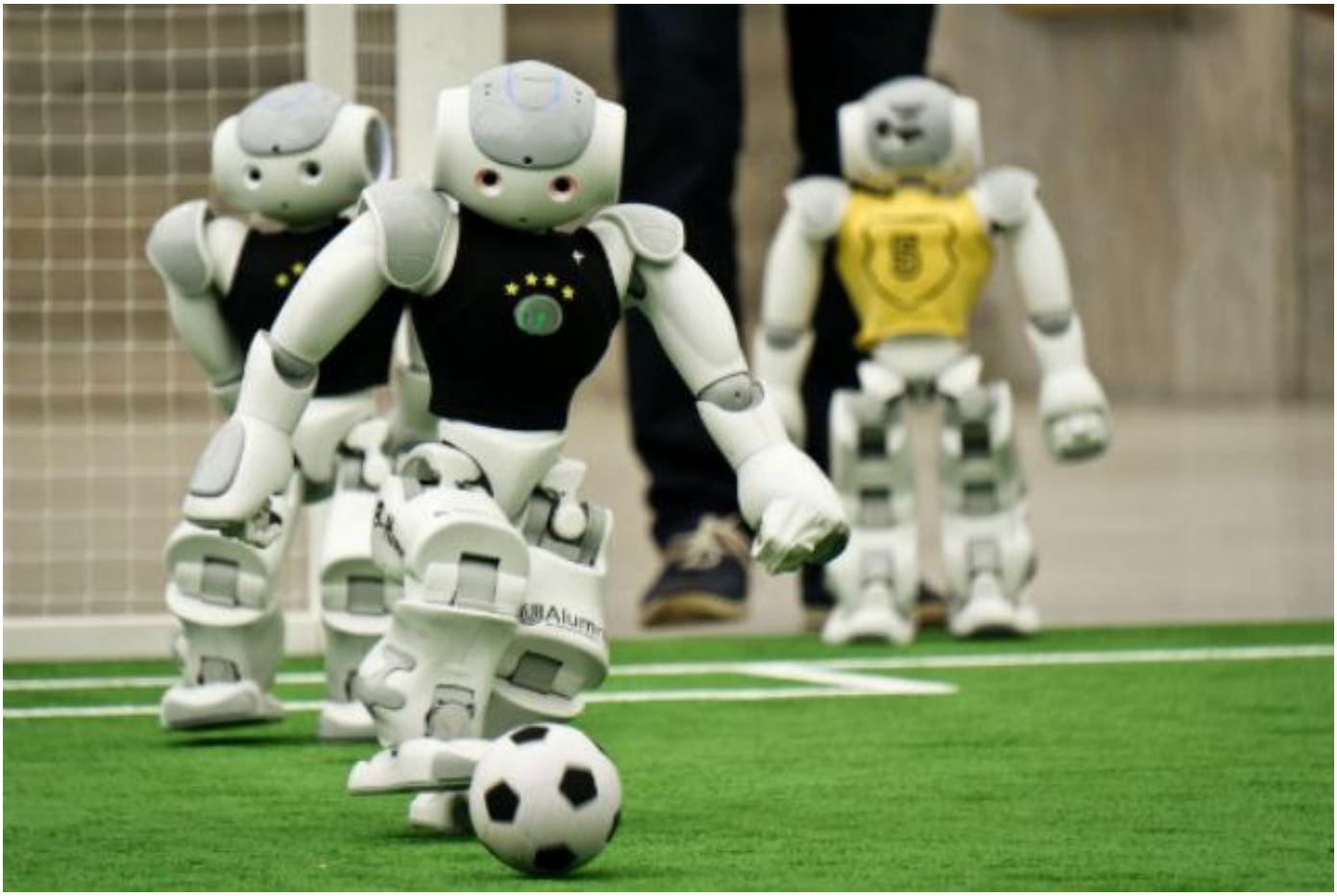
Lab 1



Autonomous Agents

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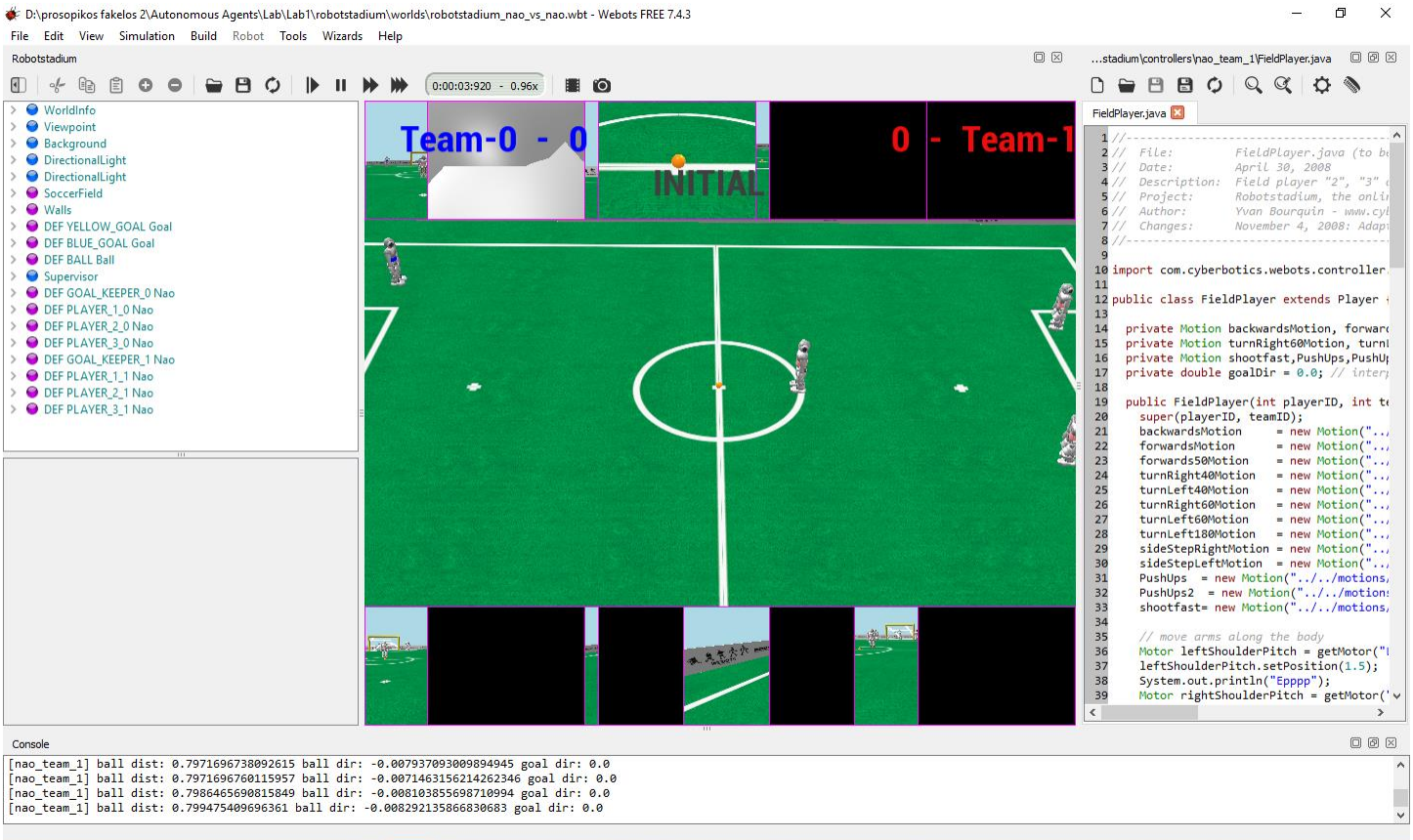
Introduction to Webots

Webots is a development environment used to model, program and simulate mobile robots. With Webots the user can design complex robotic setups, with one or several, similar or different robots, in a shared environment. The properties of each object, such as shape, color, texture, mass, friction, etc., are chosen by the user. A large choice of simulated sensors and actuators is available to equip each robot. The robot controllers can be programmed with the built-in IDE or with third party development environments. The robot behavior can be tested in physically realistic worlds. The controller programs can optionally be transferred to commercially available real robots. Webots is used by over 1309 universities and research centers worldwide. With Webots, you take advantage of a proven technology that has been codeveloped by the Swiss Federal Institute of Technology in Lausanne, thoroughly tested, well documented and continuously maintained for over 20 years. The development time you save is enormous!

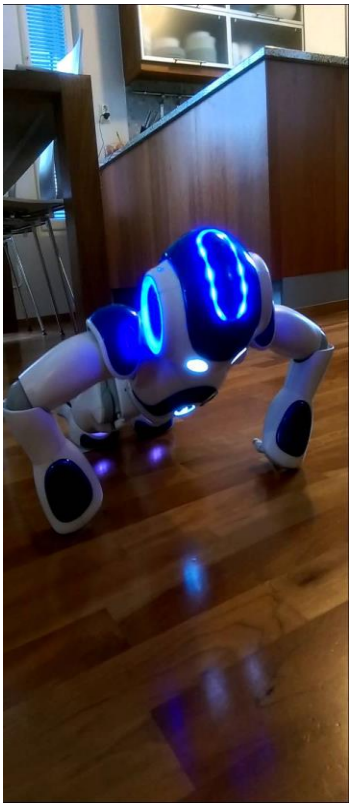
Purpose of the Lab1

Given that our university participates at Robocup conference ,we are more familiar to design on a Football Background. So we have used a RoboCup world - that is already designed in Webot's platform(7.4.3)- to devise a new motion that a Nao robot will incorporate to make an action in the Football Game .



Guess about a Motion

Our Teacher let as to experiment the Webot Platform.In fact ,he let as the freedom to design the motion that we prefer .A first thought was to make a Wave motion, like a Greeting .But I find it useless with any connection to a Sport ,like Football . As a result, I have thought that is a better idea to prepare the players for a Football match .It's widely known that all the Football players should prepare their self's before the Match is started .So, a workout like push -ups it's a good way to exercise their knees ,elbow ,shoulder,ankle and foot.



Push-Ups and Shoot a Ball

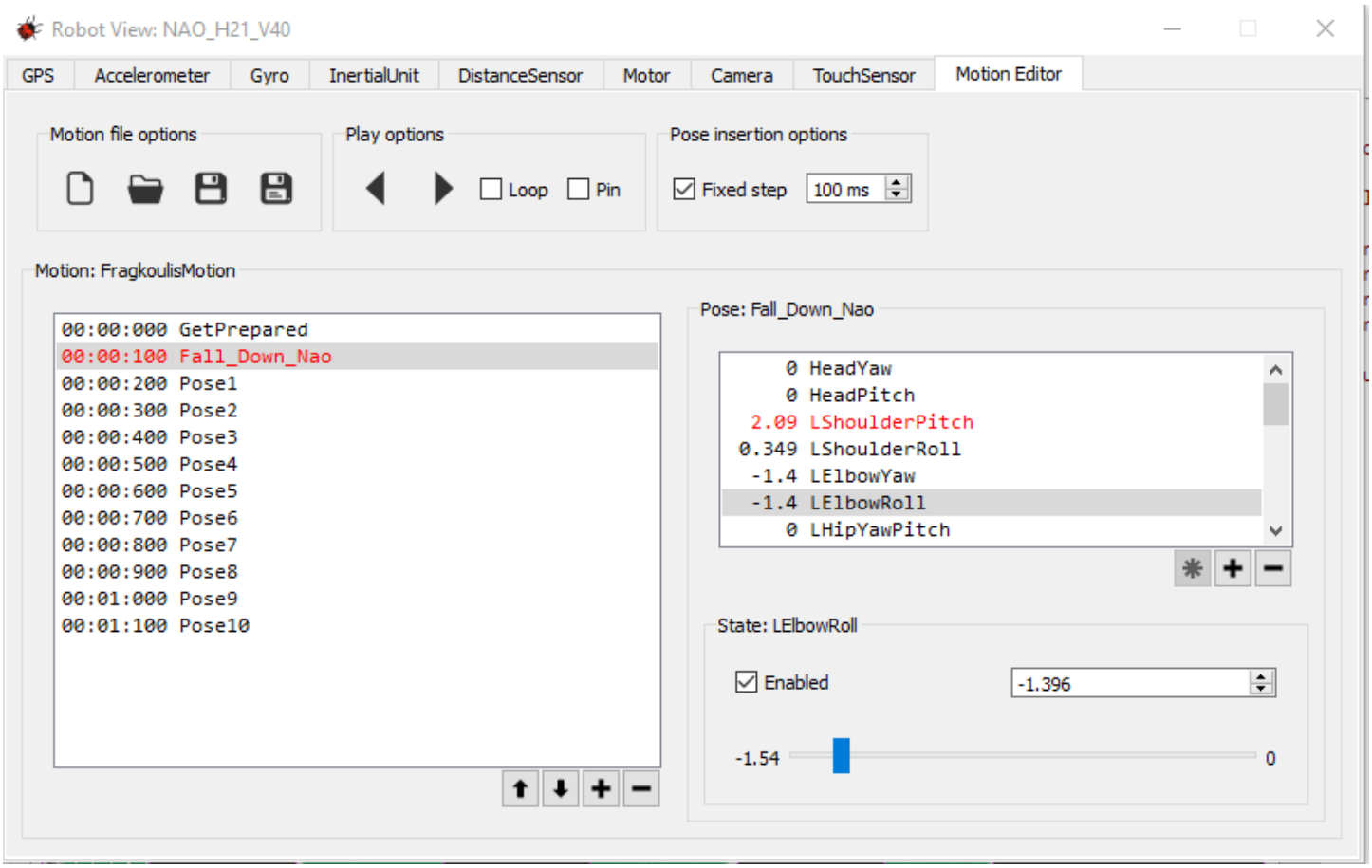
Nao starts his workout by following the following steps :

- Find The colored Ball
- Find The path to shoot it
- When you are near to the Ball ,Shoot them
- Start you Push-ups
- To do the above you have to use Motion Editor

Motion editor

This tab allows you to create, edit or play a motion file. It contains an animation which can be executed by the robot at any time. The motion is composed of multiple poses (left pane). A pose is an instant in the time the robot has to follow. The robot will smoothly move from one pose to the next one.A pose is composed of multiple states (right pane). A state represents a position of one motor. If the state is enabled, it means that the motor should have the set position at the pose instant time.

So I have made a motion ,it's name is FragkoulisMotion.motion :

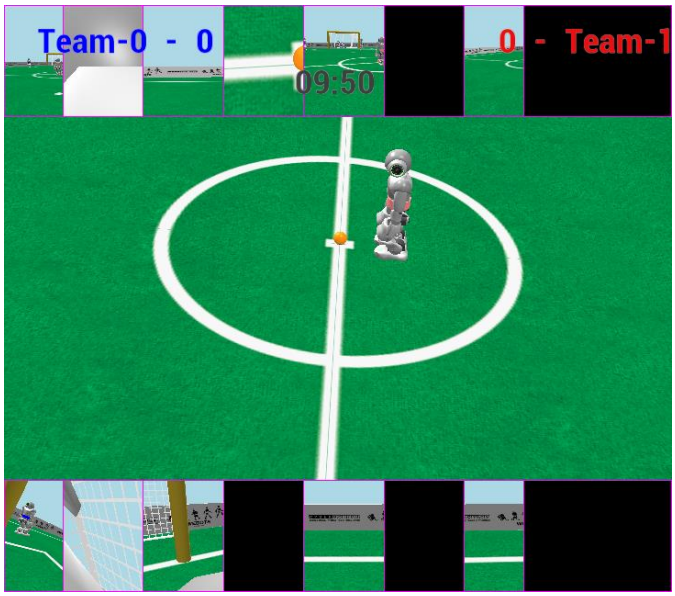


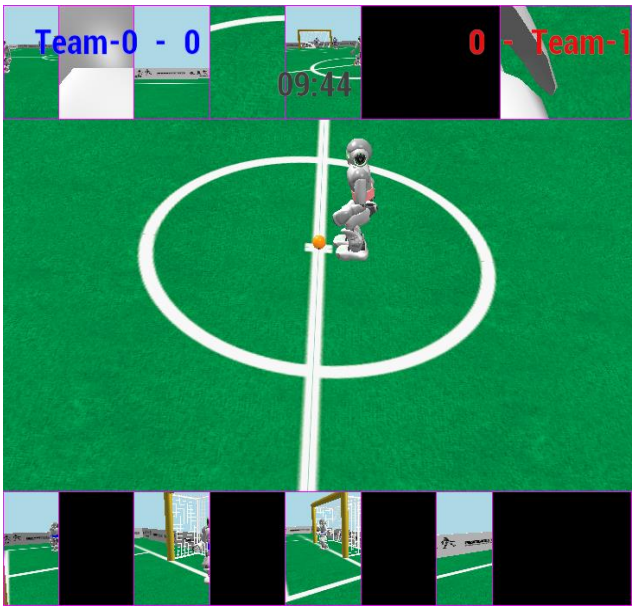
Analysis of Poses:

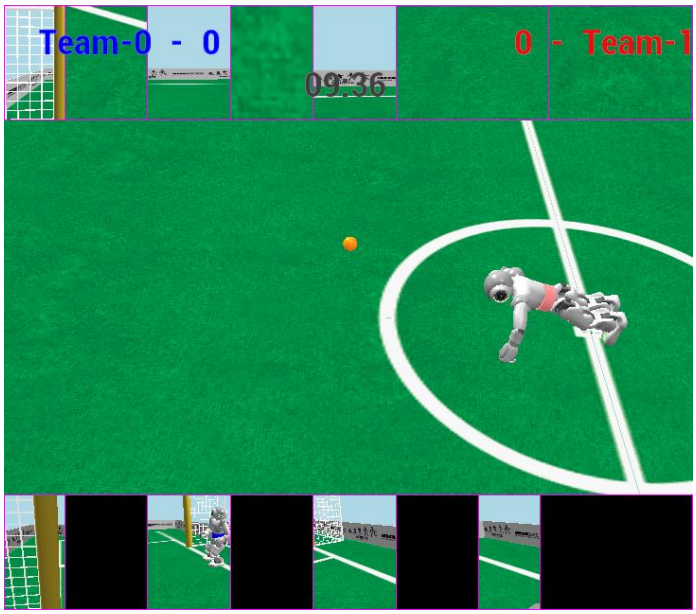
- GetPrepared → Prepare Nao Body to fell down
- Fall_Down_Nao → Nao is down
- Poses 1-10 →Push -ups

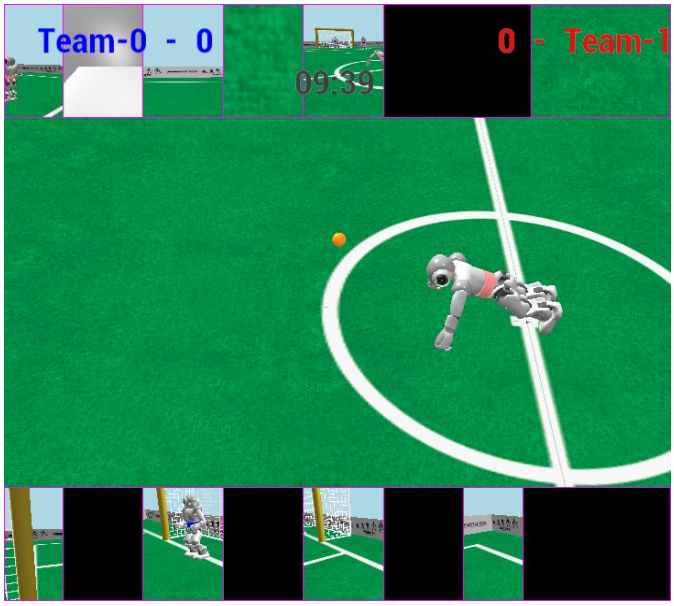
  - I would like to mention that "Fixed step Time " is so low because of low amount of poses

Come pictures









Watch the video on my Github : https://github.com/flogothetis/Autonomous-Agents