

Dynamic Ordering for Asynchronous Backtracking on DisCSPs

Roie Zivan & Amnon Meisels

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Abstract An algorithm that performs asynchronous backtracking on distributed CSPs, with dynamic ordering of agents is proposed, ABT DO. Agents propose reorderings of lower priority agents and send these proposals whenever they send assignment messages. Changes of ordering triggers a different computation of Nogoods. The dynamic ordered asynchronous backtracking algorithm uses polynomial space, similarly to standard ABT. The ABT DO algorithm with three different ordering heuristics is compared to standard ABT on randomly generated DisCSPs. A Nogoodtriggered heuristic, inspired by dynamic backtracking, is found to outperform static order ABT by a large factor in run-time and improve the network load.

Keywords Distributed Constraint satisfaction . Distibuted AI . Search