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# Learning and Adaption in Multi-Agent Systems

First International Workshop, LAMAS 2005, Utrecht, The Netherlands, July 25, 2005, Revised Selected Papers

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This book contains selected and revised papers of the International Workshop on Learning and Adaptation in Multi-Agent Systems (LAMAS 2005), held at the AAMAS 2005 Conference in Utrecht, The Netherlands, July 26. An important aspect in multi-agent systems (MASs) is that the environment evolves over time, not only due to external environmental changes but also due to agent interactions. For this reason it is important that an agent can learn, based on experience, and adapt its knowledge to make rational decisions and act in this changing environment autonomously. Machine learning techniques for single-agent frameworks are well established. Agents operate in uncertain environments and must be able to learn and act autonomously. This task is, however, more complex when the agent interacts with other agents that have potentially different capabilities and goals. The single-agent case is structurally different from the multi-agent case due to the added dimension of dynamic interactions between the adaptive agents. Multi-agent learning, i.e., the ability of the agents to learn how to cooperate and compete, becomes crucial in many domains. Autonomous agents and multi-agent systems (AAMAS) is an emerging multi-disciplinary area encompassing computer science, software engineering, biology, as well as cognitive and social sciences. A theoretical framework, in which rationality of learning and interacting agents can be understood, is still under development in MASs, although there have been promising first results.

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