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%
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%
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% May 2012
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 Welcome.  before starting to use this toolbox, you would need to perform
 some steps:

 1- Set the path of the toolbox directories in Matlab.
     There are two ways to do that:
     The temporary change of the path(recommended)
       1.1. cd to the directory of toolbox :
       1.2. type HoloRec3DPath(pwd) in the command line of Matlab
    OR the global change of the path:
       1.1. Choose 'File/Set Path...'
       1.2. In the opened window, choose the button 'Add with
subfolders',
       and select the folder containig this toolbox - HoloRec3D_v1.3

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 2- IF YOU HAVE THE C-SOURCE CODES : Compile the mex functions for your
PC's  configuration
     To do so:
     2.1. cd to ~/HoloRec3D_v1.3/IPA/C_src

     2.2. Run compile_mex.m
     - To have a successful compilation, you would need to have a C++
compiler         installed on your machine.
     - If you don't have a C++ compiler, check
           http://mingw.org/category/wiki/download to download a free
one. Note that if             your system is Winx64,
         you will have to install Microsoft Visual C++ instead.

     - FOR SIMPLE USE: For the simple usage through the graphical user
                interface, you don't need to succeed in the compilation
of                              'model_mex_faster.cpp' and/or
'Qmap_mex.cpp'.
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- FOR COMPLEX USE ONLY: To be able to compile the mex function 'model_mex_faster.cpp' for the fast model with multi-threading, your compiler should access OpenMP library. If you can't use multi-threading, make sure to provide the argument MEXmodelFAST=0. This will cause the program to run slower.

- FOR COMPLEX USE ONLY: To see details of compilation of mex functions, check the help of Matlab for mex.

- FOR COMPLEX USE ONLY: If you can't compile the file 'Qmap_mex.cpp', be careful to set the parameter MEXQmap=0 wherever it has been asked for (e.g., in the MAIN_IPA.m and MAIN_FAST.m ).

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3- Start using the toolbox

NOTE : you can find sample holograms and other information in the folder ./HoloRec3D/Data/ + ./HoloRec3D/simulations + ./HoloRec3D/holo_LMFA.

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SIMPLE USE:

- You can start working with the toolbox through the Graphical User Interface - To do so, type 'GUI' in the command line. You are ready to go!

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COMPLEX USE:

- You can directly check the headers of the files for the directions on the inputs/outputs parameters and test of that function.

- There are two sample files which allow you to process holograms using inverse problems approach: One for single-scale approach and one for multi-scale approach.

3.1. Single-scale approach :

The corresponding files are located in ~/HoloRec3D_v1.3/IPA/. This folder contains:

one .m file called

3.1.1. MAIN_IPA.m : this file is the sample file where you can set the application parameters. please read the comments to provide the relevant parameters. Some parameters like alpha_threshold are practically found according to the application (in the case of simulations, this value is very close to 2).

and 5 sub_folders namely:

3.1.2. ./bin : This folder contains the binary files for the mex functions

3.1.3. ./m_src : This folder contains the Matlab source files in .m
format
3.1.4. ./help : This folder contains the help files for the mex
functions, e.g., the descriptions on the inputs
and outputs of the functions.

3.2. Multi-scale approach :
This folder extends the previous part to use pyramidal approach. The corresponding files are located in ~/HoloRec3D_v1.3/FAST/. This folder contains three .m files.
one .m file called
3.2.1. MAIN_FAST.m : this file is the sample file where you can
set the application parameters. please read
the comments to provide the relevant parameters.
Using the pyramidal approach, there are some
extra parameters which you would need to set.

ENJOY !