

UNLocBoX: MAJOR CHANGES FOR VERSION 1

MATLAB CONVEX OPTIMIZATION TOOLBOX

Lausanne - November 2012

PERRAUDIN Nathanaël nathanael.perraudin@epfl.ch

LTS2 - EPFL

1 About this document

This document is made to relate the major change between the version 0.3 and 1.0 of the UnLocboX. We highly recommend to spend 5 minutes reading this document if you have some code running on a old version of the UnLocBoX.

All information about the UnLocBoX can be found on <http://unlocbox.sourceforge.net>.

2 Change of variable name

In order to be consistent with the usual matlab name, we change some parameter names. If you provide parameter with old names, those would just be ignored without any warning. A list is presented below

	Old parameter name	New parameter name	Parameter function
1)	<i>param.epsilon</i>	<i>param.tol</i>	Tolerance. Algorithm is consider to have converges if the relative tolerance is less than <i>param.tol</i> .
2)	<i>param.max_iter</i>	<i>param.maxit</i>	Maximum number of iterations to do.
3)	<i>param.Psit</i>	<i>param.A</i>	Operator for the <i>prox_l1</i> function.
4)	<i>param.Psi</i>	<i>param.At</i>	Operator for the <i>prox_l1</i> function.

In function *solve_bpdn* and *solve_tvdn*, the names of the parameter are different. So, if you used one of these functions, just have a look to their documentation again.

3 Change of name of functions

In order to be consistent with the matlab notation, all names of function have no capital letters any more. This affects in particular all proximal operators and all example files. Here is an exhaustive list of the affected functions:

	Old function name	New function name
1)	<i>fast_proj_B2</i>	<i>fast_proj_b2</i>
2)	<i>proj_B2</i>	<i>proj_b2</i>
3)	<i>proj_B1</i>	<i>proj_b1</i>
4)	<i>prox_L1</i>	<i>prox_l1</i>
5)	<i>prox_L1inf</i>	<i>prox_linf</i>
6)	<i>prox_L12</i>	<i>prox_l12</i>
7)	<i>prox_sumG</i>	<i>prox_sumg</i>
8)	<i>prox_NuclearNorm</i>	<i>prox_nuclearnorm</i>
9)	<i>prox_TV</i>	<i>prox_tv</i>
10)	<i>prox_TV3D</i>	<i>prox_tv3d</i>
11)	<i>norm_TV</i>	<i>norm_tv</i>
12)	<i>norm_3DTV</i>	<i>norm_3dtv</i>
13)	<i>norm_NDTV</i>	<i>norm_ndtv</i>
14)	<i>gradient_op3Dx</i>	<i>gradient_op3d</i>
15)	<i>div_op3D</i>	<i>div_op3d</i>
16)	<i>norm_L1inf</i>	<i>norm_l1inf</i>
17)	<i>norm_L12</i>	<i>norm_l12</i>
18)	<i>norm_sumG</i>	<i>norm_sumg</i>
19)	<i>RLR</i>	<i>rlr</i>
20)	<i>solve_BPDN</i>	<i>solve_pbdn</i>
21)	<i>solve_TVDN</i>	<i>solve_tvdn</i>

Moreover the examples have been renamed demo.

4 Improvements

The code remains mostly unchanged. Only small modification has been done. However some structural improvement has been done.

- All matrices can be passed as operators. This allows firstly more flexibility such as using linear operator without having to define their matrices (For example: `fft`). Secondly, it can in some case allow the user to save memory. Thirdly using operator often allows using more efficient code.
- Comments have been uniformed all over the toolbox.
- Documentation has been improved and is available on the website <http://unlocbox.sourceforge.net/doc/>.

5 Future

The unlocbox is still a baby project. You can contribute to it with bug reporting, documentation corrections and suggestions or by proposing new functions to be included.

We thank you for using the UnLocBoX.