

# Wall Ball Setup / Calibration

Wall projection game

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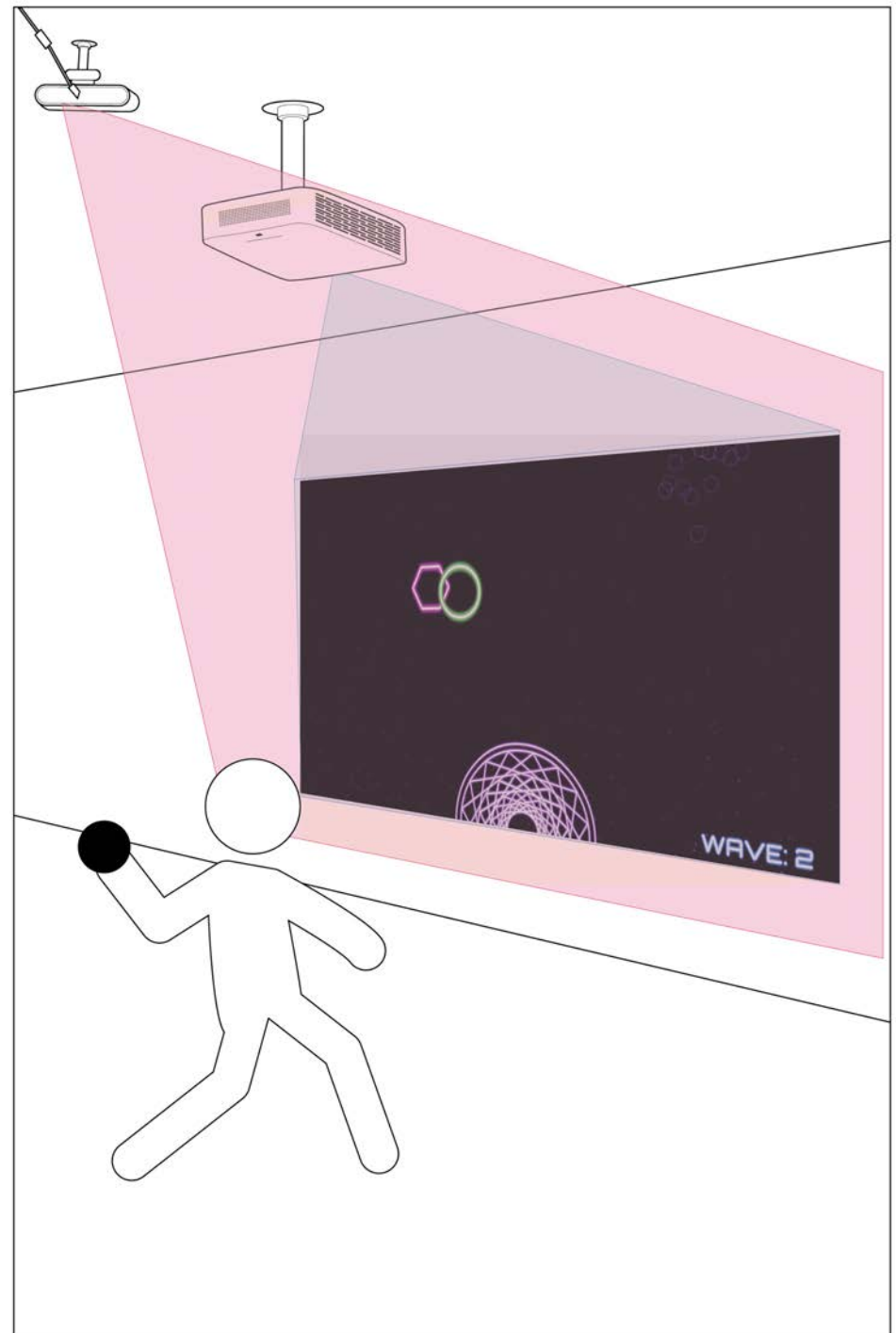
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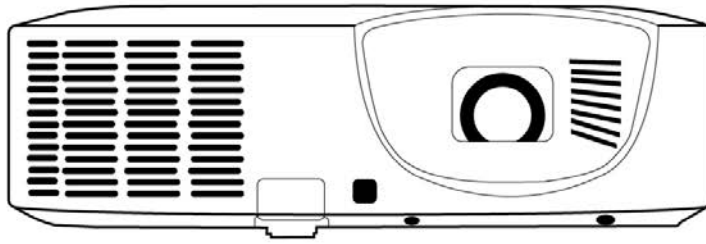
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# Wall Projection

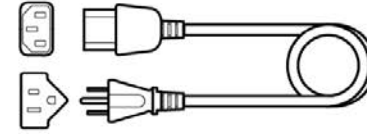
Ceiling Mounted



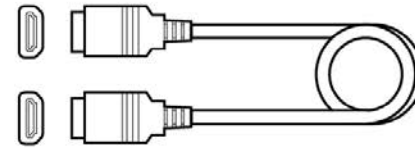
# 1



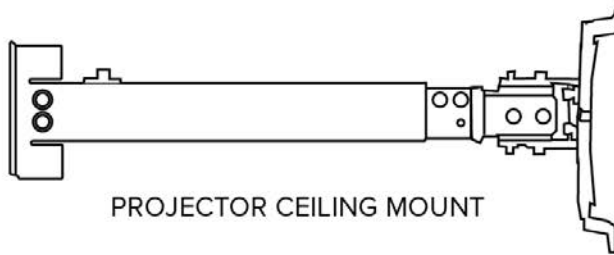
PROJECTOR



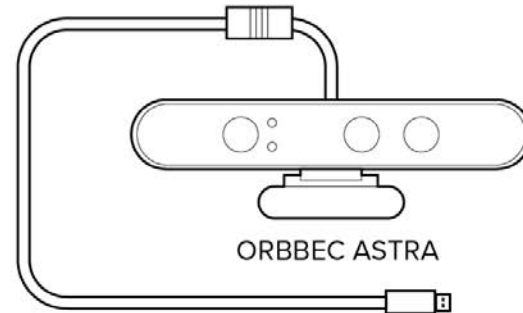
PROJECTOR POWER CABLE



HDMI



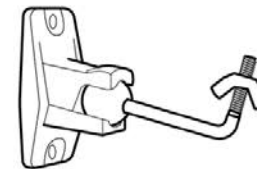
PROJECTOR CEILING MOUNT



ORBEC ASTRA

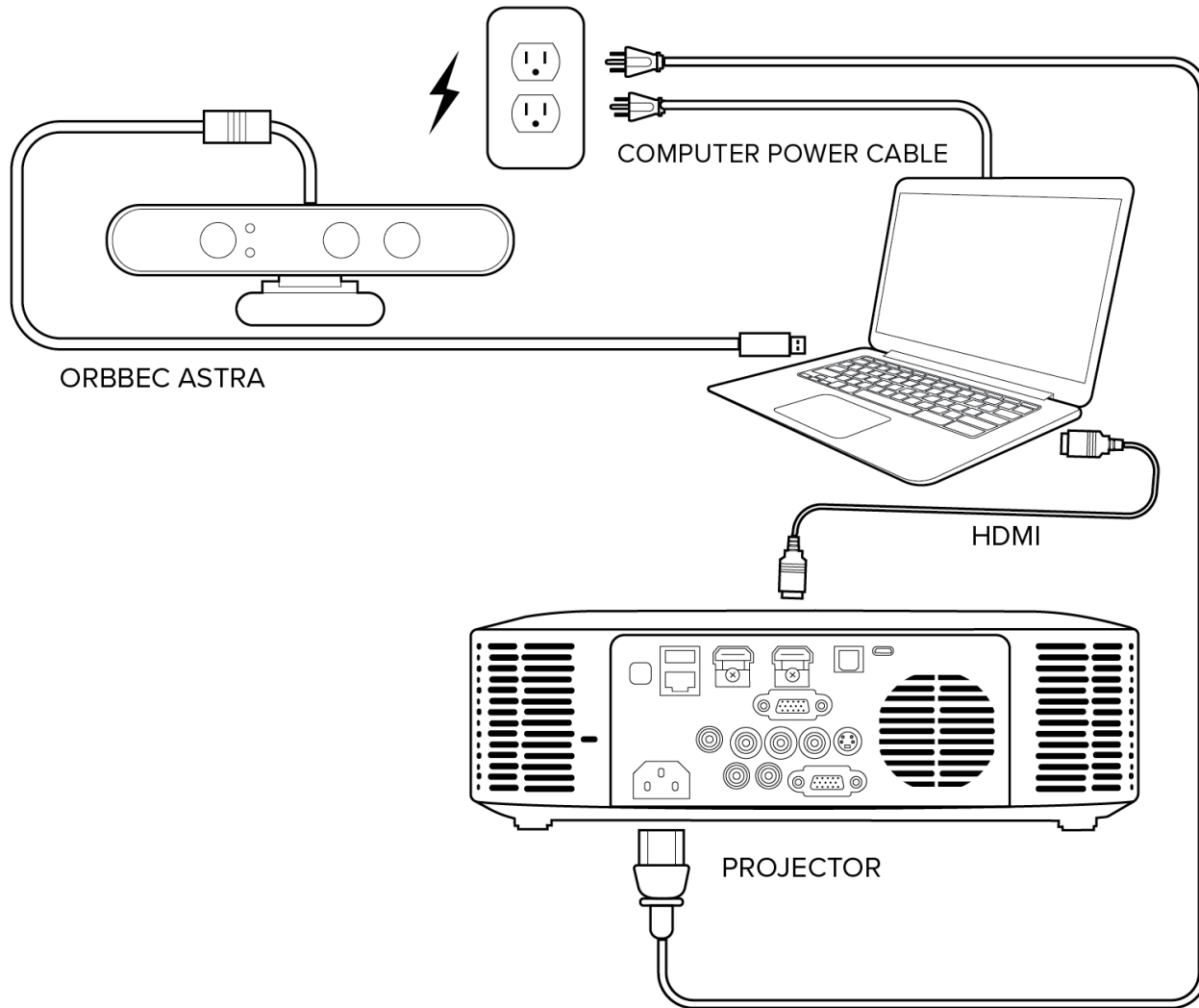


WINDOWS 10 COMPUTER

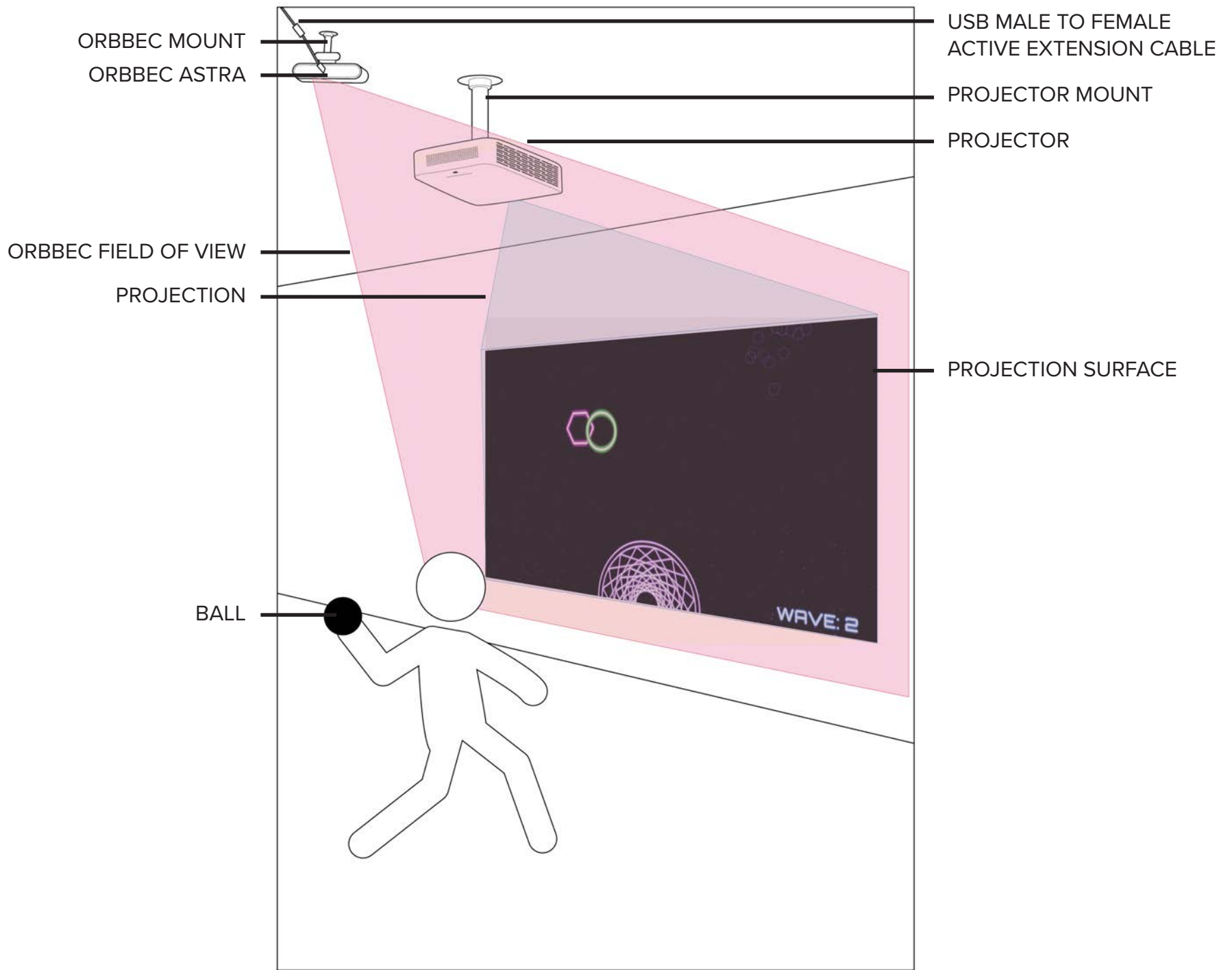


ORBEC MOUNT

# 2



# 3



## HARDWARE

— Connect to the Internet to download your Lumo Play software from [www.lumoplay.com](http://www.lumoplay.com), install it and register the software.

— Follow the instructions that came with your projector mount to install the projector mount on the ceiling. Plug your projector into the power outlet.

— Place your Windows 10 computer where it will be stored permanently. Turn it on. Connect to the Internet. Connect the computer to the projector using an HDMI cable.

— **3a.** Follow the instructions that came with your camera mount to install the Orbbec Astra camera on the ceiling.

— **3b.** Follow the instructions that came with your camera mount to install the Orbbec Astra camera on the wall.

— Connect the USB male to female active extension cable to the Orbbec Astra. Plug the USB connector into a USB port of your computer.

— Once the hardware is in position ([see illustration 3](#)) run the Lumo Play software.

## GOOD TO KNOW

— Please note that Wall Ball games will ONLY work with the Orbbec Astra (recommended) or the Kinect for Xbox One camera.

— Devices may get warm while in use; this is completely normal and they will gradually cool down again after they are turned off.

— We strongly recommend using cable protection channels to keep stray power and usb cables away from little hands.

## CALIBRATION

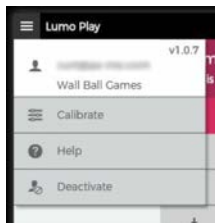
— Make sure that you have set up your equipment so that the projector is facing a wall and the Orbbec is also facing that same wall.

— For the purposes of this tutorial, our Orbbec was 10 feet and 6 inches (3.2 meters) from the wall

— For Wall Ball games to respond only to balls or other items thrown at the display, you will need to calibrate the Lumo Play software in a very specific way.

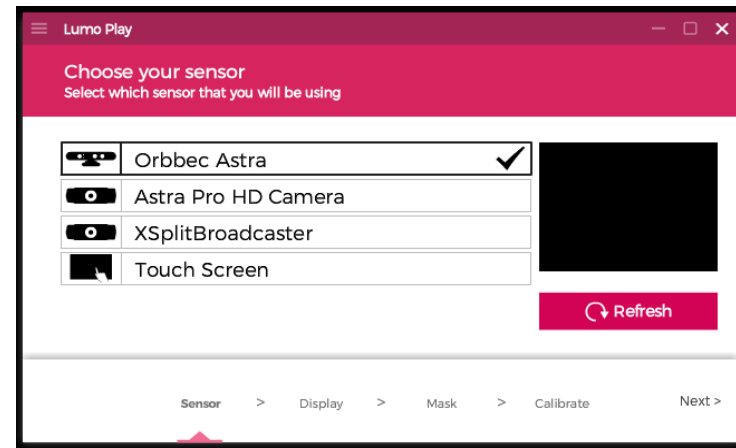
To find the calibration controls, click the button in the top left of the software. ☰

Then select Calibrate:

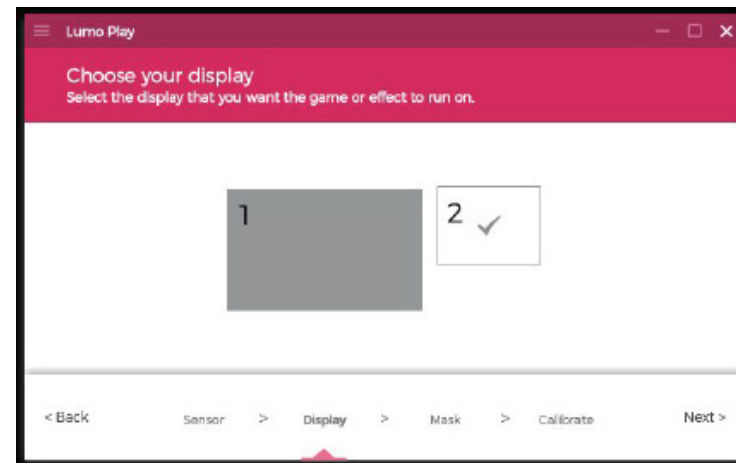


— You will be taken to the calibration screen, and a test game will appear in the background with little white markers in the corners.

To begin, we need to select our camera. Select the Orbbec Astra camera hit Next >



If you have multiple monitors (projector and laptop screen for example) then you need to select the screen that is your projector. Once this is done, click Next >





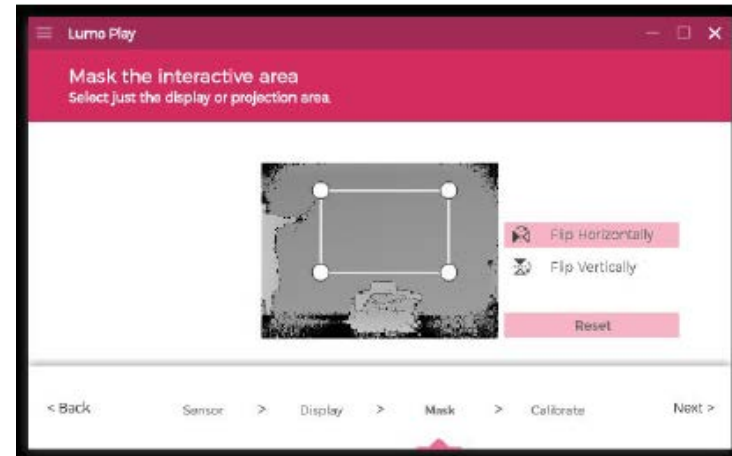
## CALIBRATION

— The Mask step is critical to the accuracy of the games. The mask area must match the projection area as closely as possible, otherwise it will not respond to thrown objects.

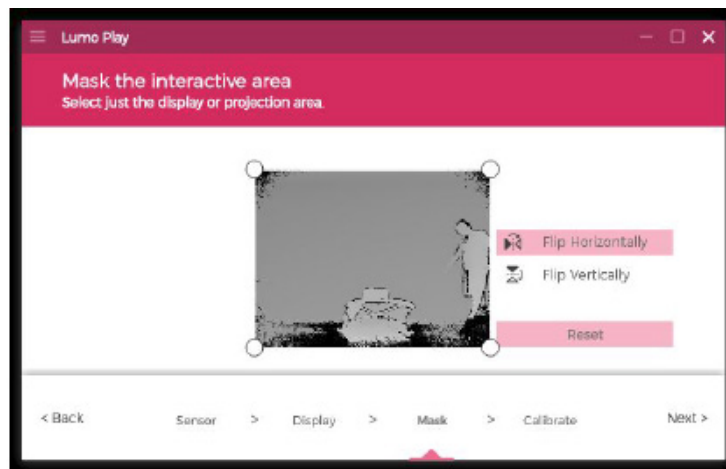
The Orbbec Astra sees images in the IR (infrared) spectrum, so it will not be able to display the projector's light. This means that the camera will not be accidentally triggered by motion in the display (it will only see the motion of objects or people).

When using the Orbbec Astra camera, you will need a helper to point out where the corners of the projected area are. Ask a friend to stand in front of your projection and point at each corner of your projected area. If the projection is very high up, your helper may need to use a broom to reach the top corners.

helper is pointing until each pin is on a corner of the projected area



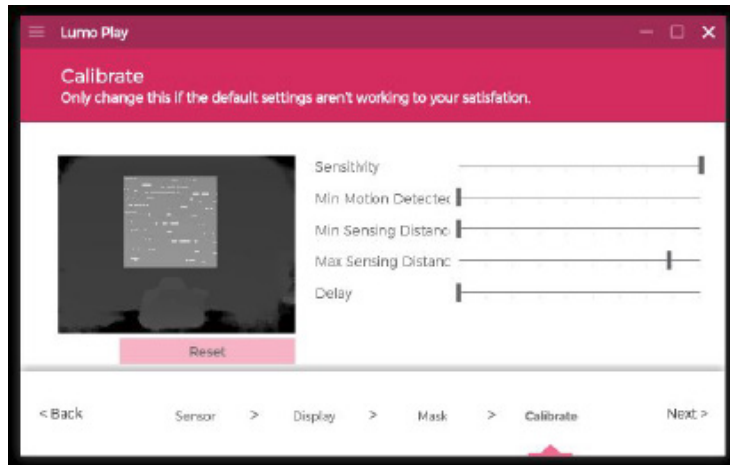
Once you've defined your mask, you can hit Next > and move to the calibration sliders.



move the mask pins from the corners to where the

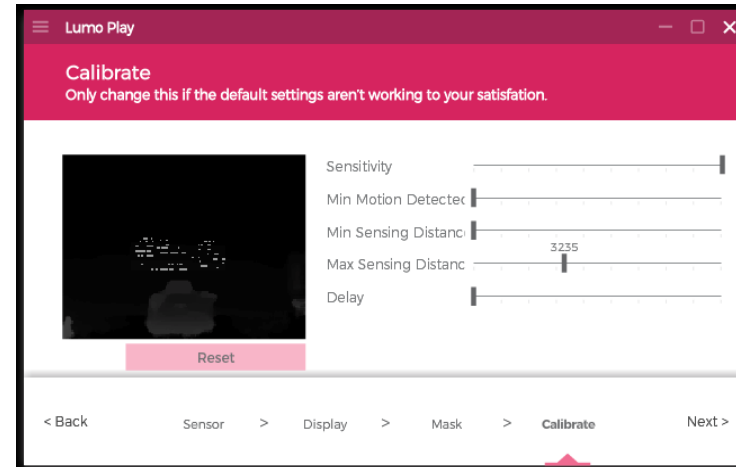
## CALIBRATION

— To start, we need to move the Sensitivity slider all the way to the right and the Min Motion Detected and Delay sliders all the way to the left, like so:

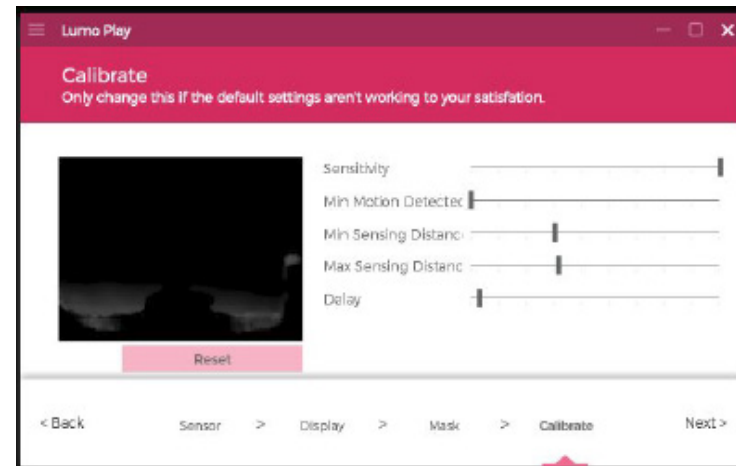


This will result in a lot of noise in the video feed (and a lot of pink and blue rectangles in the test game).

Slowly move the Max Sensing Distance slider to the left while watching the video feed. Stop immediately when the noise in the masked area has stopped. Be as precise as possible.



Move the Min Sensing Distance slider to be just to the left of the Max Sensing Distance slider.



Your end screen will look similar to this. You can now hit Next > and end the calibration sequence.

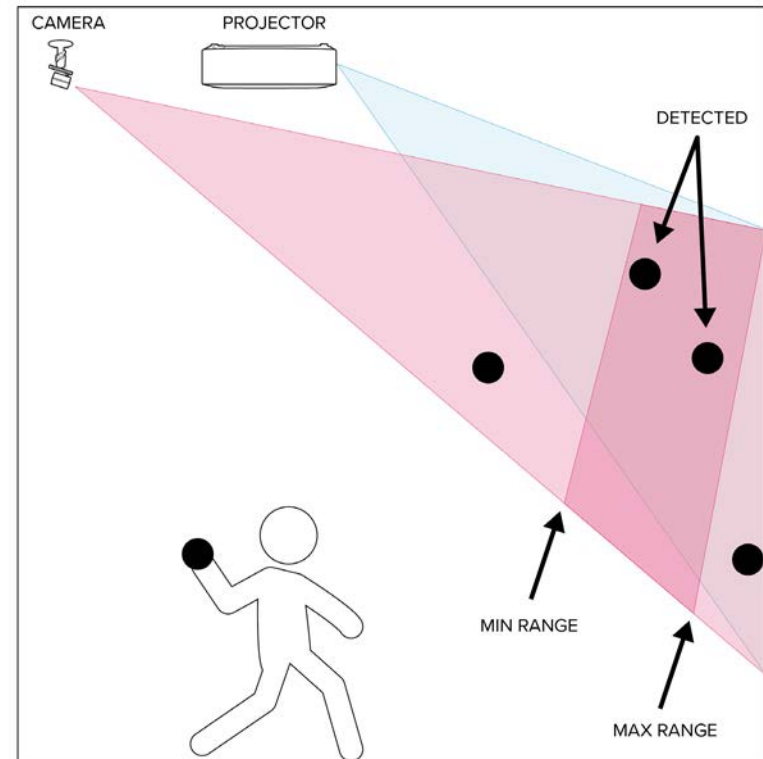
## WHAT'S HAPPENING?

— You should be set up and good to go at this point. This section is only if you're interested in what's happening.

What we're doing is effectively setting up a cross section of detection right before the wall. We've set the maximum range right before the wall and the minimum range a little further back from that.

This means that balls that are right about to hit the wall are 'detected' and an event is sent to the game.

Balls before and after these ranges are ignored. When looking for movement, things that are out of range (both minimum and maximum) are given a specific out-of-range value, so occlusion caused by objects that are before the minimum range are not detected since there is nothing within the maximum range either.



# Shopping List

Lumo Play doesn't sell hardware, but we do test projectors and Windows computers frequently for the most common installation types.

If you are planning to hire an installer, we recommend that you contact them first. Professional installation services cost more than doing this yourself, but the results usually look a lot better.

# Retail

The following **Retail hardware** is suitable for retail, museum, and event installations with normal/controllable ambient light.

[Click here](#) to shop!

# Small Business

The following **Small Business hardware** is appropriate for schools, daycares, and small businesses who can control the lighting environment.

[Click here](#) to shop!