Setting up humanshape code on Windows 7

Operating system and software used

- Windows 7 64 bit
- Matlab R2015a 64 bit
- Visual Studio 2013 Professional for mex file creation (C and C++ compiler)
- Intel Visual Fortran Composer 2013 (part of Intel Cluster Studio 2013) and MS Visual Studio 2012 Professional for mex file creation (FORTRAN compiler)

To compile external\lbfgsb-for-matlab

- Code changes
    - matlabprogram.cpp
        - l.144: const int   nlhs = 1;
        - l.169: mxArray** plhs = (mxArray**) (mxCalloc(nlhs, sizeof(mxArray*)));
        - add after l.193: mxFree(plhs);
    - program.h and program.cpp
        - replace setulb_ by SETULB (different compiler convention for naming)
- Run mex in matlab using the following four commands
    - mkdir objfiles
    - mex -c -outdir objfiles/ "...\humanshape\external\lbfgsb-for-matlab\solver.f"
    - mex -output lbfgsb.mexa64 "...\humanshape\external\lbfgsb-for-matlab\matlabexception.cpp" "...\humanshape\external\lbfgsb-for-matlab\matlabscalar.cpp" "...\humanshape\external\lbfgsb-for-matlab\matlabstring.cpp" "...\humanshape\external\lbfgsb-for-matlab\matlabmatrix.cpp" "...\humanshape\external\lbfgsb-for-matlab\arrayofmatrices.cpp" "...\humanshape\external\lbfgsb-for-matlab\program.cpp" "...\humanshape\external\lbfgsb-for-matlab\matlabprogram.cpp" "...\humanshape\external\lbfgsb-for-matlab\lbfgsb.cpp" objfiles/solver.obj
    - rmdir('objfiles','s')

    Here … is the location on disk where humanshape is stored (e.g. "C:\Code")
- This generates the file lbfgsb.mexw64

To compile shapemodel

- Code changes
  - shapemodel\lib\include\bool.h
    - do not use this file by commenting out everything
  - shapemodel\lib\include\o_Vector.h
    - l. 8: #ifdef _WIN32 || _WIN64
  - CTMesh.h and CTMesh-30DOF.cpp
    - comment out the following function, as it causes problems in terms of how arrays are allocated and is never used
    static void readShapeSpaceEigens(std::string fileName, int numEigenVectors);
- Run mex in matlab using the following command
  - mex -output shapepose.mexw64 -I...\humanshape\shapemodel\lib\nr\ -I...\humanshape\shapemodel\lib\include\ "...\humanshape\shapemodel\shapepose.cpp" "...\humanshape\shapemodel\Show.cpp" "...\humanshape\shapemodel\NMath.cpp" "...\humanshape\shapemodel\NRBM.cpp" "...\humanshape\shapemodel\paramMap.cpp" "...\humanshape\shapemodel\CTMesh-30DOF.cpp"

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- This generates the file shapepose.mexw64

To compile rigidAlign (in evaluation\statQuality)

- Code changes
  - GeneralizedProcrustes.h and Generalized Procrustes.cpp
    - replace « long int » by « std::ptrdiff_t »
    - l.210: replace dgels_ by dgels
    - l.227: replace dgesvd_ by dgesvd
    - l.235 and l.262: replace dgemm_ by dgemm
- Run mex in matlab using the following command
  - mex -largeArrayDims -output rigidAlign.mexw64 -Imatlabroot\extern\include\ "...\humanshape\evaluation\statQuality\rigidAlign.cpp" "...\humanshape\evaluation\statQuality\GeneralizedProcrustes.cpp" -Lmatlabroot\extern\lib\win64\microsoft\ -llibmwblas.lib -llibmwlapack.lib

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- This generates the file rigidAlign.mexw64

To compile ErrorEvaluation (in evaluation\statQuality)

- Code changes
  - GaussVector.cpp
    - l.84: replace dlamch_ by dlamch
    - l.99: replace dsyevx_ by dsyevx
    - l.134: replace dgemm_ by dgemm
    - l.176 and l.206: replace dgemv_ by dgemv
  - UnsupervisedLearning.h
    - after l.26: #include <algorithm>
- Run mex in matlab using the following command
  - mex -largeArrayDims -output ErrorEvaluation.mexw64 -Imatlabroot\extern\include\
    "...\humanshape\evaluation\statQuality\ErrorEvaluation.cpp"
    "...\humanshape\evaluation\statQuality\GeneralizedProcrustes.cpp"
    "...\humanshape\evaluation\statQuality\patternRecognitionPCA.cpp"
    "...\humanshape\evaluation\statQuality\Mle.cpp"
    "...\humanshape\evaluation\statQuality\GaussVector.cpp"
    "...\humanshape\evaluation\statQuality\UnsupervisedLearning.cpp"
    -Lmatlabroot\extern\lib\win64\microsoft\ -llibmwblas.lib -llibmwlapack.lib

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- This generates the file ErrorEvaluation.mexw64