

A set of Tools to support Setplays' Learning from Demonstration

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It is usual in RoboCup soccer competitions seeing the setplays' developers becoming angry with their robots because they made a wrong choice during a setplays execution or selection. The main reason for this observation is that soccer, in general, and robotic soccer as a particular case is a complex domain with lots of variables representing incomplete or imprecise information. Most of the good setplays in soccer are a result not only of well-known formalized rules and plans but of intuitive intelligence from coaches and players. In this context, team BahiaRT is developing a research project which aims provide a Learning from Demonstration (LfD) framework to enable domains experts (i.e., coaches, players, roboticists, robocuppers) to demonstrate how they would like their robots to act in a specific situation where they have failed before. Our previous work [4] presented this proposal with some preliminary results. To support this framework, many existing and new tools are necessary. Even the existing tools demand some updates and enhancements. Figure 1 shows the initial set of tools used to support our project. First, we need to change RoboViz to enable a demonstrator to stops a logplay match at the moment where they think robots are not performing well. So, he can select the robots involved in the situation. Robots from both teams can be selected. Then, he pushes the start demonstration button to launch Strategy Planner (SPanner)[1] with a new setplay created from the selected situation in RoboViz.

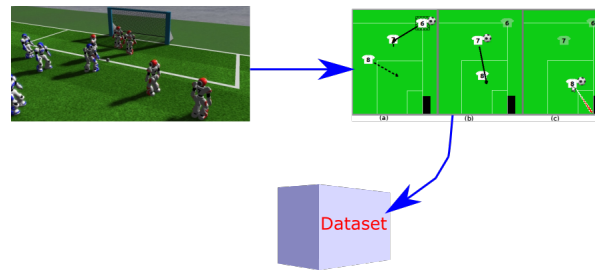


Fig. 1. Set of tools to support Setplays' Learning from Demonstration

SPanner is a graphic tool used to design setplays using domain-level knowledge. SPanner turns possible to the setplays designer to abstract the implementation details of the setplay execution. SPanner is free software. Although, in its most recent available version (1.5) there are many missing features that our research project needs.

We have modified SPanner to consider opponents as a reference for some behaviors, to add some defensive behaviors (e.g., offensive marker and defensive markers) and some different pass options (e.g., pass to best player). To turn our work easier we have developed *Behavior-def*: a tool to turn easier to modify SPanner and FCPortugal Framework Setplays (FFS)[3]. *Behavior-def* is a web application where the user can fill a form describing a new behavior and it performs the need changes to SPanner and FFS source codes. *Behavior-def* is inspired on Model-Driven Development (MDD)[2].

The demonstrator should use SPanner starting with situation loaded from modified RoboViz and complete his setplay suggestion for that situation. Then, SPanner generates a setplay in an S-expression format file which can be used by the team. In our project, all setplays acquired from lots of demonstrations from different domain experts will be put together in a dataset for setplays learning.

References

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