In this tutorial, we tried to depict a brief description about source code of our paper. This program has been written in MATLAB 2011 IDE. Figure 1 shows the environment of MATLAB related to this program.

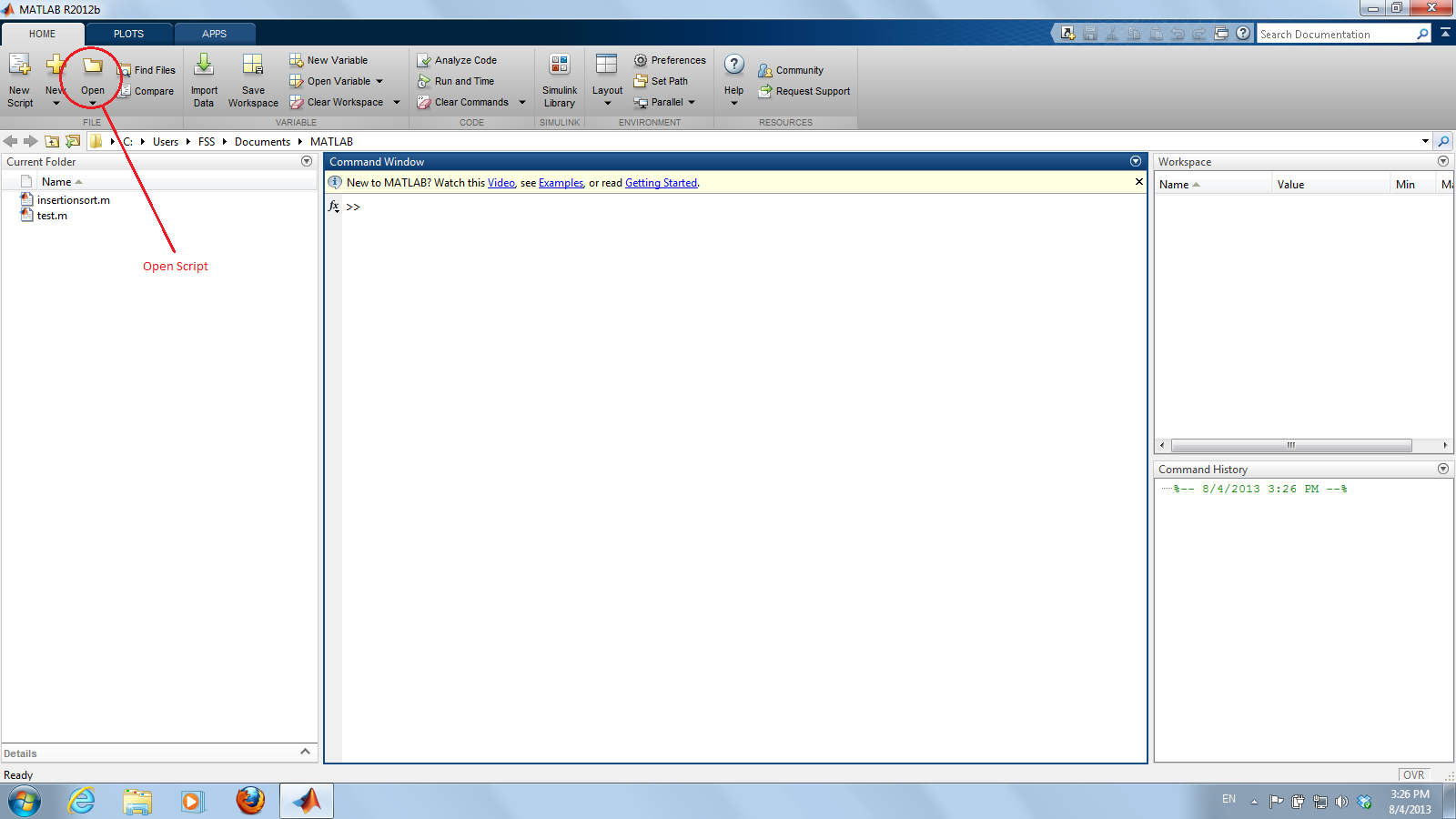


Figure 1. MATLAB IDE

For assessing the given algorithm for clustering problem (K-means, NKA, Simulated annealing, Genetic Algorithm, Kohonen neural network) we utilized two distinct data set with 9 dimensions, one of them are related to a small data set with just 20 instances and other one with 20000 instance records.

In the MATLAB’s IDE, use open icon or CTRL+O to open initial data sets. These datasets are under the NKA/Input data, directory. Under this directory there are two distinct data file, “SmallValue.m” and “LargeValues.m” which are related to aforementioned small and large data sets respectively. Figure 2 display these two files. Select one of them for example small one.

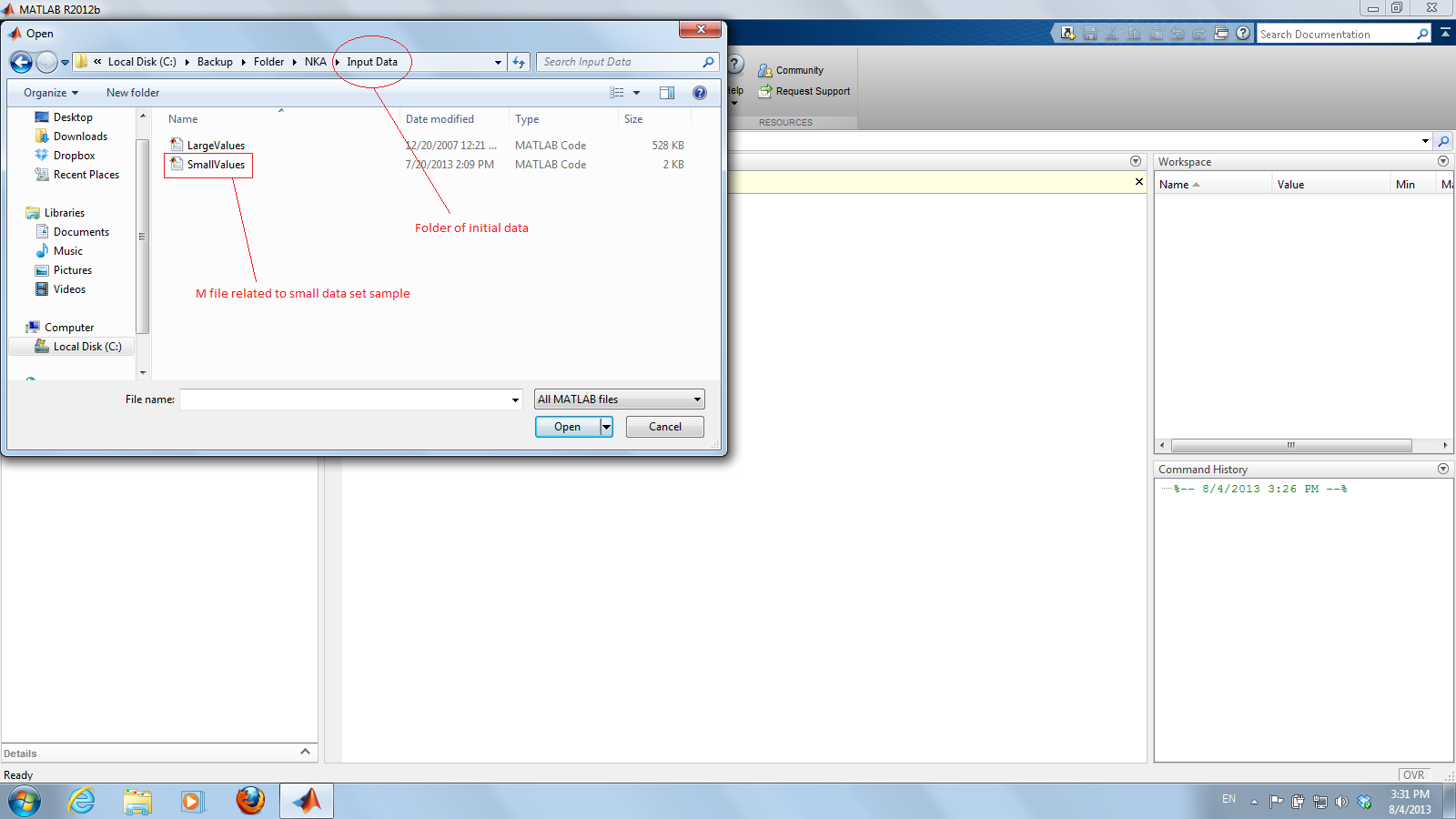


Figure 2. Initial data

After opening one of initial files, run it. In these files, matrices “P” acts as initial data set. Figure 3 displays small data set.

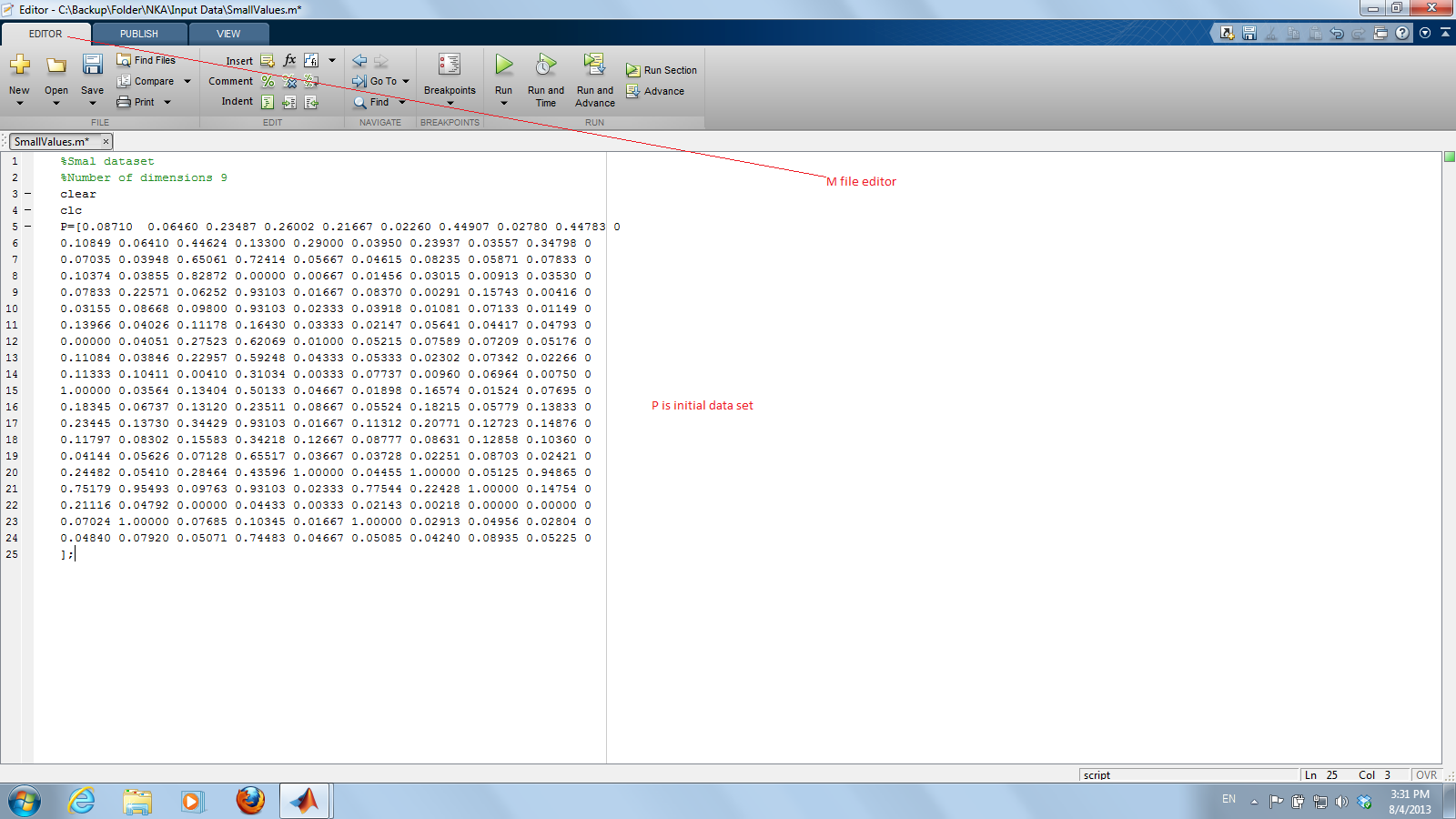


Figure 3. small values data set

Now, we have initial data set in MATLAB environment. On the other hand, under the clustering folder there some files which are related to methods and sub-methods of all aforementioned clustering algorithms. Among them the main file is called “main.m”. Figure 4 shows clustering files.

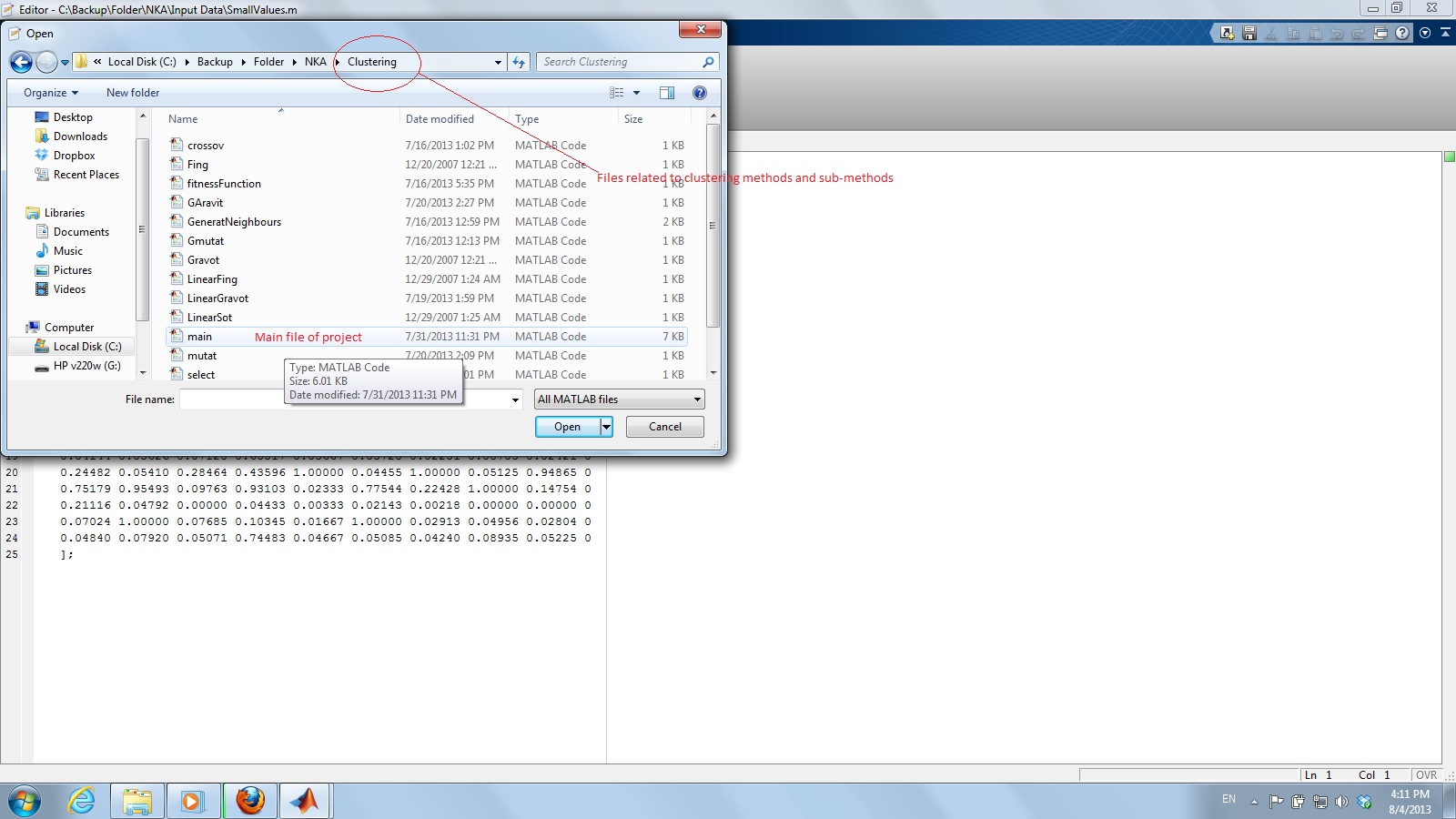


Figure 4. clustering files

Under this folder, main.m should be selected. In this file there are some parameters related to clustering algorithms, each of them has given comments. The most important one is “T” which acts as maximum number of iterations for all algorithms. So, run the main.m file and wait until the end if program. Figure 5 shows main.m.

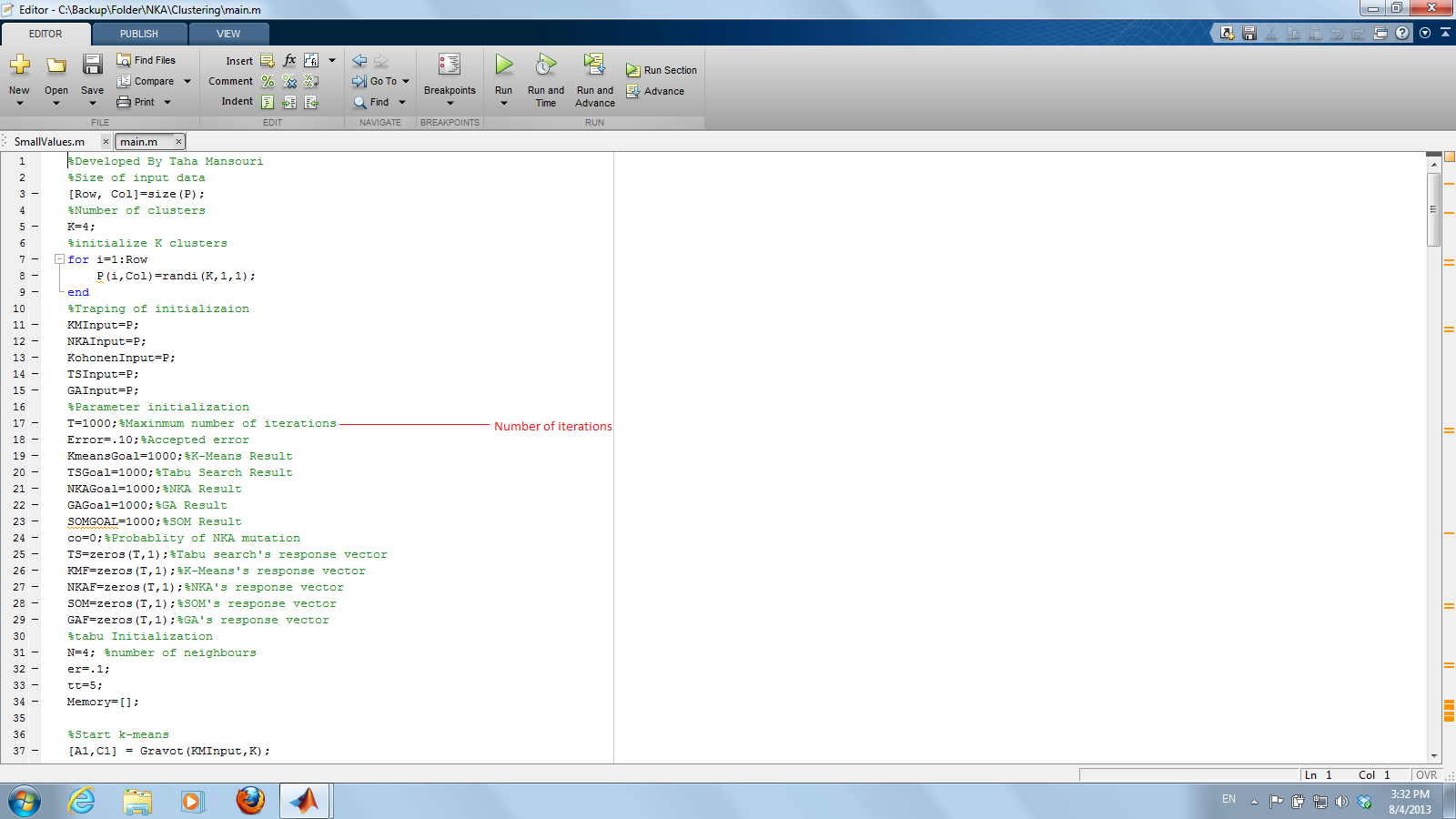


Figure 5. main.m

After the running of the main.m file, in the MATLAB IDE; the result variables can be exploited and analyzed as follow:

* *timeKmeans: time which Kmeans has consumed to reach the ultimate response*
* *timeNKA: time which NKA has consumed to reach the ultimate response*
* *timeTS: time which tabu search has consumed to reach the ultimate response*
* *timeGA: time which genetic algorithm has consumed to reach the ultimate response*
* *timeSOM: time which Kohonen has consumed to reach the ultimate response*
* *KmeansGoal: Kmeans's ultimate response*
* *TSGoal: Tabu search's ultimate response*
* *NKAGoal: NKA's ultimate response*
* *GAGoal: Genetic algorithm's ultimate response*
* *SOMGOAL: Kohonen's ultimate response*

Figure 6 shows the mentioned variables in MATLAB environment:

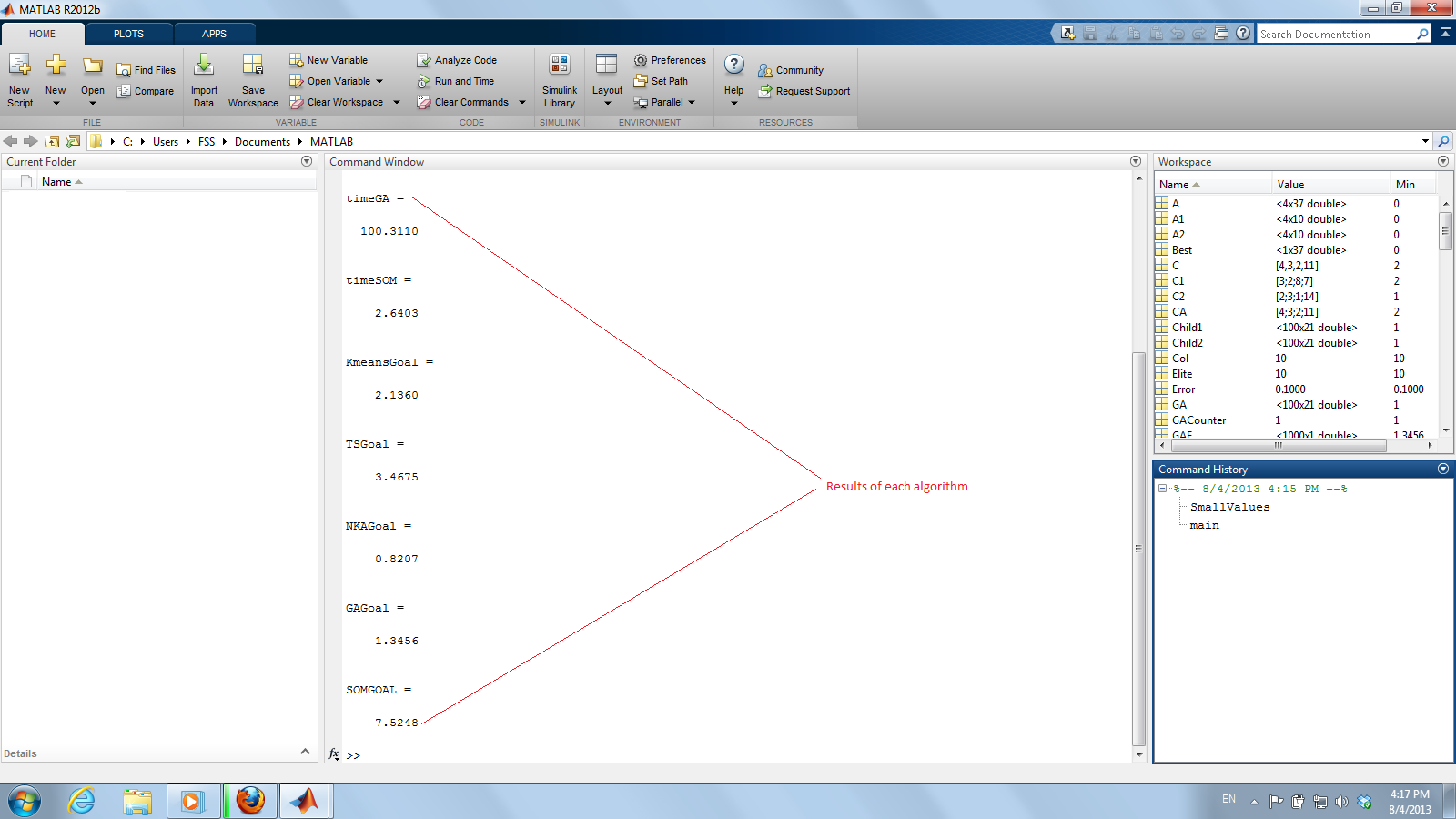
**

Figure 6. Resulted variables

Finally, the folder which named “Output Results” contains an excel file with three data sheet. It depicts the performance of aforementioned algorithms under 30 distinct run and each sheet display dimension of problem (9, 5, and 2).

The performance index of all algorithms is depicted in figures 7-11.

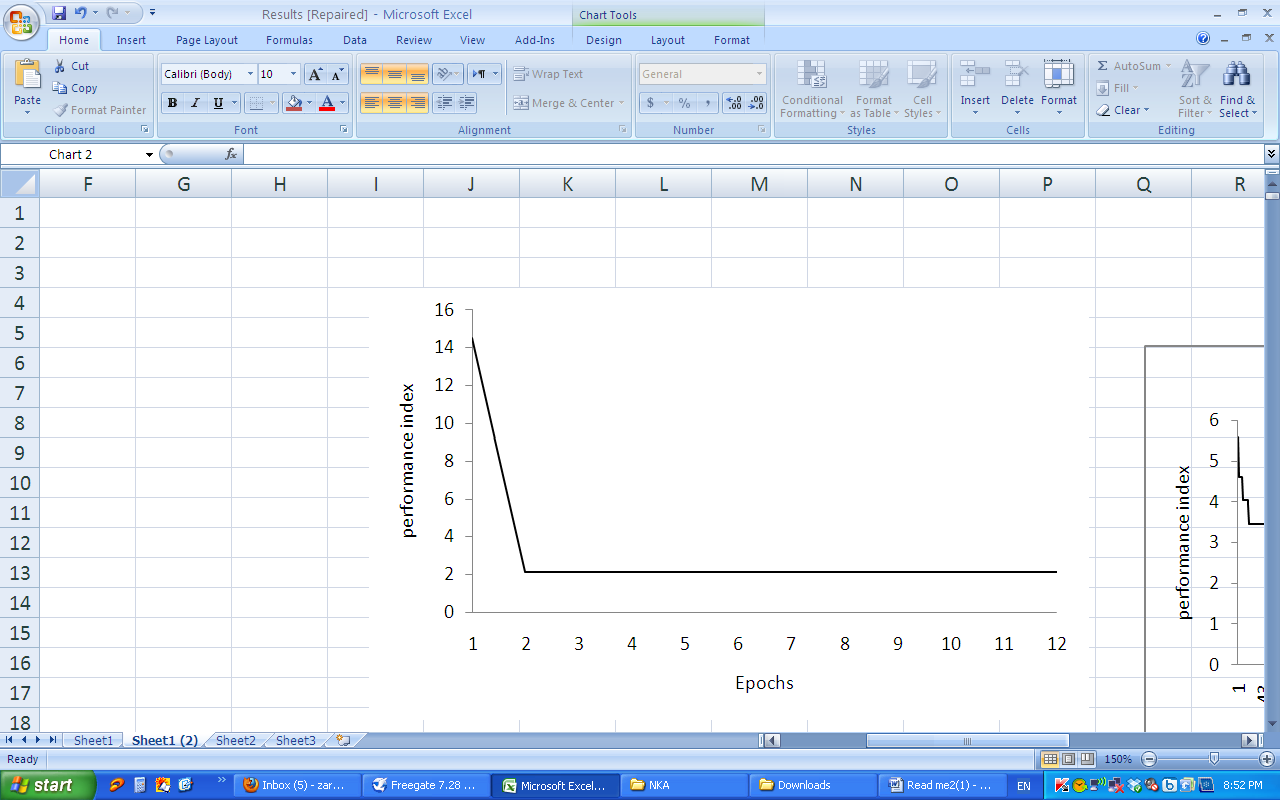


Figure 7. K-Means Performance Index

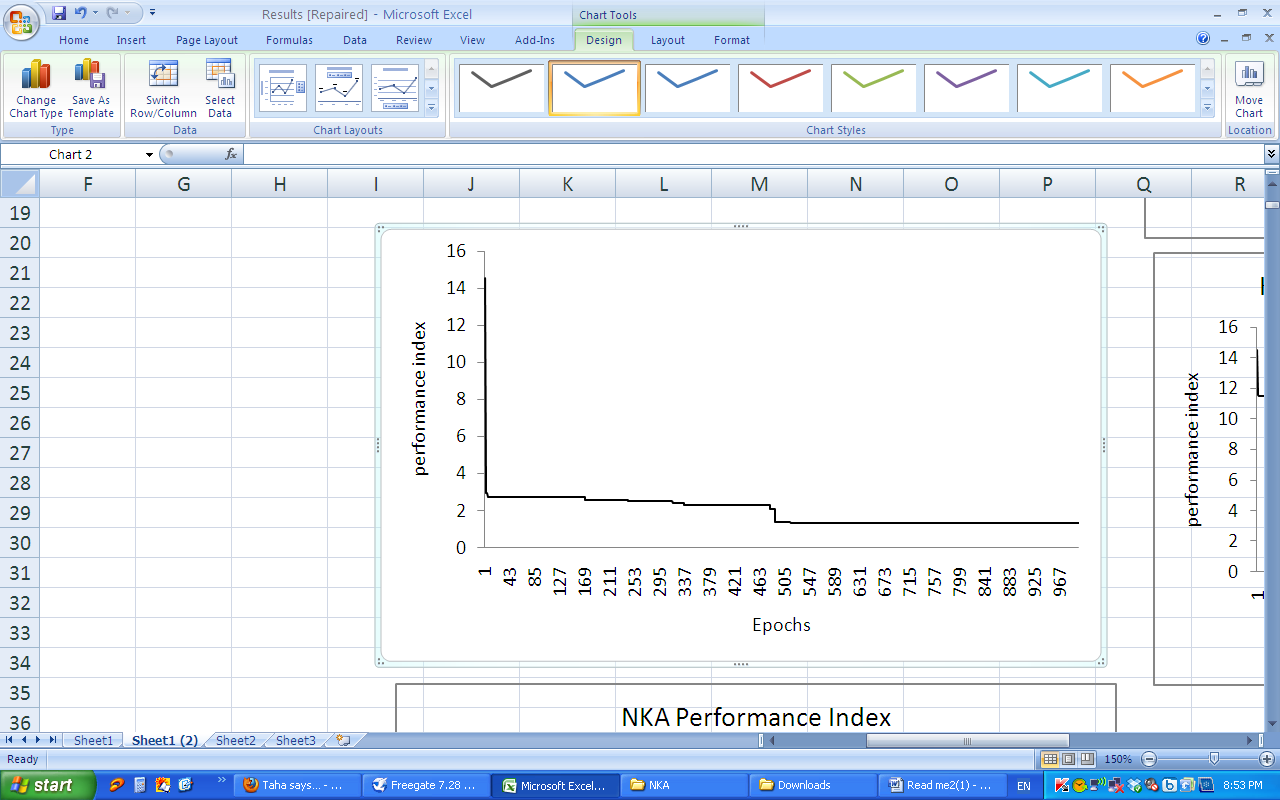


Figure 8. Genetic Algorithm Performance Index

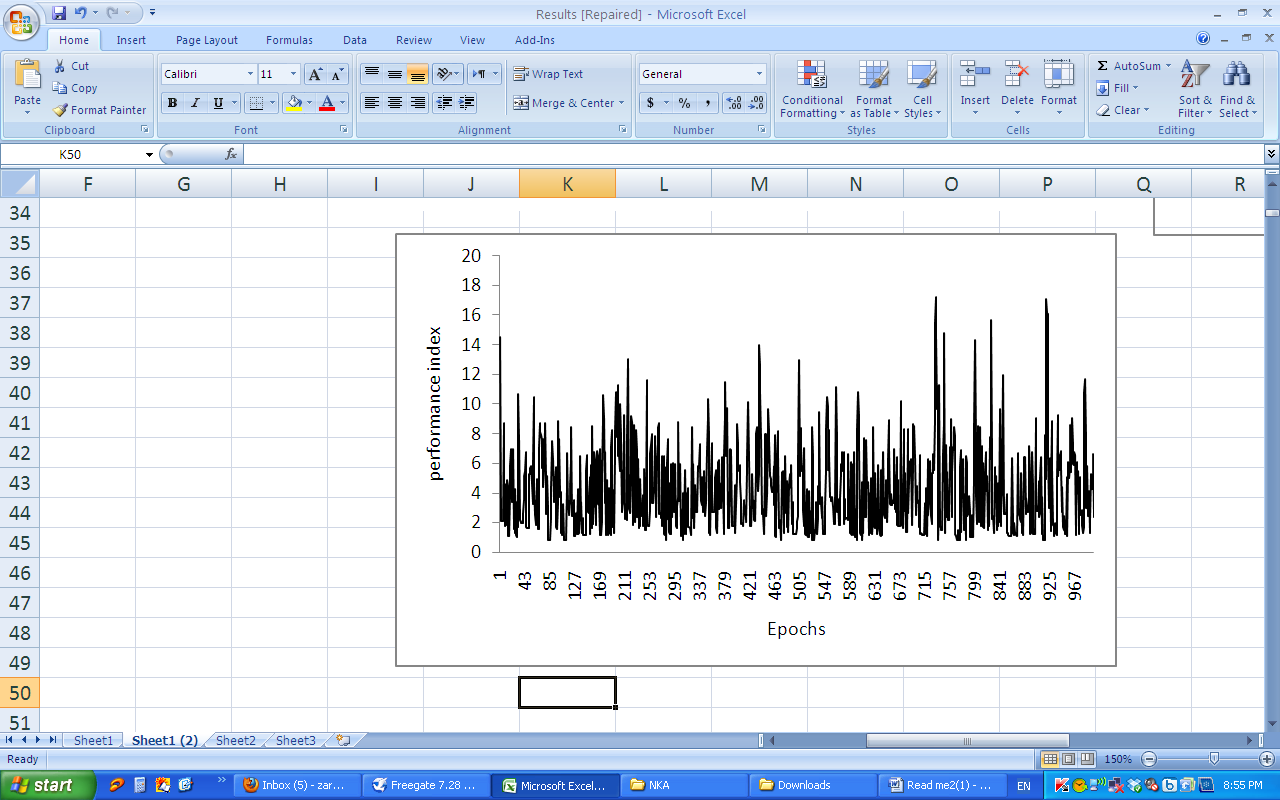


Figure 9. NKA Performance Index

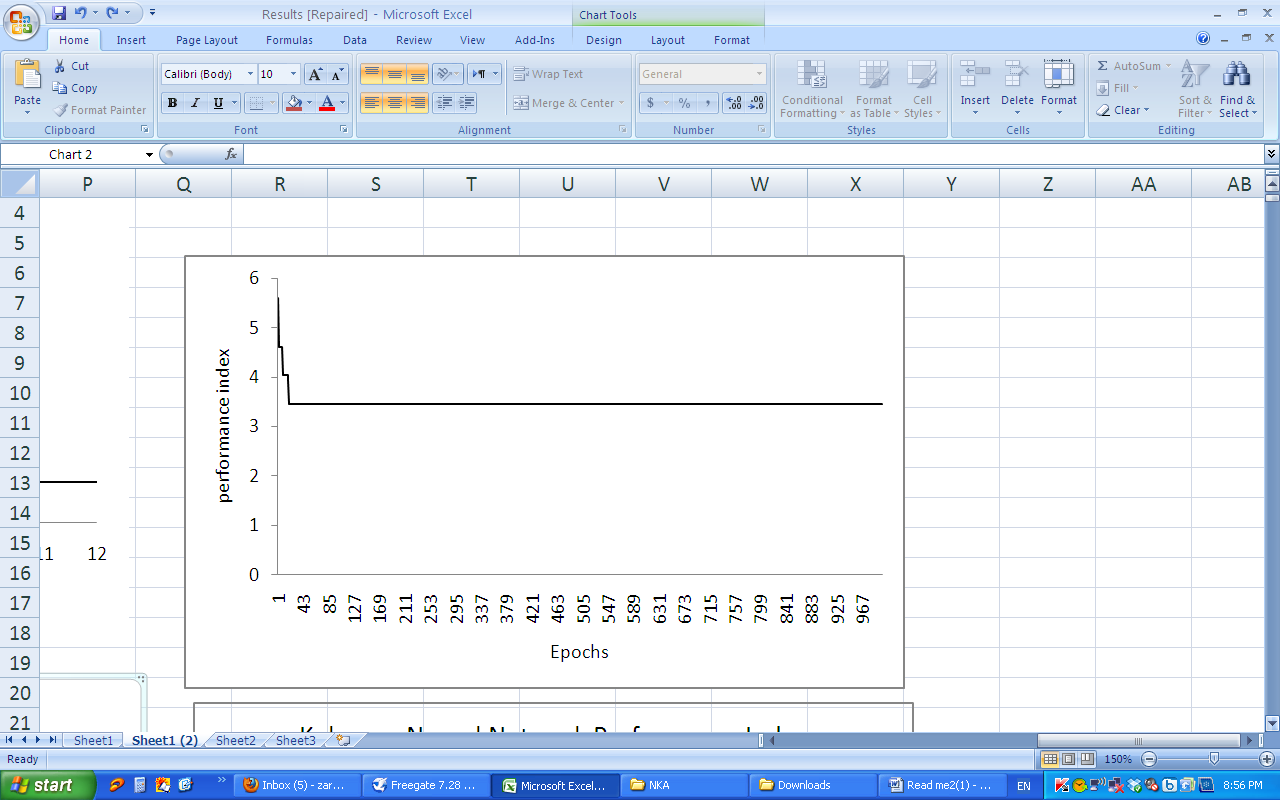


Figure 10. Tabu Search Performance Index

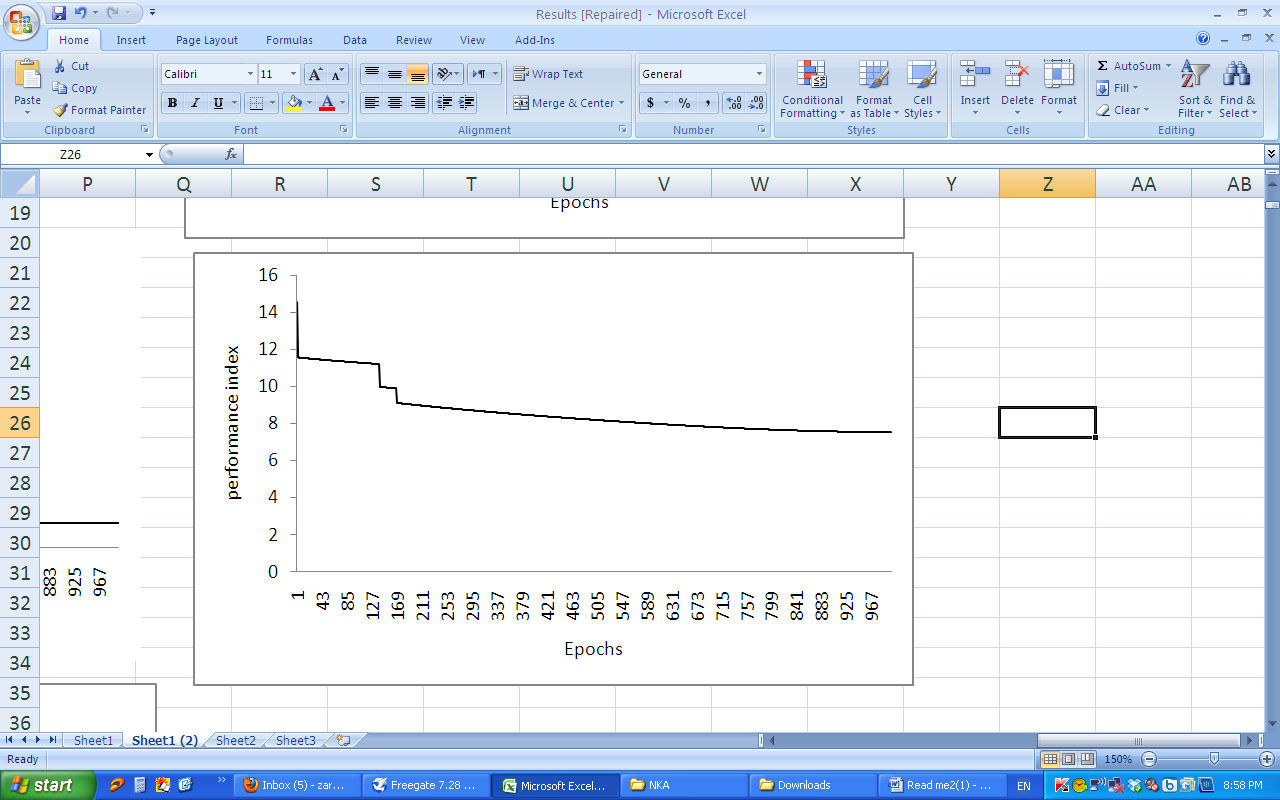


Figure 11. Kohonen Neural Network Performance Index