SimpleSoccerAgent

The extremely simple behavior is by intention: Users shall be able to propose improvements and implement them without much effort.

To change the program, it needs only to modify the source files; keyframes and initial positions (see read-me.doc for more details).

All other parts need not to be changed in the beginning. They provide scheduling, communication with soccerserver etc. They are based on the projects of Nao Team Humboldt.

Compilation using *SimpleSoccerAgent.sln* produces (with VisualStudio) the executable file *naoth-simspark.exe* .

The agent has 3 motion skills (walk, turn, standup). They are implemented as fixed keyframe sequences. The walk skill does a single step. For longer walks, the skill is called subsequently.

Incoming sensor messages are scanned only for the ball, and if the robot is standing.

Decision makes a choice between searching for the ball (by turn skill); and walking towards the ball (by walk skill). If necessary, the robot stands up after falling down.

SoccerServer

The soccer environment is given by the SoccerServer which is developed by the RoboCup community. The executable file *rcssserver3d.exe* is located in *rcssserver3d-0.6.4-win32*.

It is a predefined physical simulation of

- the playground with the field and the goals
- the referee
  - observing the game state and
  - giving commands like kick-off
- the body of the player including
  - sensors (vision, audio, …)
  - actuators (controlled by motor commands from the agent program).

  The body simulates the robot NAO from ALDEBARAN

The simulation works cyclically:

1. It sends sensory data to the agent. This data reflects the situation that the player observes (e.g., distance to ball, goal, other players).
2. It receives action commands from the agent (control of joints by related motors).
3. According to action commands from agents, the simulator
   - calculates new poses of the players and their physical effects, (e.g., moving legs, pushing other objects etc.) and
   - resulting game state

According to the policy of RoboCup, the SoccerServer is permanently improved for more realistic games and new scientific challenges (e.g. for Machine Learning). It is done by volunteers from all over the world (see the Web Resources below for more information). The code provided here is the code from the world championship 2010 in Singapore.

Technical resources

Windows XP or 7 (Note that the original version was implemented in Linux)
For Compilation: C++ (Visual Studio)

Web Ressources

RoboCup:
http://www.robocup.org/ (RoboCup Federation)
http://www.robocup2010.org (World Championship 2010 Singapore)
http://www.robocup2011.org/en/ (World Championship 2011 Istanbul)

3D-Simulation-League:
http://simspark.sourceforge.net/
http://simspark.sourceforge.net/wiki/index.php/Soccer_Simulation
http://sourceforge.net/projects/apollo3d/ (code from world champiuon)
http://robocup.martenvdsanden.net/document.php?id=2 (all logfiles of RoboCup 2010)

Webots: (free download Simulator for RoboCup)
http://www.cyberbotics.com/

Standard-Platform-League (real Nao)
http://www.tzi.de/spl/bin/view/Website/WebHome
http://www.aldebaran-robotics.com/ (producer of Nao)
http://www.b-human.de/en/ (worldchampion 2010, with code releases)

Mailing lists
https://lists.sourceforge.net/lists/listinfo/sserver-three-d
https://lists.cc.gatech.edu/mailman/listinfo/robocup-nao

Nao Team Humboldt:
http://www.naoth.de/