

Part I:
Invited Papers

Uncertain Learning Agents

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Abstract. The nature of the task environment in which an intelligent agent must operate has a profound effect on its design. It can be argued that AI has only recently begun to take seriously the problem of partial observability of the environment, despite the fact that this is perhaps the primary reason why intelligent agents need memory and internal representations. In complex environments, partial observability goes hand in hand with uncertainty, and necessitates the development of new tools for representation, inference, decision making, and learning. I will describe work in progress on a suite of such tools, including methods for learning complex models of a partially observable, stochastic environment, methods for using such models to keep track of what's happening in the environment; and methods for reinforcement learning with hierarchical behaviour descriptions.