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Kyle the robot

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Level 1

Concept
Level one involves the robot moving towards the pile of food, eating some of it, and then moving on to a wall to punch it down.

Eating
Eating is registered as a valid gesture when the player moves his or her hand close to the face.

Punching
Punching is registered when a player moves his hand in the Z direction. Unity receives a scaled punch velocity,the hand used and the player that threw the punch. Unity averages out the speed of the punches to set a punch speed for each hand.

Fail Case
If the robot didn't eat enough, the wall doesn't break down. At this point the robot walk back to the food station and the process repeats.

Level 2

Concept
The robot now moves on to get a Spring in the form of a power up. The spring appears in a box at the bottom of the screen and the players squat to compress the spring. The spring uncoils as the robot climbs its next obstacle, a large wall. The climbing motion

Spring Compression

The players squat down to trigger this. A compression variable is assigned to each player and the amount they compress is averaged out to compress the spring. This compression represents the energy generated.

Climbing

Climbing works by reaching up and dragging your hand down. The kinect registers the downward motion of the hand as a climb. As the player climbs up, the compressed spring decompresses.

Fail Case

If it wasn't compressed enough the robot falls short of reaching the top and falls down and the cycle starts over again.

Level 3

Concept

This level involves shouting as the energy generation component and rowing across a body of water as the energy expenditure component. It works on amount of time spent shouting rather than the actual volume of the shout. The only way they can make it to the other side is if they both shout for 20 seconds each.

Shouting

The Kinect detects the number of sound sources. To generate energy, 2 or more seperate sound sources need to shout in unison for a set amount of time. Tentatively, that time is 20 seconds(subject to change upon further testing).

Rowing

The gesture of placing both your hands in front of your body and then moving them closer to your body is considered to be a single row. MATLAB calculates the frequency of each row of each player and sets the rowing speed of the boat accordingly.

Fail Case

You fail to row across the water if you didn't both shout long enough.

Level Change(optional)

This is a message that unity sends to Visual Studio and MATLAB through port 12349 that contains the level number. Upon receiving the level number both MATLAB and Visual Studio sends over the data most relevant at the time.

OSC
OSC forms the basis of the pipeline to from MATLAB.
Usage of Ventuz