

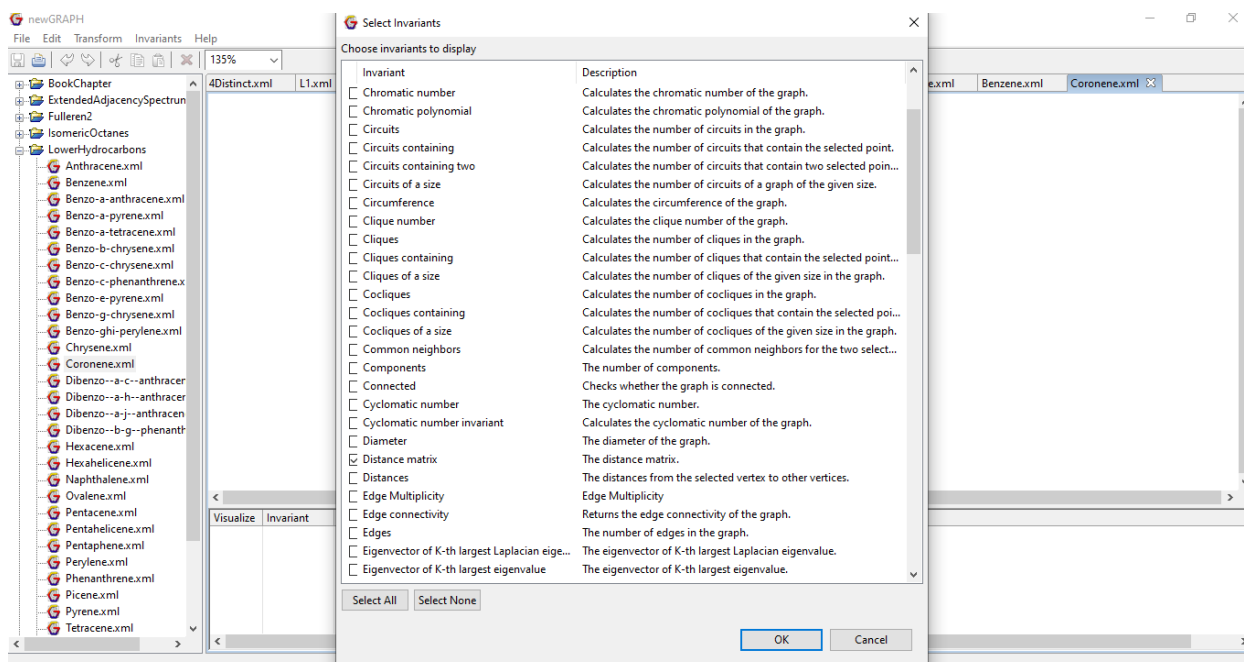
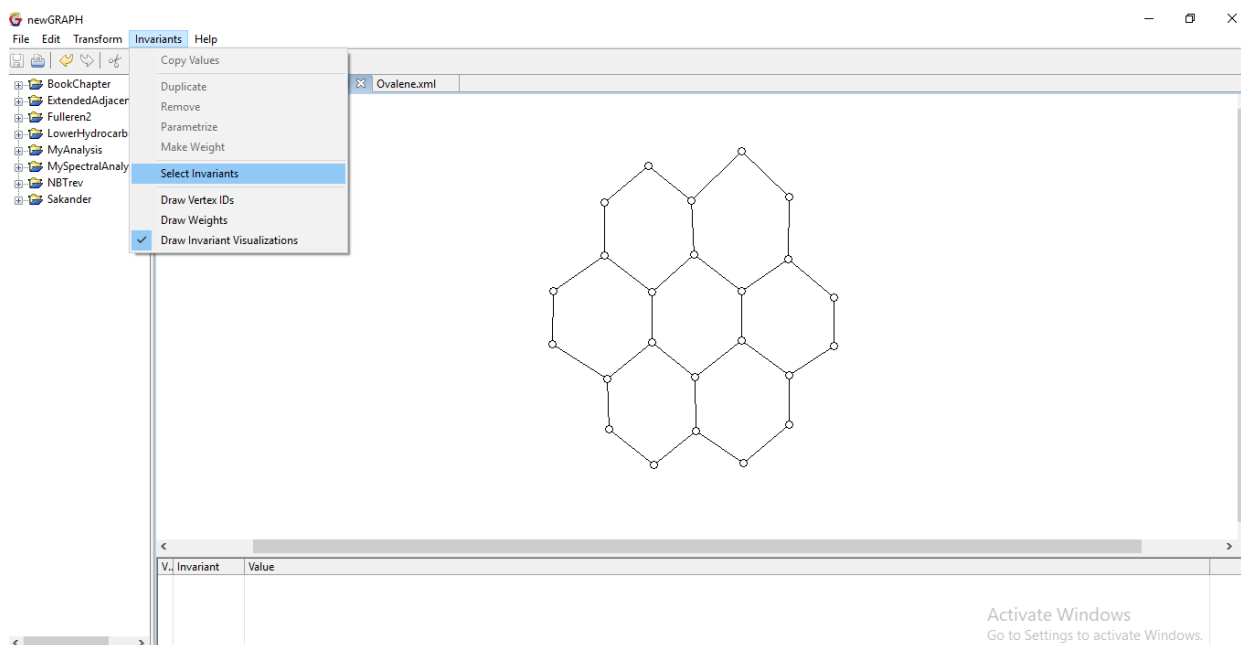
Workflow of our proposed method with a Minimal Working Example (MWE)

In this document, we will explain the working pattern of our technique to compute certain distance-based spectral descriptors of graphs.

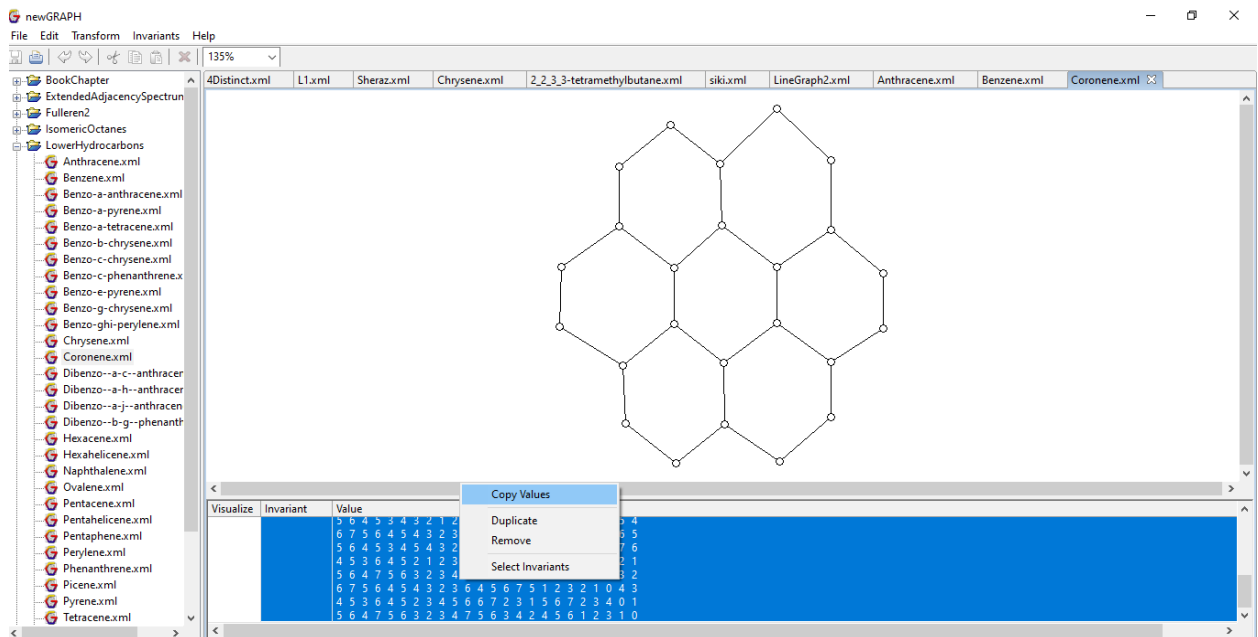
1. Let G be a graph for which you want to compute a distance-based spectral topological index from the following list:
 - i. Distance spectral radius
 - ii. Distance energy
 - iii. Distance Estrada index
 - iv. Distance Laplacian spectral radius
 - v. Distance Laplacian energy
 - vi. Distance Laplacian Estrada index
 - vii. Distance signless Laplacian spectral radius
 - viii. Distance signless Laplacian energy
 - ix. Distance signless Laplacian Estrada index
 - x. Harary spectral radius
 - xi. Harary energy
 - xii. Harary Estrada index
 - xiii. Szeged spectral radius
 - xiv. Szeged energy
 - xv. Szeged Estrada index
 - xvi. PI spectral radius
 - xvii. PI energy
 - xviii. PI Estrada index
 - xix. Degree-distance spectral radius
 - xx. Degree-distance energy
 - xxi. Degree-distance Estrada index
 - xxii. Schultz spectral radius
 - xxiii. Schultz energy
 - xxiv. Schultz Estrada index
 - xxv. Second atom-bond connectivity spectral radius
 - xxvi. Second atom-bond connectivity energy
 - xxvii. Second atom-bond connectivity Estrada index
 - xxviii. Second geometric-arithmetic spectral radius
 - xxix. Second geometric-arithmetic energy
 - xxx. Second geometric-arithmetic Estrada index
 - xxxi. Gutman spectral radius
 - xxxii. Gutman energy
 - xxxiii. Gutman Estrada index

We would like to set the coronene graph as our MWE.

2. In first step, we draw graph G on newGraph and choose “Adjacency matrix” and “Vertices” as “Select Invariants” under the “Invariants” tab as follows:



3. By right clicking on the matrix values, select “Copy Values” as follows:



4. Paste the copied matrix values from newGraph to Matlab in Distance_Sepctral_Descriptors.m file. Change the value of n which is 24 in our MWE.

The screenshot shows the MATLAB R2013a environment. The top ribbon includes tabs for HOME, PLOTS, APPS, EDITOR, PUBLISH, and VIEW. The EDITOR tab is active, showing a script with the following code:

```

1 close all
2 clc
3 format short g
4 roundn = @(t,n) round(t*10^n)/10^n;
5
6 n=24; % Order of the graph
7 B=ceil(10*ones(1,n)).';
8
9 % Create the matrix D
10 D=zeros(n,n);
11
12 D=reshape(B,[n,n]);
13 if D==D'
14     disp('Matrix is symmetric')
15 else
16     disp('Not Symmetric')
17 end
18
19 % Plot the graph
20 figure;
21 plot(1:n, D, 'b');
22 hold on;
23 plot(1:n, D, 'r');
24
25 % Save the figure
26 save('D.mat', 'D');
27
28 % End of script

```

A context menu is open over the line `B=ceil(10*ones(1,n)).';`, displaying the following options and shortcuts:

- Evaluate Selection (F9)
- Open "[0, 1, 1, 2, 2, 3, 3, 4, 4, 5, 5], [1, 0, 2, 1, 3, 2, 3, 4, 5]..." (Ctrl+D)
- Help on Selection (F1)
- Cut (Ctrl+X)
- Copy (Ctrl+C)
- Paste (Ctrl+V)
- Select All (Ctrl+A)
- Wrap Comments (Ctrl+J)
- Comment (Ctrl+R)
- Uncomment (Ctrl+T)
- Smart Indent (Ctrl+I)
- Evaluate Current Section (Ctrl+Enter)
- Insert Section Breaks Around Selection
- Insert Text Markup
- Function Browser (Shift+F1)
- Function Hint (Ctrl+F1)

The Command Window at the bottom shows the prompt `>>`.

5. Click “run” to obtain the result as follows:

