

A Heuristic Approach to Dynamically Update Approximations of Dominance Based Rough Set Theory

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Abstract— In decision-making problems, dominance based rough set approach (DRSA) has been extensively used. However, in real-time domain, information often evolves with time. To extract updated knowledge from dynamic systems using DRSA, we have to re-calculate approximations which can then be used to extract the updated decision rules/features. This process of periodic re-calculation consumes a significant computational cost, and it considerably affects the efficiency of conventional algorithm. Therefore, to address this challenge, in this paper, we focused on updating approximation sets of DRSA, while considering the evolution in the object set of the system. We propose an algorithm which avoid much redundant computations. The experimental evaluation of proposed approach on UCI publicly available data sets, shows that the proposed technique of dynamic approximation update, surpasses the conventional approach of DRSA in terms of execution time. We achieve same approximation sets but computational time decreases by almost 98%. This shows that our method can be used successfully for dynamic applications based on DRSA approximations.

Keyword—Decision System, Dominance Based Rough Set Theory-DRSA, Dynamic update, Dynamic System.



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