Introduction

This paper presents an overview of Avan’s approach to build multi-agent systems and activities in RoboCup. Our scientific approach in working on multi-agent systems and distributed intelligence is based on Planning. We have paid attention to 3T as a known autonomous agent control architecture. In this way some strategies have been selected to provide significant assistance in the design of autonomous intelligent control. The most important items are: Modularity for simplifying both design and control, Hierarchically Organized Action Selection for focusing attention and providing prioritization when different modules conflict, and Environment Monitoring System for allowing attention to shift and priorities to be reevaluated [1].

3T architecture have been selected to improve some features of Avan’s autonomous agents, such as communication, planning, action scheduling, execution monitoring, coordination and learning. Reactive Action Packages (RAP) is an architecture that has been used for the middle layer of 3T. Our main goal in this project was to create reactive, flexible, situation-driven and coachable plans using RAP architecture [2],[3].

Debugging and verifying for such a distributed control program is so difficult and directly related to their distributed nature. We have developed a tool called Task Monitor for sequencing (RAPS) and control skills tier. It shows hierarchical actions, although it would be possible to display flat action structure (where all actions are leaf actions) [4].

The control system and programming of Avan agents are provided via a GUI called Plan-Editor, in which executable actions are treated as basic building blocks that can be chained together to achieve a larger more complex goal in the style of an Skill Network. To achieve this and in order to have a coachable team, a language based on Clang has been used, with some conventional loops and conditional selection. The plan file is the output of the Plan-Editor in Clang and represents the behavior of the agent. For an agent in the plan file there is a set of capabilities (potential objective or goal) and a collection of reusable generic behaviors that may be planned and executed to achieve the objectives [5].

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References
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