

Instruction

(1) Install Mosek: |

a) First download Mosek package from here:

<http://mosek.com/resources/download/>

b) Then get a 30-day trial licence or a free academic licence from here:

<http://mosek.com/resources/trial/>

c) If you are using Windows you could just unpack the package you downloaded to any folder. On Unix system or Mac system you should do more following the install documents:

<http://docs.mosek.com/6.0/toolsinstall/index.html>

d) In Matlab, set the path by command 'addpath'. For example, on Windows you should do:

```
% For MATLAB 7.9 (R2009b) or any later version do
addpath 'c:\Program Files\mosek\6\toolbox\r2009b'
% For MATLAB 7.4 (R2007a) to MATLAB 7.8 (R2009a)
addpath 'c:\Program Files\mosek\6\toolbox\r2007a'
% For MATLAB 7.3 (R2006b) do
addpath 'c:\Program Files\mosek\6\toolbox\r2006b'
```

For more detail and other platforms please read this document:

<http://docs.mosek.com/6.0/toolbox/index.html>

e) You can verify that it works by typing 'mosekopt' in Matlab

(2) Install Yalmip:

a) First download Yalmip package from here:

<http://users.isy.liu.se/johanl/yalmip/pmwiki.php?n=Main.Download>

b) Just unzip it and add the following paths in Matlab:

```
/yalmip
/yalmip/extras
/yalmip/demos
/yalmip/solvers
/yalmip/modules
/yalmip/modules/parametric
/yalmip/modules/moment
/yalmip/modules/global
/yalmip/modules/sos
/yalmip/operators
```

For more details please read:

<http://users.isy.liu.se/johanl/yalmip/pmwiki.php?n=Tutorials.Installation>

c) you can verify that it works by typing 'yalmiptest' in Matlab

(3) Prepare data:

We load the data from the Matlab MAT-file, so you should save your data set which you want to test as a MAT-file include three variables:

'X': is the covariance. It should be a (n*d) matrix which n is the number of patients and d is the number of feature.

'Y': is the time data. It is the survival data as a (n*1) matrix corresponding to X

'delta': is the censoring indicator. It is a (n*1) matrix which only include 0 and 1 values. 0 means censored data and 1 means the event.

The size of the three variables should match. We have given several example data sets, you can find them in our program folder.

(4) Modify function gethr.m:

Since this file include the Mosek path, you should change it before you test the demos.

(5) Modify the demo file:

We have two demos: demo and demo2.

Demo is one simple test on the dataset. You can modify the dataset name you have prepared in step (3). And you can modify the name of method we use to model, you can select one from 'minlip', 'minlip1', 'minlipp', 'model2', 'model2p'. By modifying 'tunemethod', 'tunepar', 'testmethod' and 'testpar' you can select different tune method and test method an their parameters. Here is an example:

```
dataset='sorliedataorig'; % Dataset
func='minlip'; % Model function
tunemethod='linesearch'; % Tune method
tunepar={-10,10,1,0.01}; % Tune parameters (serach range/initial values)
testmethod='CV'; % Test method
testpar={3}; % Test parameters
```

Demo2 will repeat the test in demo many times on the random permutations of the data sets. In demo2 you can also set another variable 'nr' which means how many random permutations we want to test.

(6) Run the demo. Some texts will show, include the time cost information and the c-index scores of the test set and train set. You can also find the result in the variables like 'ctest', 'ctrain',etc. Now we have two selections for tuning: 'linesearch' and 'gridsearch', which are used for one parameter and two parameter models. If you run demo2, a box plot will also be given. Note that the program will automatically detect your machine and decide whether it use the parallel toolbox. The newest Matlab support 12 cores parallel program in a local machine, but if you build a distributed network computing system, you could also modify it to fit your case.