ANGRY BIRDS GAME

AI Course Project

TEAM NAME:

The Blues

Final Version

MEMBERS:

MAULIK SONEJI (201201122)

HARSH PATEL (201201134)

MAYANK JIKADARA (201201162)

1. Introduction

The Planner Functionality will try to get the maximum number of points by trying to hit the maximum number of pigs to score the maximum number of points.

2. The Planning Part

General Outline of the Strategy

We have always considered two paths to hit the pig. We have always targeted the pig.

The two paths are:

1) Trajectory angle less than 45
2) Trajectory angle greater than 45

In both these paths, we have taken into account the obstacles in the path to hit the pig.

We have considered three types of materials for obstacles presented in the game:

- Ice/Glass (I)
- Wood (W)
- Hill (H)
- Stone (S)

We have assigned different hindrance values to different types of objects.

Obstacle Type	Hindrance Values
Stone	300
Ice	100
Wood	200
Hill	Infinite

By taking into account both the paths and the hindrance in both the paths, we have calculated which path is better to hit the pig.

After deciding which path is better to hit the pig, we need to decide that Depending on the Type of bird, which pig to target first.

So In this project, we have adopted different strategies for different types of birds.

Strategies for different types of Birds

Red Bird:

The red bird is the most basic bird. So we have planned to target the topmost pig first.

The trajectory is chosen by the method described above.

Blue Bird:

The blue bird splits itself into three other small birds. The blue birds plan on the same trajectory as the red bird and hit the topmost pig.

Yellow Bird:

The yellow bird gains momentum after the tap.

Because the yellow bird gains momentum after the tap, so it would be proper if we hit the base with greater momentum and damage the structure that is above it.

So the yellow bird always tries to hit the bottom most pig.

And the yellow bird is most effective if we consider the trajectory with release angle less than 45.

To deal with the tough levels:

There might be some levels through which may not get completed. In that case, we will skip the level.

We try the level for 3 attempts. After failing in the 3 attempts, we skip the level and go ahead with the game.

2.2 Feasibility

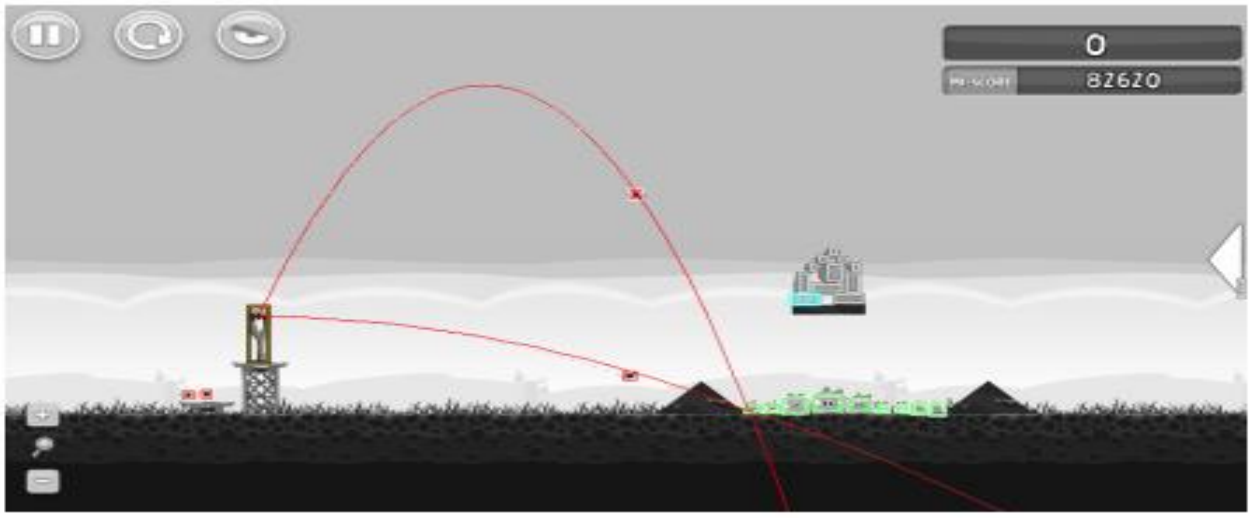
The next step to our approach is to examine each node in terms of its possibility to be reached.

It is possible some obstacles and stable structures such as mountains, to be inserted between the slingshot and the target.

Therefore, an examination step is required at each node so as to ensure that the corresponding trajectories can reach the target.

It must be noted that two different trajectories are calculated, a direct shot (angle <= 45◦) and a high arching shot (angle > 45◦).

Both of them are examined in order to estimate the tree's nodes feasibility.



If there is one trajectory that is not feasible, then that trajectory is not taken into the picture and the trajectory is chosen without considering the infeasible trajectory.

Finally, in the case of the white bird a node is considered as feasible if it can be reached by bird's egg, as opposed to the other types of birds.

The scores in the levels are as follows:

01: 28,990

02: 60,480

03: 42,140

04: 28,240

05: 44,100

06: 24,870

07: 22,700

08: 29,670

09: 32,190

10: 61,360

11: 38,980

12: 55,350

13: 29,280

14: 65,640

15: 49,830

16: 60,080

17: 46,540

18: 51,410

19: 32,290

20: 43,100

21: 63,570

Total Score: 910810