

# Up Your (Catch) Game Using a Vernier Accelerometer

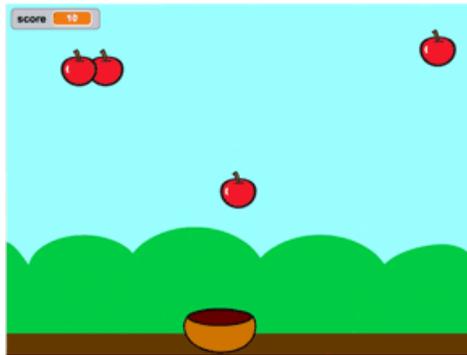


Figure 1 "Catch Game" Scratch project

The "Catch Game" is a popular, simple Scratch project. Bring in the real world by using a Vernier Low-g Accelerometer to control the Catcher sprite.

## Connect the accelerometer to Scratch

1. Connect a Go!Link and Low-g Accelerometer to your computer.
2. Launch the Go!Link extension in your browser. Our Go! Extensions are hosted on the ScratchX.org website.
3. Wait for the green light. When Scratch has identified your Go! device, the device's LED will turn green, as will the indicator circle in the extension section of Scratch.

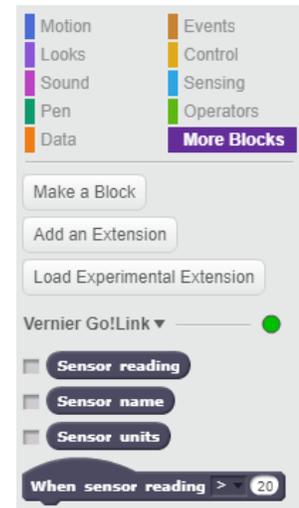
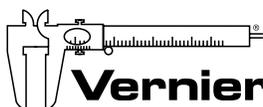


Figure 2 Green light indicates that Go!Link is connected to the Scratch project



# Create Your Catch Game

The “Catch Game” is a popular, simple Scratch project. For this project, build it as you would in Scratch; [Scratch](#) has a great tutorial. Your game could catch apples sprites with a basket sprite, as shown in the tutorial. Or you could catch taco sprites with a rocket ship sprite. Mix it up however you’d like. Have fun!

## Modify the Catcher Code to use the Accelerometer

The regular Catch Game uses the left and right arrow keys to move the Catcher sprite. Swap out the movement code for the following:

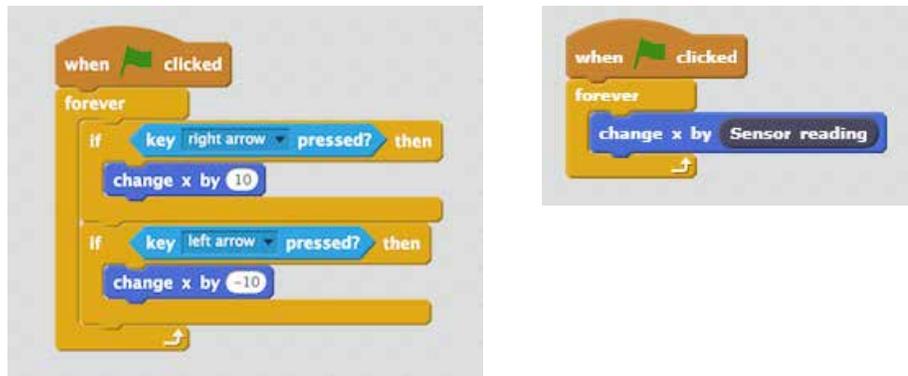


Figure 3 Modify the Catcher sprite movement code from arrow keys (left) to accelerometer (right)

You’ll find the sensor data variable in the “More Blocks” menu.

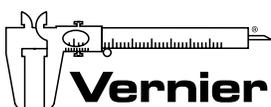
The data coming from the accelerometer, which appears in your code by way of the “Sensor reading” reporter block, will always be a number between  $-10$  and  $10$ .

- When the arrow on the accelerometer points up towards the ceiling, it will read  $+10$ ; when it points down toward the floor, it will read  $-10$ .
- If you hold it sideways, so it’s pointed at a wall, it will read zero.

In the Scratch code, the accelerometer reading provides the value by which the  $x$ , or horizontal position, of the Catcher sprite changes. Pointing the accelerometer straight up or straight down will move the Catcher sprite quickly. Hold it sideways and it won’t move at all.

## Play!

As written, the Catcher sprite will move right and left as you point the accelerometer up and down, respectively. Attaching the accelerometer to the center of a Frisbee or other circular object makes it into a convenient steering wheel.



# Teacher Information

## Use a Vernier Accelerometer to Enhance Your Catch Game

### Overview

Many mobile games, designed to run on smartphones and tablets, use the device's built-in accelerometer to control game elements. For instance, when you tilt the smartphone, the character moves from side to side. In this activity, students recreate this behavior in Scratch. First, they will create the popular "Catch Game" in Scratch. Then, they incorporate code to steer the Catcher sprite using the Vernier Low-g Accelerometer.

### Objectives

- Create a "Catch Game" program in Scratch
- Familiarize themselves with accelerometer data
- Gain an understanding of how mobile games use an accelerometer to control actions in the game movement code for the following:

### CSTA Standards

1B-AP-10	Create programs that include sequences, events, loops, and conditionals
1B-AP-12	Modify, remix, or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features.
1B-AP-15	Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended.

### Tips

1. Before doing this activity, install the Scratch Extensions Browser Plugin on each student computer. Note: The browser plugin is only available for Windows or macOS. Verify that each computer/browser connects to the Go!Link by opening the URL as described in the student handout.
2. The Catch Game project on which this activity is based is a popular, beginner project in Scratch. Even if students do not integrate the accelerometer into their Scratch project, creating the Catch Game and running it will be an rewarding activity.
3. You can find a completed example program from this activity on this Vernier webpage: <https://www.vernier.com/engineering/scratch/> Look for the "Space Tacos" example under Sample Projects.
4. If students complete the activity with extra time remaining, encourage them to continue to explore, modify, and personalize their Catch Games. They might change the Catcher sprite's costume, the Stage's backdrop, or the difficulty of the game by creating more dropping object sprites.

