CS206: Evolutionary Robotics Final Project Instructions

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Final Project Description:

The final project is worth **30%** of your final grade for the course. There are three deliverables for the final project:

1. five weekly reports (2% $\times$ 5 = 10% of your final grade);
2. an oral presentation (10% of your final grade);
3. a written report (10% of your final grade).

In summary: you will be creating a project in Reddit that enables future students to conduct the same project. Thus, if you decide to evolve robots that jump as high as possible, you need to not only evolve a robot that does so but create a project in Reddit that helps another student evolve a robot to do so. In essence, you're creating an 'Assignment 11'.

1 The weekly reports

You will submit five weekly reports to the reddit.com, very much like you did for the assignments.

1. Weekly report 1: Choosing your project (due **Thurs, Mar 26 at 8:29am**)
2. Weekly report 2: Breaking your project into milestones (due **Thurs, Apr 2 at 8:29am**)
3. Weekly report 3: Screenshots of milestone 1 (due **Thurs, Apr 9 at 8:29am**)
4. Weekly report 4: Instructions for how to reach milestone 1 (due **Thurs, Apr 16 at 8:29am**)
5. Weekly report 5: Screenshots of milestone 2 (due **Thurs, Apr 23 at 8:29am**)

1.1 Weekly report 1

Here, you will indicate on Reddit which project you will work on. You can pick one from the following list, or come with your own idea. Take some time to think about which project interests you, and whether you can finish that project before the end of the semester.

Potential project ideas:

1. Create a robot with whegs, and evolve it to use its wheels on flat ground and its legs on rough terrain.
2. Create two quadrupeds that, together, push a large object as far as possible.
3. Create a robot that can climb stairs.
4. Add a gripper to the quadruped such that it can grasp and lift objects.
5. Create a (simplified!) version of Hans Moravec's fractal robot.
6. Turn the quadruped into a wheeled robot, and evolve it to chase a moving object.

7. Evolve a robot to brachiate.
8. Evolve a bipedal robot.
9. Evolve a bipedal robot that exhibits passive dynamic walking.
10. Project ideas from last year's students.

Once you have chosen one of these projects, or come up with an idea for your own, create a new project in Ludobots by doing the following:

1. Go to `www.reddit.com/r/ludobots`.
2. Click 'Make a Post' to the right.
3. In the 'title' box, type '[Project] ' and then a one sentence description of your project, such as 'Evolve a robot that can jump as high as possible.'
4. In the 'text' box, type four or five sentences describing in a bit more detail how you will carry out this project. Continuing the example of the jumping robot, you might type: "In this project you will create a robot that jumps as high as possible. You will do this by modifying the fitness function such that it detects the maximum height reached by the robot during its evaluation. You will also need to add some velocity and acceleration sensors so that the robot is better able to prepare for the jump, and then do so at exactly the right moment."
5. Click 'submit'.
6. Copy the URL of the resulting page.
7. Go to 'Course Materials' / 'Final Project' in BlackBoard.
8. Click on 'Weekly Report 1'.
9. Click on 'Write Submission'.
10. Paste your URL here.