

# Distance Sensing LED Wall Sculpture Art Project

## Using Sonar Range Finder Sensor and BlinkM's with an Arduino

The idea behind this project is to create something that is not only using technology, but also works as an interesting piece of wall art.

### Supplies:

Wire: red, black, yellow, white (you're going to need approx. 12 feet of wire)

1 LED

8 BlinkM's

1 LV-MaxSonar®-EZ0™ High Performance Sonar Range Finder

2 512 Resistors

Bread Board

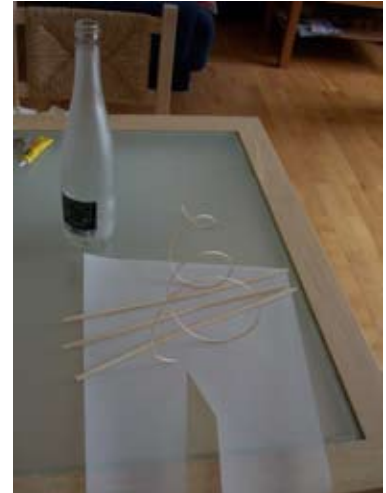
Arduino

Balsa Wood of assorted thicknesses

Vellum: 4 sheets of a heavy weight so it is durable

Hot Glue Gun

Tape: electrical, masking



Forming the balsa wood on wine bottles and finished wood ready to be put together.

### Before you begin:

Download the data sheets for the BlinkM and the Sonic Sonar

Download BlinkM\_funcs.h file and add it to the Arduino Library to be called in the script later.



Assembling the lamps together

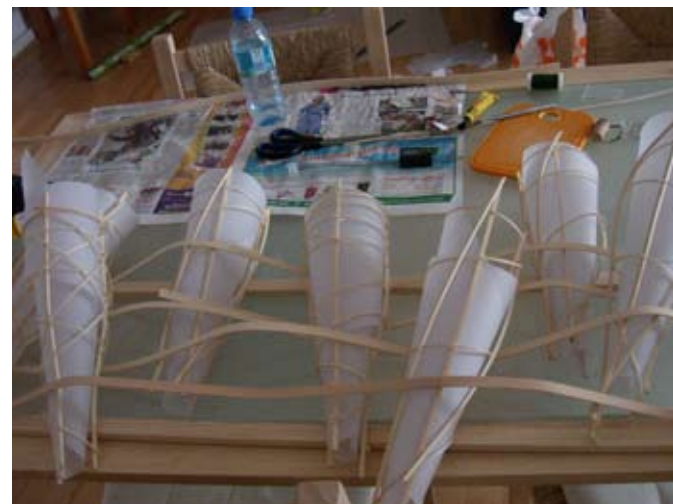
### Building the Light fixture:

What I did was soaked the balsa wood in hot water for an hour in the bathtub so it became flexible.

Then I took the balsa wood and formed curves and what not on wine bottles and other circular objects, taping it down with masking tape. And let it dry.

Then I glued the wood together using a hot glue gun.

Made a stencil of one of the wine bottles and cut the vellum to match. Hot glued the vellum to the wood and then the light fixture is set. You can check on flicker to see the steps I took to build the lamps.



The semi finished lamp

## Board Configuration:

## Programming the Devices:

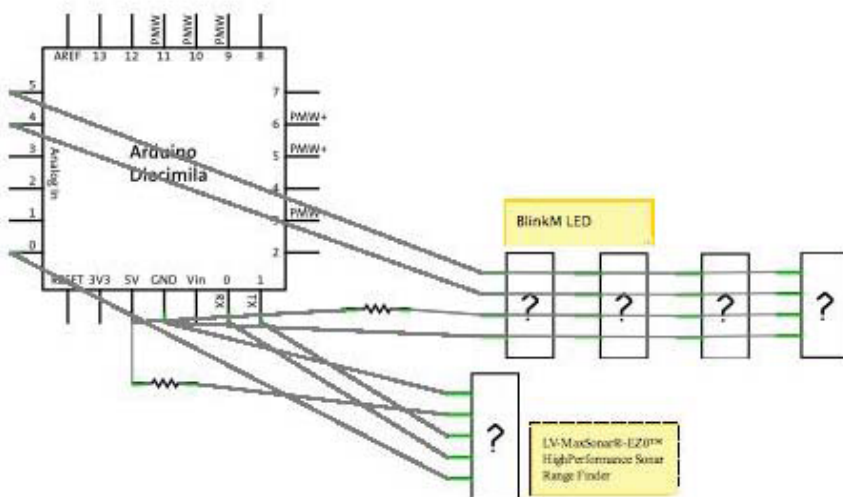
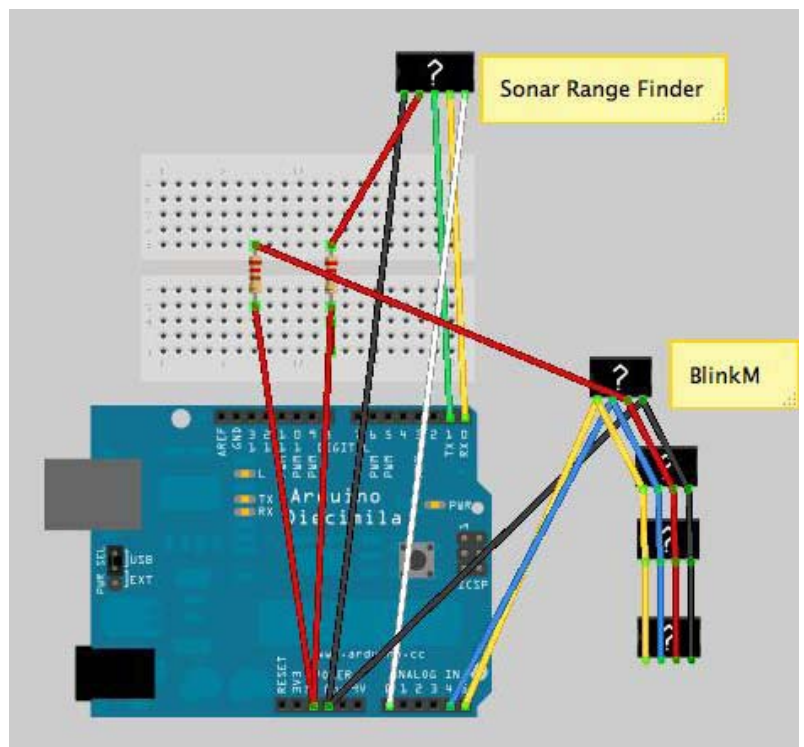
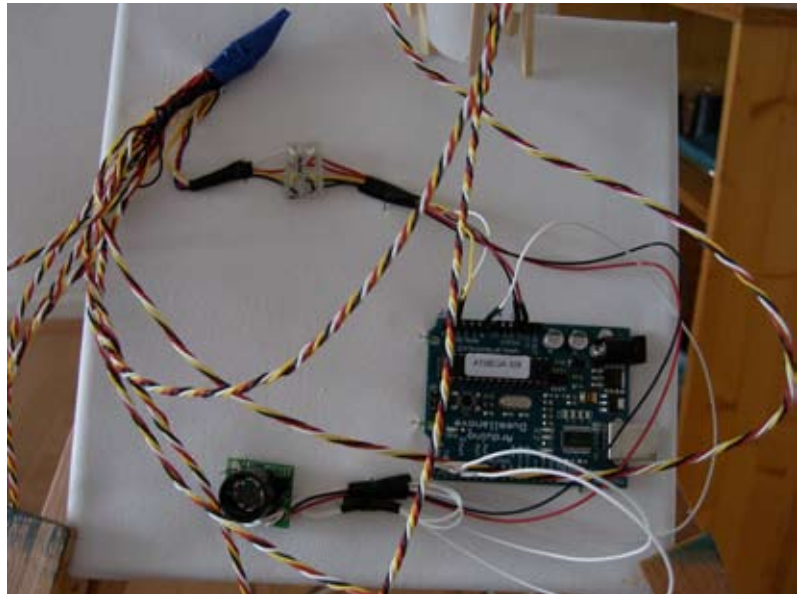
1. Test the Ultra Sonic Sensor. Connect the TX and RX, Ground, 5V and Analog 0 to the Sensor. Plug an LED into Pin 13.

Run this script from <http://sheepdogguides.com/arduino/aht1a.htm> to see the digital read of the sensor to make sure its running.

```
/*MaxBotix1simple
ver 29 Mar 08
http://sheepdogguides.com/arduino/aht1a.htm
=====*/
#define anIn 0
#define LEDpin 13
int iAnVal;

void setup() {
  Serial.begin(9600); // See note at the Serial.write line.
  pinMode(LEDpin, OUTPUT); // prepare the pin "LEDpin" for output
} // end of setup

void loop() {
  iAnVal = analogRead(anIn); // read a value from the sensor
  delay(150);
  Serial.println(iAnVal);
  digitalWrite(LEDpin, HIGH);
  delay(150);
  digitalWrite(LEDpin, LOW);
}
```



## Programming the Devices:

2. Set up the BlinkM's each one needs to be named.

See BlinkM datasheet for how to connect a BlinkM to an Arduino board. Since BlinkM is an I2C slave, for more information on controlling I2C devices read this:

<http://www.best-microcontroller-projects.com/i2c-tutorial.html>

It's important to understand this because we are going to be running multiple BlinkM on the same bus, this allows each one to have its own identity so we can program them individually.

Since the Default name is 09, I named my blinkM's in sets of 2 from 10 to 13

3. Here is the code to name 1 Blink M:

```
void setup()
{
  if( BLINKM_ARDUINO_POWERED )
    BlinkM_beginWithPower();
  else
    BlinkM_begin();
    delay(100); // wait a bit for things to stabilize
    byte newAddress = 0x09; // change one by one
  BlinkM_setAddress(newAddress);
  Serial.begin(19200);
  help();
  byte addr = BlinkM_getAddress(blinkm_addr)
  if( addr != blinkm_addr ) {
    if( addr == -1 )
      Serial.println("\r\nerror: no response");
    else if( addr != blinkm_addr ) {
      Serial.print("\r\nerror: addr mismatch, addr received: ");
      Serial.println(addr, HEX);
    }
    printProgStr( badAddrStr );
  }

  Serial.print("cmd>");
}
```



4. So, set up your numbered BlinkM's, plug them all in now.

5. And this is the point where you open up the code and try it for yourself.

**Hope this works for you, have fun and best of luck!**

