

Inference and Learning in Planning (Invited Talk)

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Abstract. Planning is the model-based approach to autonomous behaviour where the action to do next is derived from a model. The main challenge in planning is computational, as all models, whether accommodating non-determinism and feedback or not, are intractable in the worst case. In the last few years, however, significant progress has been made resulting in algorithms that can produce plans effectively in a variety of settings. These developments have to do with the formulation and use of general inference techniques and transformations. In this talk, I review the inference techniques that have proven useful for solving individual *planning instances*, and discuss also the use of learning methods and transformations for solving complete *planning domains*. The former include the automatic derivation of heuristic functions to guide the search for plans, and the identification of helpful actions and landmarks. The latter include methods for deriving generalized policies and finite state controllers capable of dealing with changes in the initial situation and in the number of objects. I'll also discuss the alternative ways in which learning can be used in planning and the challenges ahead.