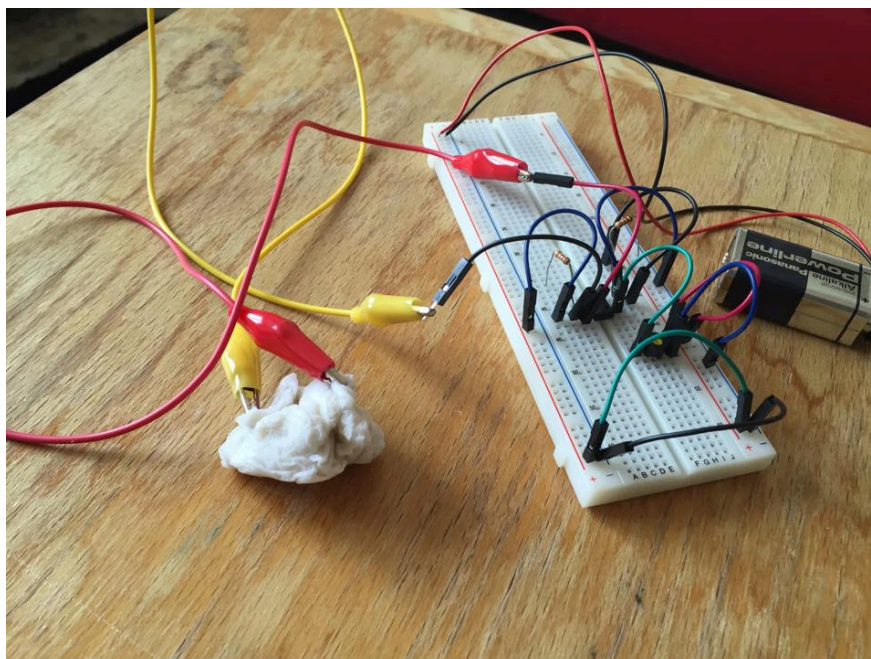
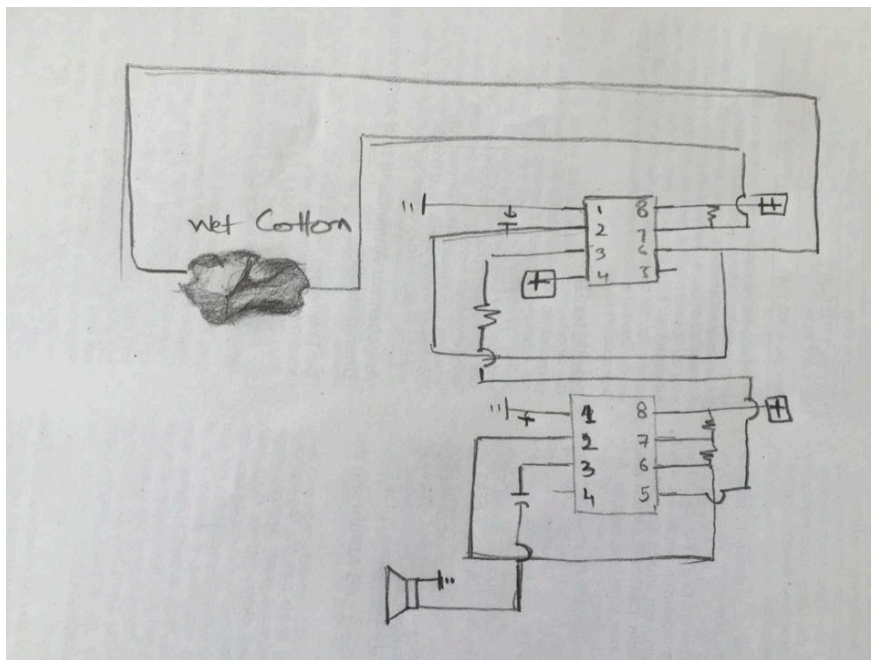


**Assignment 1:**  
Variable resistance

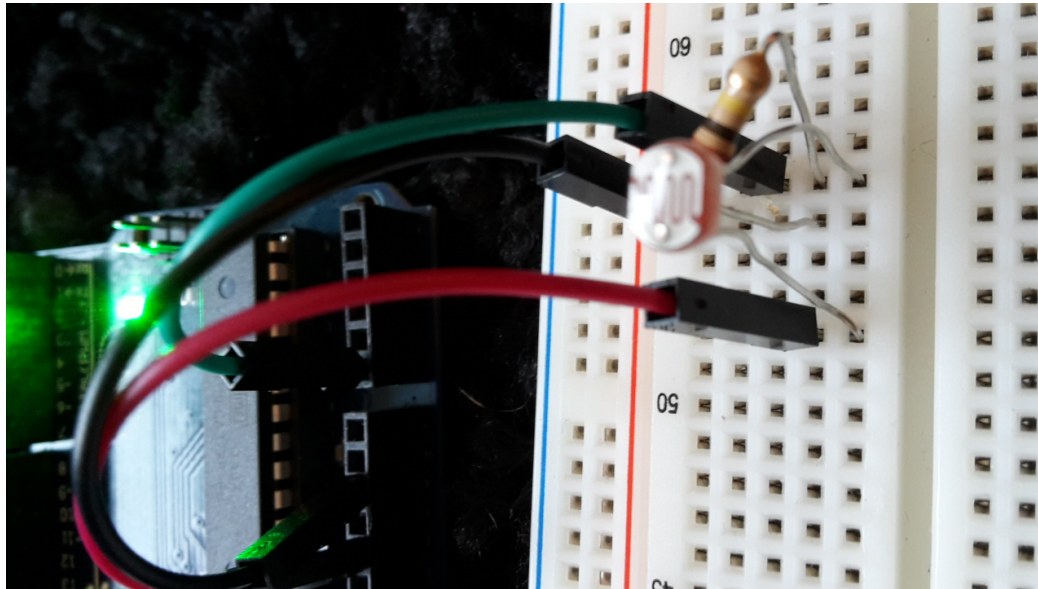
The assignment was to build a 555 timer and experiment with sound. The circuit has 4 resistors. The idea was to identify a unique un-conventional semi or conductive material in order to create a variable resistance. I worked with Cotton. At the initial stage, I assumed that cotton is also a conductive material like wool because wool has a static charge in its fiber. The experiment was not a big success. Later on I used wet cotton and the results were surprisingly different.



### Assignment 3:

#### Drawing Kit

The main idea was to use Photocell as a switch to control servo motor in order to make an electronic drawing kit. We used Arduino for this purpose to make it simple and more efficient.



The process started by setting up Arduino, a 10 k resistor, photocell and a breadboard. After this we got some digital values of Photocell (300- 720). In Arduino software we programmed some “if and else” statements like if the value is below 300 then the servo motor should not work and above that and up to certain value the servo motor should behave in a particular manner or vice versa.

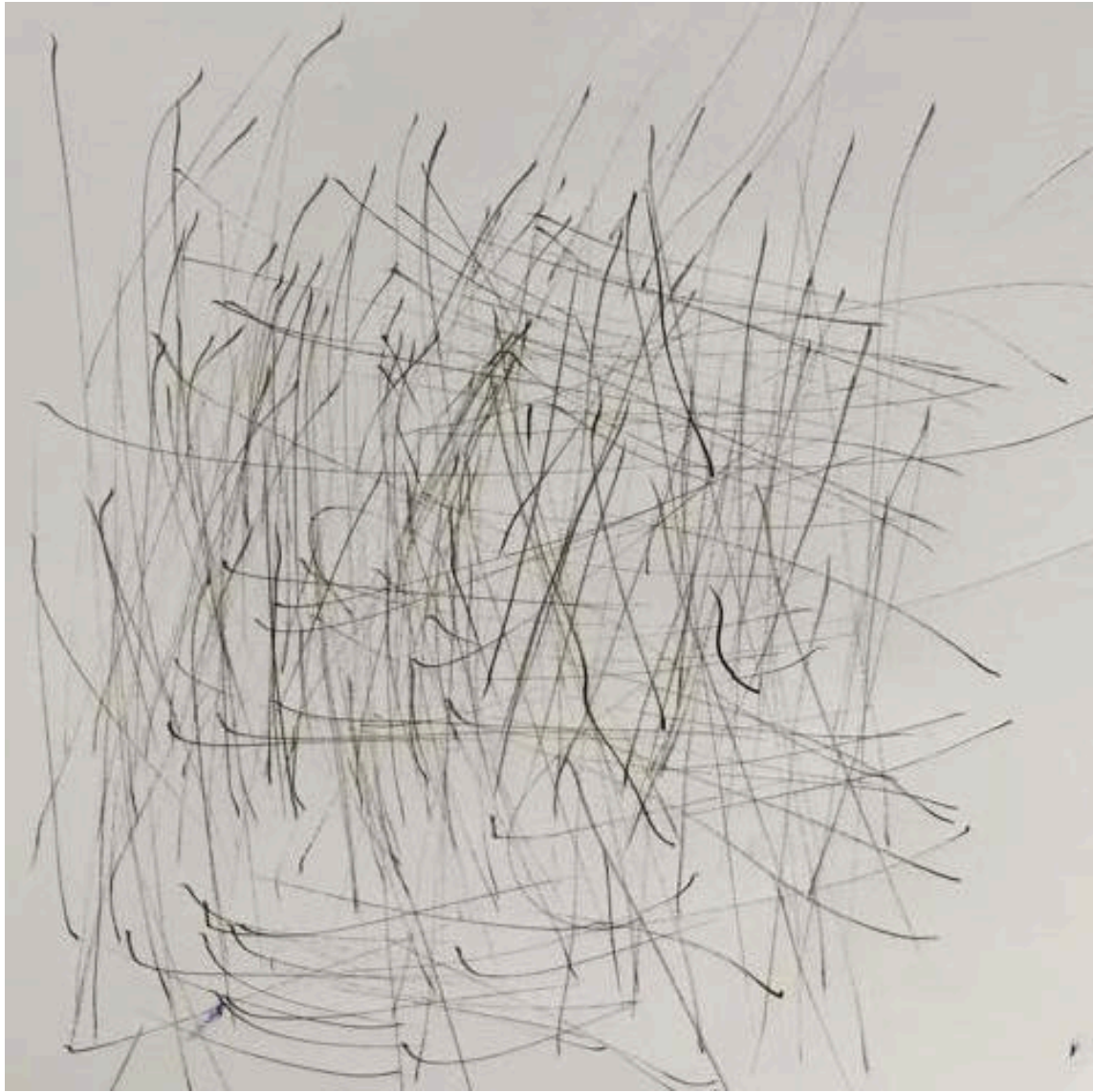
Arduino helped us in many manners like we programmed 3 to 4 behaviours of servo motor depending on the values of Photocell sensed by the gestures of hand (brightness and darkness).

After few experiments we attached three different mediums to get the drawing result.

- Lead Pencil
- Pointer
- Ball pen

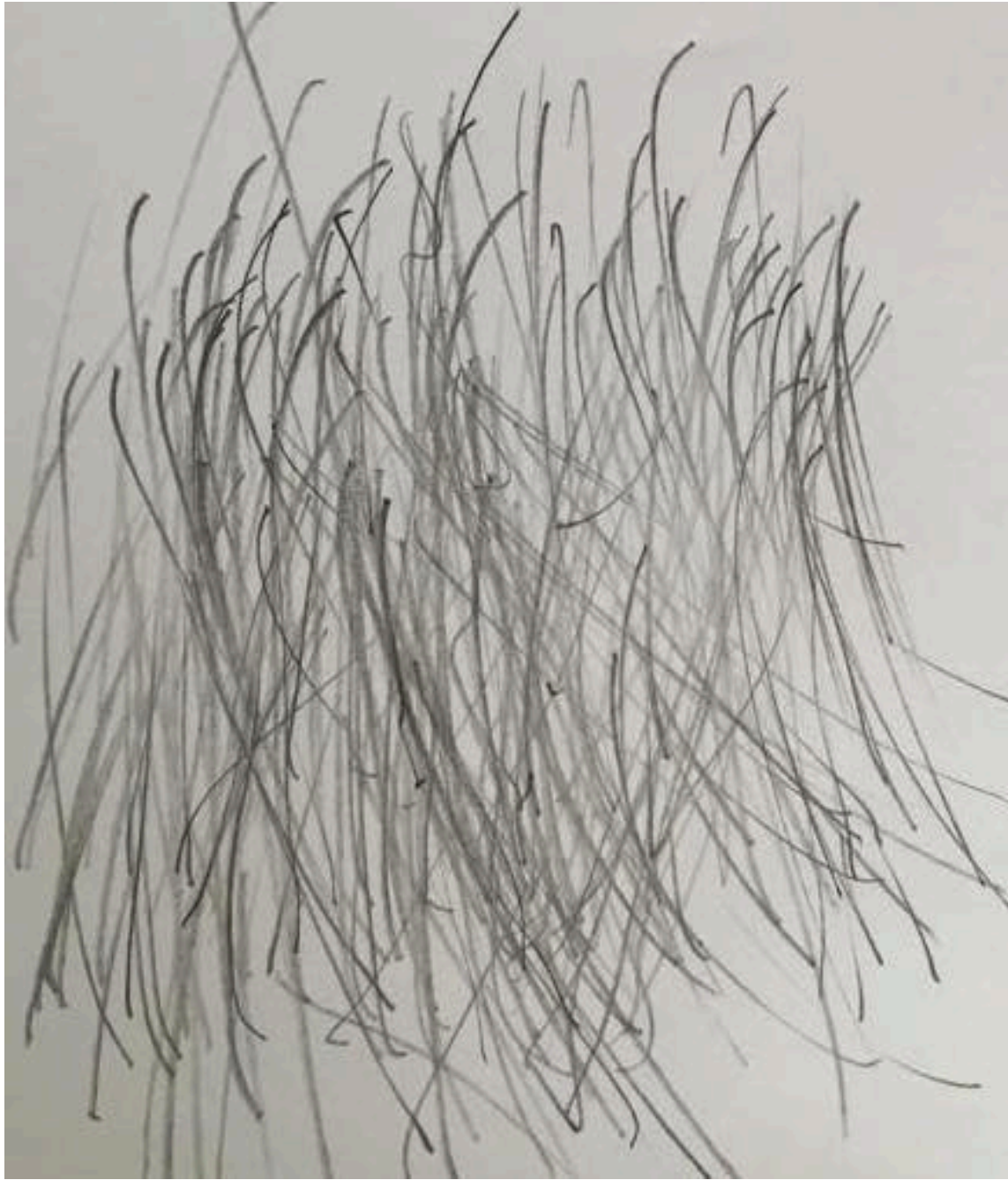
Results:

The pictures below show the result of electronic drawing kit with three different mediums. After results we realized that this drawing kit is not appropriate for any realistic drawing figure but it is suitable for creating textures.

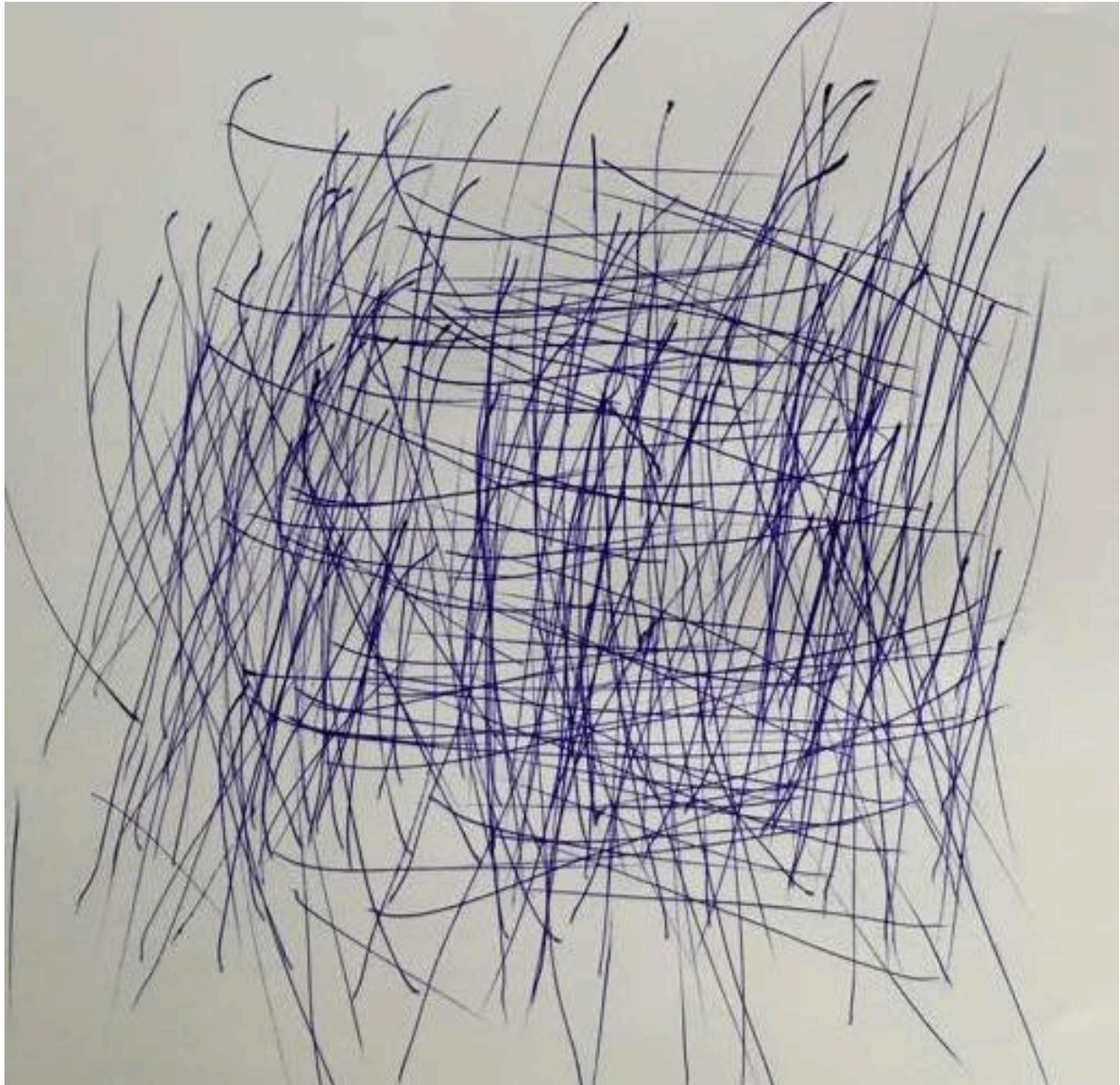


Pointer (Figure 1)





Lead Pencil (Figure 2)



Ball pen (Figure 3)

## Appendix:

```
#include <Servo.h>
```

```
int servoPin = 4;
```

```
Servo servo;
```

```
int angle = 0; // servo position in degrees
```

```

int photocellPin = 0;

// int counter=1;

void setup() {
servo.attach(servoPin);

//Serial.begin(9600);

}

int pos=0;

void loop()
{

int reading = analogRead(photocellPin);

int newAngle = reading/3 - 100;

Serial.println(newAngle);

//Serial.print("\n");

//counter=counter + 100;

//servo.write(newAngle);
if(reading<300){
for(pos = 0; pos <= 180; pos += 1) // goes from 0 degrees to 180 degrees
{
servo.write(pos); // tell servo to go to position in variable 'pos'
delay(15); // waits 15ms for the servo to reach the position
}

servo.write(pos); // tell servo to go to position in variable 'pos' delay(15);
// waits 15ms for the servo to reach the position

}

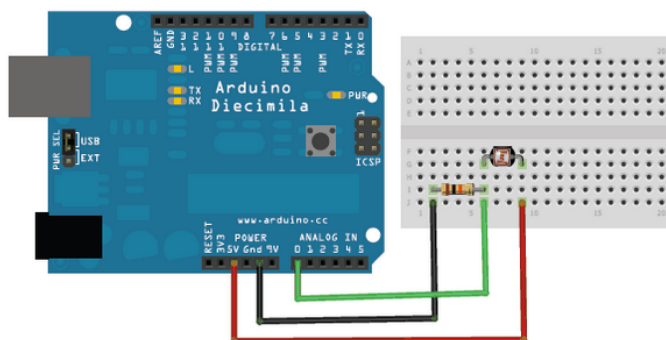
}

//if(counter==100) //counter=1;

delay(50);

}

```



(Made on Virtual Arduino & Breadboard)

