Algorithm 1 $(d, f)-$ extended coloring of fuzzy graph

Input: adjacency matrix of fuzzy graph (A), the dissimilarity measure (di), the number of vertices of fuzzy graph (n), scale function (ro).

(1) Consider the color of all edges -1 edge $index$ coloring start and The color of choice $c \leftarrow 1$ for Coloring $index$ edge to consider.
(2) According the $index$ of edge, start and end vertices $[ver1, ver2]$ are determined.
(3) If the vertex $ver1 = 0$, i.e all edges of graph colored, go to step 5.
(4) While $1 > 0$ do:
  4.1. Consider the vertex $i \leftarrow 1$.
  4.2. While $i \leq n$ 0 do:
    (i) If the color c is greater than maximum available the color, go to step 3.4.
    (ii) If $ver2$ of vertex lso edge $ecolor(ver1, i)$ is colored. Ifcolored. If the color c in formula (**??**) is not satisfied, not suitable the c of color for coloring and select $c \leftarrow c + 1$ of color for coloring , then $i\ leftarrow 1$ and re-run 2.4 stage first the first.
    (iii) select $i \leftarrow i + 1$ of vertex and re-run 2.4 stage first the first.
  4.3. If c of color is positive, considered c of color as the color edges $ecolor(ver1, ver2)$ and $ecolor(ver2, ver1)$, then considered $c \leftarrow 1$ and go to step 9.4.
  4.4. If arrived to the $index = 1$ of edge, go to step 5.
  4.5. select $index \leftarrow index - 1$ of edge.
  4.6. While $index > 1$ and color of $ecolor(ver1, ver2)$ of edge is greater than maximum available the color, select $index \leftarrow index - 1$ of edge.
  4.7. $c \leftarrow ecolor(ver1, ver2) + 1$ of color assignment to edges $ecolor(ver1, ver2)$ and $ecolor(ver2, ver1)$, go to step 3.
  4.8. If arrived to th 5.
  4.9. choose step 3.
  4.10. If arrived to th 5.
  4.11. choose step 3.
  4.12. If arrived to th 5.
  4.13. choose step 3.
  4.14. If arrived to th 5.
  4.15. choose step 3.
  4.16. If arrived to th 5.
  4.17. choose step 3.
(5) If there is no edge is possible.
(6) If arrived to th 5.
(7) choose step 3.
(8) If arrived to th 5.
(9) choose step 3.
(10) If arrived to th 5.