Checking for Collisions:
Using Functions in Alice

By Henry Qin
under the direction of
Professor Susan Rodger
Duke University
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Step 1: Building the World
This tutorial will demonstrate how to use a tool called a Function in Alice, to tell if
one object is relatively close to another object. In order to do this we will build a
simple world and a simple function to tell if two objects are colliding (on top of
each other).

To build it simply choose a grass scene in Alice and add
a bunny and a cow from the animals folder of the local
gallery.

Step 2: Creating a Function
The first thing that we need to do is create a function in the
world.
Click Done to go back to the main window.
Click on world in the object tree and and then the
functions tab.
Click on the gray “Create new function” button.
We are going to name this one “overlapTest.”
Make sure you select the Boolean type.
After you write the name a green tab should appear
on in your method editor.

Step 3: If/Else Condition
Next we need to drag an if/else statement into the place that
currently says “do nothing.”
Select true.

Now lets go to world level functions and drag the a < b tab
over the true in the if/else.

Just pick 1 for both a and b, they are simply place holders for
the moment.
Step 3: If/Else Condition

For the first we are going to go to the cow’s functions and choose “cow distance to” bunny, (the entire bunny).

Now find the function labeled “cow’s width.” Drop on top of the 1 in the second space.

Replace the 1 with the same expression only this time using the bunny. Drag in bunny’s width from the bunny’s functions over the 1. Select the down arrow next to bunny’s width and select math. Select “bunny’s width /” and 2 to divide the width in half.

Now click on the down arrow immediately next to width and select math.

Select “cow’s width /” and 2 to divide the width in half.

Click on the down arrow next to the “2”). Select math again and choose “(cow’s width / 2) +” and choose 1 as a placeholder.

Step 4: Return Statements

This function is going to check and see if the cow is closer than the length of the cow’s width to the bunny. In other words, is the cow colliding with the bunny? We want to return “true” if the cow is overlapping with the bunny.

Drag a Return statement into the first Do Nothing and select true.

Drag a second Return statement into the remaining Do Nothing and select false. Since if the cow and bunny aren’t close enough, they are not colliding.
Now we need to write a method to call this function. Let's go into World.myfirstmethod and drop in an "if statement."

Now, in the else statement have the cow say, "Checking... we are not colliding."

Now drop in your “overlapTest” function on top of the “if statement.”

We want the cow to say something if overlapTest is true. Let's have him say, “We are colliding, how can this be?”

Now, in the else statement have the cow say, “Checking... we are not colliding.”

Now drag the cow on top of your bunny in the add objects screen and play it again.

The cow should say “We are colliding, how can this be?”

You can use functions like this in your Alice worlds to determine if objects in your world are within a certain distance of each other. Check out some of the example worlds that require colliding with another object (such as games where try to catch something) to see how we can use this code.

That’s all folks!