

JUMPSCARE PROJECT

Share your work!
@CodeJoyEdu

GOAL: Use a motor to create a randomly activated jumpscare!

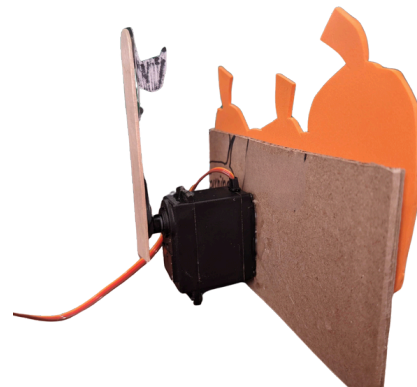
Group Size: 2-3 students

Craft Materials:

- Cardboard scraps
- Paper
- Popsicle stick
- Blade or scissors
- Hot glue
- Marker

Robotic Components:

- Robotics kit
(suggested: Hummingbird)
- Position servo motor



Criteria:

Things your project must do

- At least 1 position servo
- Hide some element to create something that “jumps” out
- Make yourself laugh!

Stretch Goals:

- Add more motors or LEDs
- Trigger the project with a sensor

Constraints:

Limits on your project

- Time: 30 minutes
- Materials you have available

JUMPSCARE BUILD

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Step 1:

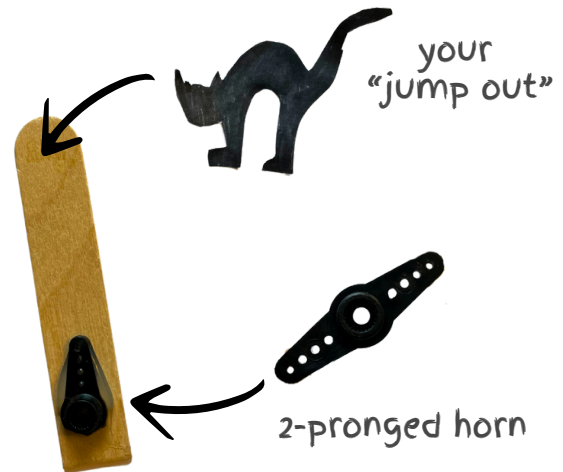
- Create the front layer
- Create the "jump out" element

The front layer should be big enough to completely hide the element that "jumps out."



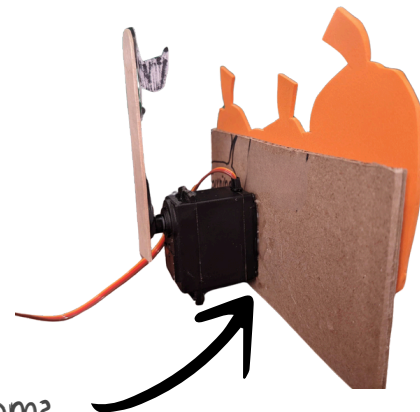
Step 2:

- Attach the "jump out" element to a popsicle stick
- Attach the popsicle stick to the servo horn with hot glue or tape



Step 3:

- Snap on the servo horn with the "jump out" popsicle stick to the motor
- Attach the servo to the back of the front layer near the bottom with hot glue



Why should it be attached near the bottom?
What range of motion should the popsicle stick have?

JUMPSCARE EDUCATOR GUIDE

CodeJoy Companion Student Show: Robot Haunted House

Prep: 15 minutes

Duration: 40 minutes

Grades: 3-12

Difficulty: Simple Moderate Complex

Standards

NGSS

- K-2: Engineering Design: Ask questions and identify problems to be solved through engineering.
- 3-5: Engineering Design: Generate and test ideas for solutions to problems.
- 6-8: Engineering Design: Apply science and engineering ideas to design, construct, and test solutions to problems.

CSTA

- K-5: CT.K12.02: Develop and use algorithms to solve problems.
- 6-8: CT.K12.04: Design and implement algorithms to control physical devices.

Lesson Procedures

Discussion - 5 mins

What do you think makes something spooky?

Assignment - 5 mins

Share the Criteria and Constraints (page 1). Modify these to fit your classroom!

Paired Programming & Building - 20 mins

Especially with younger students, paired programming promotes collaboration, debugging, and troubleshooting. Having students work in groups of 2-3 also helps with material management.

Sharing & Reflection - 10 mins

Allow student to share their projects. Our favorite process-oriented reflection questions are:

What was your favorite part of working on this project? What was the hardest part of working on this project? What did you learn by working on this project?

Troubleshooting Questions To Ask Students

What is the robot doing, and what do you want it to do?

Sometimes, just having students identify their goals and explain the problem is enough to get them on the right track to solving it.

What is your code missing?

A missing pause block might cause the motor to twitch. Two angles that are the same would not allow the position servo to move.

Where is the servo positioned/glued on your project?

We recommend gluing the motor to the bottom of the front layer so, it not only hides the element that will "jump out," but also acts as a stand.

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JUMPSCARE RESOURCES & CODE

Hummingbird Robotics Kit

**NOTE: To get a motor moving, we love the [Hummingbird Robotics Kit](#) from BirdBrain Technologies. It makes connecting motors, LEDs, and sensors to the micro:bit easy & safe. It also has great learning support materials.*



Resources

Coding Cards

These printable coding cards for various coding platforms are a great resource for students.

Troubleshooting Cards


These printable troubleshooting cards for various coding platforms are a great resource for students.

Professional Development

Birdbrain Technologies offers a free PD video course, webinars and professional development through CodeJoy.

Coding Platforms

 **MakeCode** makecode.microbit.org

 **Birdblox** Download from any app store

 **Snap! for Hummingbird** snap.birdbraintechnologies.com

Sample Code with MakeCode for Hummingbird

turn your Hummingbird on

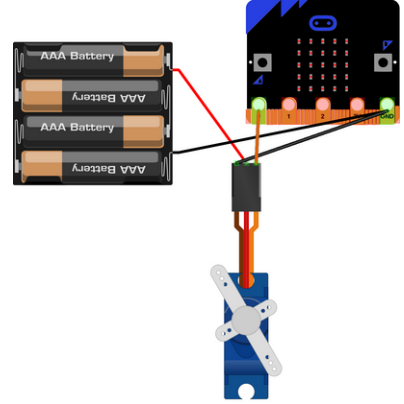
allows your “jump out” to happen at random intervals of time

JUMPSCARE RESOURCES & CODE

Micro:bit + Servo Motor

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NOTE: You can move a motor with a micro:bit, without using a breakout board! However, you will need some more supplies like connection wires, a power source, and some understanding of electronics. Check out the resource below for tips and tricks.



Resources

[Tutorial for using a servo motor with the micro:bit](#)
["Behind the Hardware: Servos" by MakeCode](#)

Professional Development

Learn more about the micro:bit through professional development with CodeJoy.

Coding Platforms

 **MakeCode** makecode.microbit.org

Sample Code with MakeCode for micro:bit

```
forever
  set servo P0 angle to 0
  pause (ms) pick random 0 to 300
  set servo P0 angle to 90
  pause (ms) 500
```

allows your "jump out" to happen at random intervals of time