

Mars Lander Project

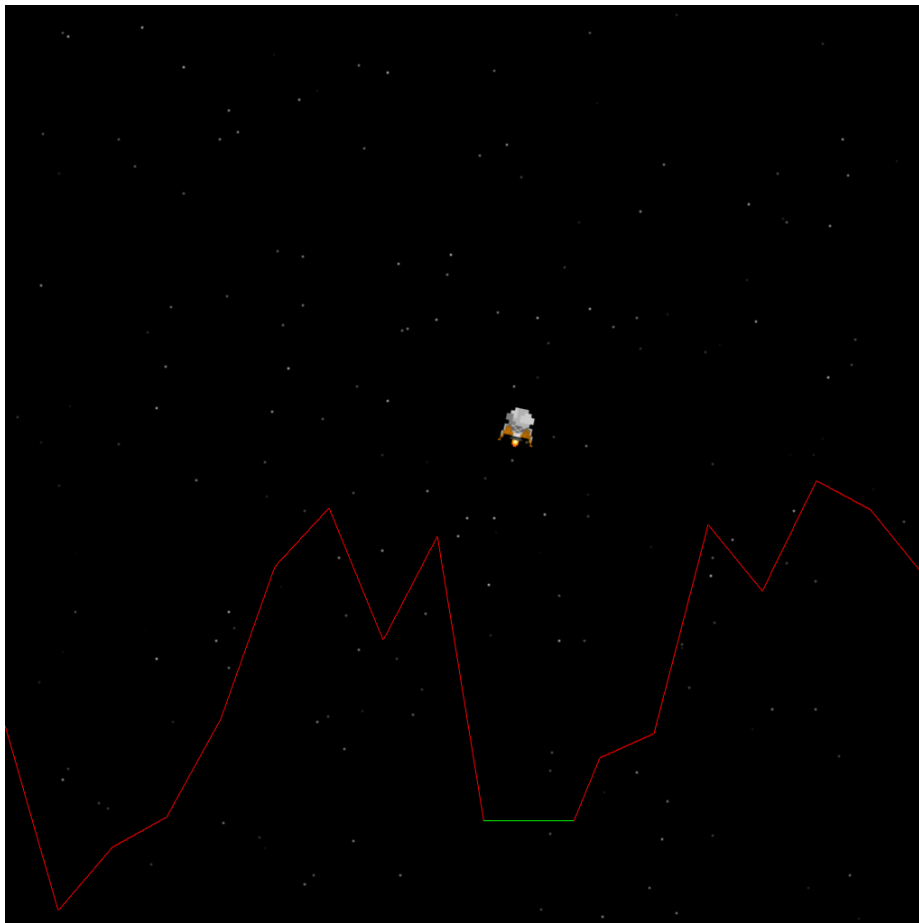


Figure 1: Mars Lander

Introduction

The goal of the project is to write an AI that should be able to successfully land the mars lander in the surface of mars.

AI Task

Create a new package Controller by creating `controller.ads` and `controller.adb` files. In this package, create a new task *AI_Task*. In the specification file (.ads), write:

```
task AI_Task;
```

The body of the package should contain the body of *AI_Task*:

```
task body AI_Task is
    -- declare a variable Next of type Time to store the Next step time
    Next : Time := Clock;

    -- declare a constant Period of 10 milliseconds of type Time_Span
    -- defining the loop period
    Period : constant Time_Span := Milliseconds (10);
begin
    loop
        -- Write your AI here.

        exit when Is_Killed;

        Next := Next + Period;
        delay until Next;
    end loop;
end AI_Task;
```

Controller

The controller should be able to automatically find the surface in which to land.

It should be able to land taking into account previous implemented rules:

- Low speed
- Low angle
- Land on a perfectly horizontal surface

Note that the terrain should be randomly generated, thus the AI should always be able to land on an unknown terrain.

The AI should adjust to external inputs. If some user decide to turn the lander, the AI should be able to adjust the trajectory.

Project

To be sent at **last** the **02 of march at 23h59**

The whole project consists in the previous mars lander labs and this one. This means that you should send the full game playable by the IA or/and by a human.

You should write a small report (French or English as you prefer). The report should contain at least 5 pages with:

- An explanation of the structure of the program.
- If you made some particular decisions, explain them.
- If you added new features, explain them.
- Explain how you shared the work between your teammates.
- Explain precisely how you implemented the AI.
- Write the report as if I do not know about the project.

Last, but not least, be creative!

You have plenty of time to write this small program, thus you will have the maximum quote only if you add features to your program (add the possibility to restart, add a menu, add the possibility to take over the control of the AI, ...).