SORBONNE UNIVERSITÉ
CRÉATEURS DE FUTURS
DEPUIS 1257

Algorithmic assessment DAAR 9: Feedback Vertex Set.

BM Bui-Xuan

WARNING :

— Examples of score/marks are available on the UE's website.

— To use the canvas file from the ARI/PPTI TME rooms on the Jussieu campus, line 36 should be uncommented in the `build.xml` file.

Geometric graph : A geometric graph in a 2D plane is defined by a set of points in the plane called vertices, and a threshold on the distance between the points : there is an edge between two vertices if and only if the Euclidean distance between the two vertices is smaller than this threshold.

Feedback Vertex Set : Given a graph $G = (V, E)$, the minimum Feedback Vertex Set (MinFVS) problem consists in computing a minimum sized subset of vertices $F \subseteq V$ such that the subgraph $G[V \setminus F]$ induced by $V \setminus F$ in G is cycleless, that is, $G[V \setminus F]$ is a forest.

1 Assessment for DAAR 9

The overall goal is to propose a heuristics to MinFVS problem in a 2D geometric graph, without budget. In the GUI canvas, V is given by the input file `input.points` and (after parsing,) the variable named `points`. The distance threshold under which an edge exists is given in the variable named `edgeThreshold`.
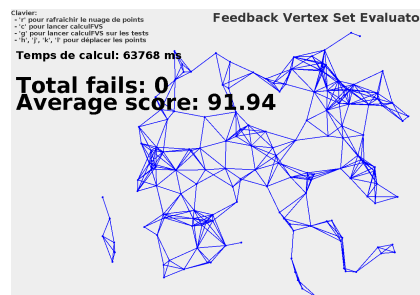

FIGURE 1 – Example of a result obtained over 100 runs using the GUI.

The evaluation of the assessment will mainly depend on the average score obtained for the 100 input instances of the test (key 'g' in the GUI), and also the clarity of the code (*cf.* Fig. 1) A table of conversion "SCORES & MARKS" is available on the UE's website.

Constraints :

— The sprint is individual work or team of 2.

— To use the canvas file from the ARI/PPTI TME rooms on the Jussieu campus, line 36 should be uncommented in the `build.xml` file.

— Send one screenshot of the score (mandatory !) and the file DefaultTeam.java to `buixuan@lip6.fr`, 3 emails maximum for each project team. The use of online drive (Google, Dropbox, etc) is strictly forbidden. The naming should be
daar-project-FVS-STUDENTNAME1-STUDENTNAME2.piki, where piki could belong to $\{png, jpg, java, etc\}$. This naming convention is important for an automatic classification of your files on the PC of the poor person who will have to assess 70+ student projects...

— Deadline : 08 December 2024, 23h59. Late report penalty : penalty of $0, 1 * 2^k$ points for k minutes late.