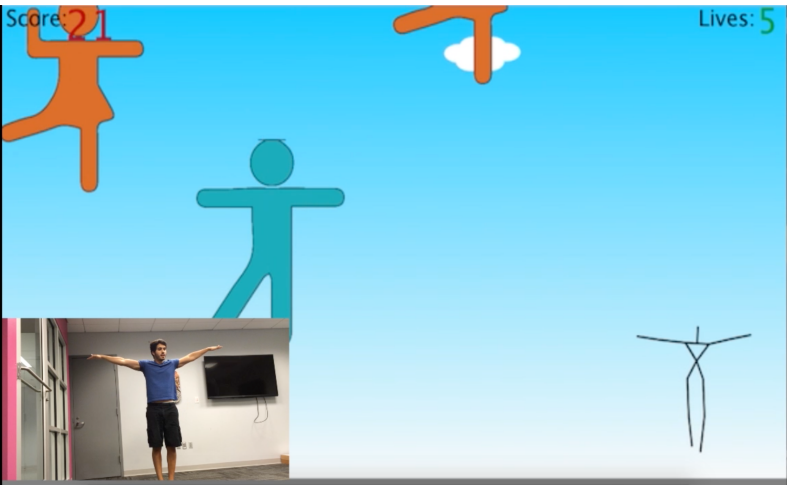
Marco Silva
Applied: Physical Computing
Project 3 - Kinect Project

Project Documentation



Those are pictures of two players playing game made for the project.

For the third project, I decided to finish the second one.
After many problems to track the positions using coordinates X and Y, the Professor told me to track the player positions comparing the parts of the body, for example, if the right hand is below or above the head.

So, I have changed the class Movement showed in the last documentation, using a function that receives all player's body parts and return true if the player is making some of the movements appearing on the screen.

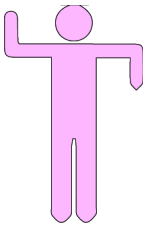
```
private boolean checkMovement(PVector projHead, PVector projNeck, PVector projLShoulder, PVector projRShoulder,
PVector projRElbow, PVector projLElbow, PVector projLHand, PVector projRHand, PVector projTorso, PVector projLHip, PVector projRHip,
PVector projLKnee, PVector projRKnee, PVector projLFoot, PVector projRFoot) {

  if (type==0) {
    if (projLHand.y < projHead.y && projRHand.y > projTorso.y && projRHand.x > projRElbow.x && projLFoot.y <= projRKnee.y) {
      return true;
    }
  } else if (type==1) {
```

For having a better control and being easier to explain in the documentation, I have done a document with all positions that the game have and what the player needs to do to match them.

Movement1:

Type = 8

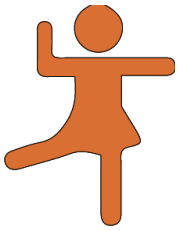
LeftHand.y < Torso.y
LeftHand.y > Head.y
RightHand.y < Torso.y
RightHand.y > Head.y
LeftFoot.x>=LeftHand.x
LefElbow.y <= LeftShoulder.y
RightElbow.y <= RightShoulder.y



Movement2:

Type = 9

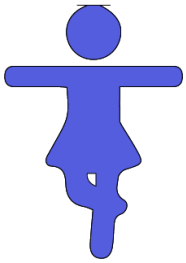
LeftHand.y <= Head.y
LefElbow.y <= LeftShoulder.y
RightHand.y > RightShoulder.y
RightElbow.y <= RightShoulder.y
!!



Movement3:

Type = 10

LeftHand.y <= Head.y
LefElbow.y <= LeftShoulder.y
RightElbow.y <= RightShouldery
RightHand.y > Head.y
LeftFoot.x > LeftElbow.x
RightHand.y<=RightShoulder.y



Movement4:

Type = 11

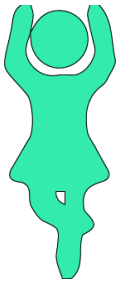
LeftHand.y < Torso.y
LeftHand.y > Head.y
RightHand.y < Torso.y
RightHand.y > Head.y
LeftFoot.y <= RightKnee.y
LeftFoot.x < LeftKnee.x

Movement5:

Type = 12

RightHand.y <= Head.y
RightElbow.y <= RightShoulder.y
LeftHand .x < LeftElbow.x
LeftHand.y >Torso.y
LeftKnee.x > LeftElbow.x

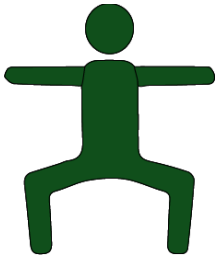
Movement6:



Type = 13

RightHand.y <= Head.y
RightElbow.y <= RightShoulder.y
LeftHand.y <= Head.y
LefElbow.y <= LeftShoulder.y
LeftFoot.y <= RightKnee.y
LeftFoot.x < LeftKnee.x

Movement7:



Type = 14

LeftHand.y < Torso.y
LeftHand.y > Head.y
RightHand.y < Torso.y
RightHand.y > Head.y
LeftKnee.x > LeftShoulder.x
RightKnee.x < RightShoulder.x

Movement8:

Type = 15

RightHand.y < RightShoulder.y
RightElbow.y < RightShoulder.y
LeftHand .x < LeftElbow.x
LeftHand.y >Torso.y

Movement11:

Type = 0

LeftHand.y < Head.y
RightHand.y > Torso.y
RightHand.x > RightElbow.x
LeftFoot.y <= RightKnee.y

Movement12:

Type = 1

LeftHand.y < LeftHip.y
LeftHand.y > LeftShoulders.y
LeftHand.x < LeftKnee.x
LeftHand.x < LeftElbow.x
RightHand.y < RightHip.y
RightHand.x > RightElbow.x
RightHand.y > LeftShoulder.y
LeftFoot.y <= RightKnee.y

Movement13:

Type = 2

RightHand.y < Head.y
RightElbow.y < RightShoulders.y
LeftHand.y >= torso.y
RightFoot.x > LeftHand.x
RightFoot.y <= LeftKnee.y

Movement14:

Type = 3

RightHand.y < Head.y
RightHand.y > LeftHand.y
LeftHand.y < Head.y
RightFoot.x < RightHand.x
RightFoot.y <= RightHip.y

Movement15:

Type = 4

RightHand.y < Head.y
RightHand.y > LeftHand.y
LeftHand.y < Head.y
RightFoot.x > LeftFoot.x

Movement16:

Type = 5

LeftHand.y < Head.y
LeftHand.x < LeftElbow.x
RightHand.y > RightShoulder.y
RightFoot.y <= RightHip.y
RightFoot.x > LeftFoot.x

Movement17:

Type = 6

LeftHand.y > LeftShoulder.y
LeftHand.x < LeftElbow.x
RightHand.y < Head.y
RightFoot.x > LeftFoot.x
RightFoot.y > LeftKnee.y

Movement18:

Type = 7

LeftHand.y < RightHand.y
RightHand.y < Head.y
RightFoot.y < RightHip.y
RightFoot.y < RightKnee.y

Features

- It has 3 options in the main menu (training mode, advanced mode and instructions).
- In the first screen, the hi-score and the last score is shown.
- When the player reaches the hi-score during the game, the score shown on the screen becomes red and bigger.
- The Player has 5 lives.
- Whenever the Kinect loses the player, the game stops and give the option of either continue or exit.
- When the game is over and the player got the hi-score a happy sound is played, although when it is just over without getting the hi-score a sad sound is played.
- The player can pause the game positioning their two hands bellow their two knees.

Reflection about the project

Now that I understand how a Kinect is used to make projects, I can start thinking of how I am going to use it in the future.

I want to fix the bugs that are going to be find when people start playing and make stages for the game, as the player keep increasing the score, besides the velocity, the background and the positions change as well.

*A short video of the game is in the same folder