Challenge: Graph isomorphism

Graph matching must solve graph isomorphism problem that has no known polynomial algorithms.

Solution approach
First, eliminate almost all topologies by simple pre-tests: counting nodes, edges, degrees, graph spectrum.
Then utilize VF2 graph matching algorithm and software.

Conclusions
- Results show that the solution is effective in practice.
- Applicable to static patterns. Can be extended to multiple patterns and multiple communication phases.
- Logicalization combined with single trace compression for full solution.
- Local (non global) communication causes inaccuracy but not failure.

Context is Performance Skeleton construction

Performance skeleton: short running program whose execution time reflects the execution time of corresponding application.

Orthogonal to Trace Compression based on Loop Discovery in a single trace.

Logicalization
Combines all processor traces into a single logical program trace.
- Identify communication pattern
- Convert physical communication (process ids) to logical communication (e.g. to EAST neighbor in a grid).

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