

Toward a CSP-based Approach for Energy Management in Rovers

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Abstract—This paper presents recent results on applying robust state-of-the-art AI Planning and Scheduling (P&S) techniques to mobile space robotic domains. We introduce an adaptation of an advanced constraint-based, resource driven reasoner for deciding feasible sequences of movements for a

mobile robot in charge of executing a set of mission exploration-related jobs in a planetary terrain by reasoning upon complex temporal and resource constraints, in special energy demands. The major contribution of this paper is the inclusion of autonomous energy management capabilities within the general problem solving method.

Keywords-Automation and Robotics; robust constraint-based action scheduling; precedence constraint posting; autonomous energy management