The code is based on python 2.7 and on library **networkx**.

To draw undirected graphs with more than one edge between two nodes, networkx needs an external package named **Graphviz** and some other packages as well.

Installing Graphviz is the first step. You can find it in the web page:

http://www.graphviz.org/Download..php

at the download section.

Install **pydot** (possibly 1.0.28 – it is the only one with which the successive package pygraphviz worked on my laptop)

After that you need to install **pygraphviz**, which is a python package that interfaces with graphviz

And can be found here:

http://pygraphviz.github.io/documentation/latest/install.html

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In case you have problem with dot\_parser do this:

pip uninstall pyparsing

pip install -Iv https://pypi.python.org/packages/source/p/pyparsing/pyparsing-1.5.7.tar.gz#md5=9be0fcdcc595199c646ab317c1d9a709

then install pydot as you can find it here (the pip and pycharm installer do not find this version):

https://code.google.com/p/pydot/downloads/detail?name=pydot-1.0.28.zip&can=2&q=

If you install graphviz2,8 you can use the following (install also the wheel):

pip install pygraphviw-1.3rc2-cp27-none-win\_amd64.whl

that is for 64 bits architectures and you can download from:

http://www.lfd.uci.edu/~gohlke/pythonlibs/#pygraphviz

be careful that this is meant for python 2.7 and 64 bits architectures, if not, look for the proper release.

If you want to run the optimization code, you need gurobipy.

You can download it from:

http://www.gurobi.com/documentation/5.6/quick-start-guide/the\_gurobi\_python\_interfac )

before installing, it requires that you register for a free account, that you can do only

if you are on a university host or on the vpn.

Now you should see the installed packages graphviz, pygraphviz and gurobipy.

To make everything work you may also need to change some environment variables (I did not need this):

Variable: GRAPHVIZ\_DOT

valore : C:\Program Files (x86)\Graphviz2.38\bin (cartella di installazione della mia versione di graphviz)

Variable: GUROBI\_HOME

valore: C:\gurobi563\win64 (cartella di installazione della mia versione di gurobipy)

Variable: Path

valore : C:\Program Files (x86)\Graphviz2.38\bin; C:\gurobi563\win64\bin

Of course you have to verify the folder paths.

In the code there are the following files:

1. Recovery : this is the “main”, so it is the first file to execute. To make it work you should change the paths to the folders from which you read and to which you write. These are the first lines after the input . User must be your user name.

path\_to\_dot\_dir= it will contain your dot files 'C:\Users\Utente\Desktop\image\_graph\_dot\DotFile\\'

path\_to\_image\_dir= It will contain you image files

image\_graph\_dot\immagini\_generate -------> 'C:\Users\Utente\Desktop\image\_graph\_dot\immagini\_generate\\'

path\_to\_image\_store= Archive for old images. 'C:\Users\Utente\Desktop\image\_graph\_dot\store\_images\\'

path\_to\_stats= archive to statistics

>'C:\Users\Utente\Desktop\image\_graph\_dot\stats\statistiche\\'

path\_to\_file\_simulation= a sequence number

Example Simulazione\_1, Simulazione\_2, Simulazioe\_3 ecc...

In the folder graph\_dot add a text file namend current\_simulation

With a 0

>'C:\Users\Utente\Desktop\image\_graph\_dot\current\_simulation.txt'