Publication

About partial order reduction in planning and computer aided verification

Partial order reduction is a state space pruning approach that has been originally introduced in computer aided verification. Recently, various partial order reduction techniques have also been proposed for planning. Despite very similar underlying ideas, the relevant literature from computer aided verification has hardly been analyzed in the planning area so far, and it is unclear how these techniques are formally related. We provide an analysis of existing partial order reduction techniques and their relationships. We show that recently proposed approaches in planning are instances of general partial order reduction approaches from computer aided verification. Our analysis reveals a hierarchy of dominance relationships and shows that there is still room for improvement for partial order reduction techniques in planning. Overall, we provide a first step towards a better understanding and a unifying theory of partial order reduction techniques from different areas.