

Re: Need Graph Isomorphism Algorithm De-bunked

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Mike Amling wrote :

I've coded up something I think is equivalent to what you suggest. It works for up to 7 nodes (simply connected, undirected, no loopback), but for 8 it only found 10126 equivalence classes, not 11117. I'll look again at the code to see if something obvious is amiss.

My intent was to write an equivalent to the (second) Bill Cox algorithm that you verified up to 8 nodes, except not relying on a hash. I'd bet the problem (assuming it is not in your implementation) is in my rendering of Bill Cox's algorithm, not in the removal of the hash. Maybe I should have used Bill Cox's code as a basis, rather than his text. I'll check this in more detail.

It would help if you could give two graphs that are not distinguished by your new code, but are distinguished by the previous version (is it Bill Cox's?).

I notice a fun thing: when using any variant of the algorithm to compare two graphs, we can detect with certainty when the algorithm fails, as follow.

We use the algorithm to produce a hash for each vertex.

If these hashes are not identical within order, we have proved the graphs are not isomorphic.

Else, we reorder both graph's matrix according to nondecreasing hashes. If the reordered graphs are equal, we have proved the graphs are isomorphic.

Else, the algorithm failed.

Re: Need Graph Isomorphism Algorithm De-bunked

François Grieu

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