

a PART of the story

Motion detection and automata actuation

by Jim Coffee • San Diego, California, USA • Images by the author

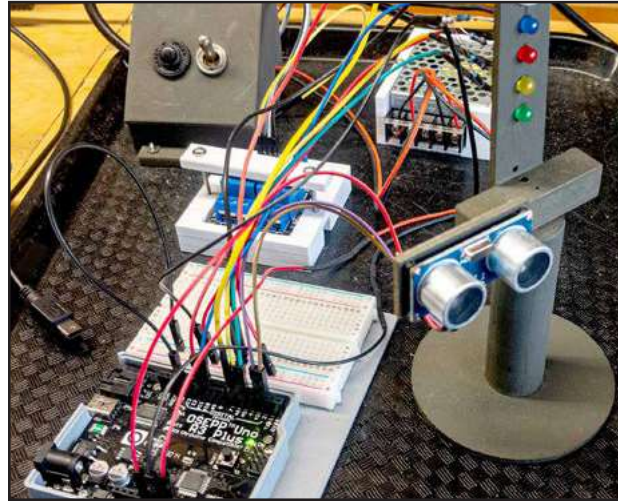
The technology:
Microprocessor and Arduino
The purpose: To “logically”
control motors (and other
things)

Have you ever wanted to computer-control an automaton? It’s not that difficult. As I create automata, I need sensors and controllers for motors and lights. My initial need was to sense when a person was near the automaton and, when a person was detected, to then turn on the automaton and leave it running for either a certain amount of time or until that person was no longer near.

The technology that I choose to fill this need was Arduino. Arduino is a mature, open-source technology centered around microprocessors, sensors, and drivers. Basically, just four things are required: power (a battery or power source), input sensor(s), a microprocessor, and an output device(s).

I started down the Arduino path by purchasing a starter kit for about \$50. After using the kit, I became more familiar with Arduino. I then needed what I call the proximity sensor. As I traveled down the Arduino rabbit hole, I learned a lot more and became more comfortable with the relatively simple technology and resources. I became less afraid and more confident until I reached the point where I could see possibilities that I was previously unaware existed.

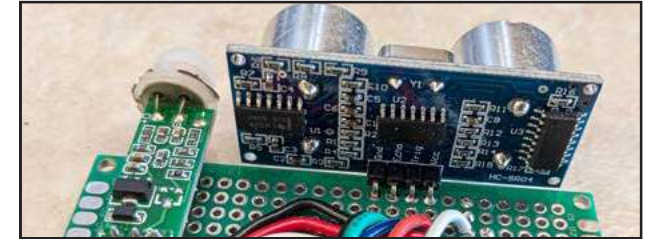
My next Arduino project was the starting and stopping of the carousel on my street



1. Breadboarding is a common practice for initial circuit design and testing. Most of these components were included in the Arduino starter kit. Clockwise from the lower left: an Arduino Uno microprocessor, a small solderless breadboard, motor-control relays, the 110V AC power switch, a power supply that converts 110V AC to 6V DC, and the sensor stalk (ultrasonic and IR sensors in a temporary mount).

organ. Instead of a jerking start and stop, it now smoothly accelerates to running speed, then decelerates to a graceful stop to load passengers.

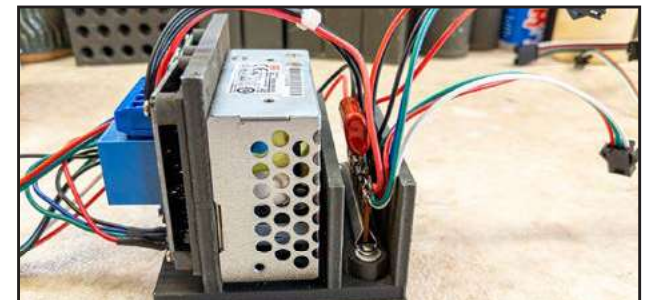
The sensors and output controllers, nicknamed “shields,” are surprisingly inexpensive and capable. I now don’t hesitate to consider Arduino



2. Ultrasonic and infra-red sensors mounted on printed circuit board are used to detect human presence.

solutions for my builds.

To learn more about using Arduino microprocessors, search Google using one or more of these keywords: “Arduino,” “Arduino sketches,” “Arduino shields,” and “Arduino tutorials.” YouTube videos are also a wonderful source of information, and you are encouraged to use the *Automata Magazine* forum, too.



3. This assembly mounts below the ferris wheel and controls the acceleration and deceleration of the wheel.