJ_ENO3_3D )
add_subdirectory( UPWIND_HJ_WENO5_1D )
add_subdirectory( UPWIND_HJ_WENO5_2D )
add_subdirectory( UPWIND_HJ_WENO5_3D )
add_subdirectory( CENTRAL_GRAD_ORDER2_2D )
add_subdirectory( CENTRAL_GRAD_ORDER4_2D )
```

The individual Cmakelists.txt in the subdirectories

```
cmake_minimum_required( VERSION 2.6 )
```

```
# matlab specific stuff
```

```
set( matlab_include_path D:/Program Files/MATLAB/R2008b/extern/include )
set( lsmlib_include_path F:/VISUAL_STUDIO_PROJECT/LEVEL_SET/lsmlib-1.0.0/include )

set( matlab_library_path D:/Program Files/MATLAB/R2008b/extern/lib/win32/microsoft )
set( lsmlib_library_path F:/VISUAL_STUDIO_PROJECT/LEVEL_SET/lsmlib-1.0.0/lib )

include_directories( ${matlab_include_path} ${lsmlib_include_path} )
link_directories( ${matlab_library_path} ${lsmlib_library_path} )
link_libraries( libmx.lib libmex.lib libeng.lib )

set( source_file
CENTRAL_GRAD_ORDER2_2D.c
CENTRAL_GRAD_ORDER2_2D.def )

add_library( CENTRAL_GRAD_ORDER2_2D SHARED ${source_file} )
target_link_libraries( CENTRAL_GRAD_ORDER2_2D liblsm_spatial_derivatives.lib )

install_targets( /F:/VISUAL_STUDIO_PROJECT/LEVEL_SET/lsmlib-1.0.0/lib/matlab
                RUNTIME_DIRECTORY
                /F:/VISUAL_STUDIO_PROJECT/LEVEL_SET/lsmlib-1.0.0/lib/matlab
                CENTRAL_GRAD_ORDER2_2D )
```

Notes : One should create a .def file in each corresponding directory first, the contents is listed below.

```
LIBRARY CENTRAL_GRAD_ORDER2_2D.DLL
```

```
EXPORTS
```

```
    mexFunction
```

Then in the top-level directory, a workspace file named lsm_spatial_derivatives.sln will appear.

Opening the workspace with Visual Studio.net 2003, one will find and ALL_BUILD project and a INSTALL project. Just build them.

