Preface

This technical report contains the papers from the AAAI-12 Cognitive Robotics workshop. This workshop aims to bring together researchers involved in all aspects of the theory and implementation of cognitive robotics, to discuss current work and future directions. All aspects of cognitive robotics are of interest to the workshop, especially discussions and demonstrations of implemented systems.

Research in robotics has traditionally emphasized low-level sensing and control tasks including sensory processing, path planning, and manipulator design and control. In contrast, research in cognitive robotics is concerned with endowing robots and software agents with higher level cognitive functions that enable them to reason, act and perceive in changing, incompletely known, and unpredictable environments. Such robots must, for example, be able to reason about goals, actions, when to perceive and what to look for, the cognitive states of other agents, time, resources, collaborative task execution, etc. In short, cognitive robotics is concerned with integrating reasoning, perception, and action within a uniform theoretical and implementation framework (using methods drawn from logic, probability and decision theory, reinforcement learning, game theory, and so on).

The use of robots and softbots is becoming more and more widespread, with many commercial products on the market. Complex applications and the need for effective interaction with humans are increasing demand for robots that are capable of deliberation and other high-level cognitive functions. Models from cognitive science and techniques from machine learning are being used to enable robots to extend their knowledge and skills. Combining results from mainstream robotics and computer vision with those from knowledge representation and reasoning, machine learning, and cognitive science has and will continue to be central to research in cognitive robotics.

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– *Wolfram Burgard, Kurt Konolige, Maurice Pagnucco, Stavros Vassos,* Cochairs