INF421 PROJECT

Graph Coloring

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DSATUR

Main Idea

Greedy algorithm :
the harder it is to color a vertex, the quicker it should be done

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the more colored neighbors a vertex has, the harder it is to color.

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PEUDO-CODE

Algorithm 1 DSATUR

procedure DSATUR

while some vertices are uncolored **do**
find the vertex with the most colored neighbors ▷ $O(n)$
visit the neighbors and store the unavailable colors ▷ $O(D \log D)$
if a hint can be satisfied **then** ▷ $O(H * \log D)$
do it
else
find the smallest available color ▷ $O(D \log D)$
end if
update the comparator ▷ $O(D)$
end while
end procedure

OTHER ALGORITHMS IMPLEMENTED

Naive algorithm

no order

Max-degree

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WELSH-POWELL ALGORITHM

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ranking vertices by degree

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