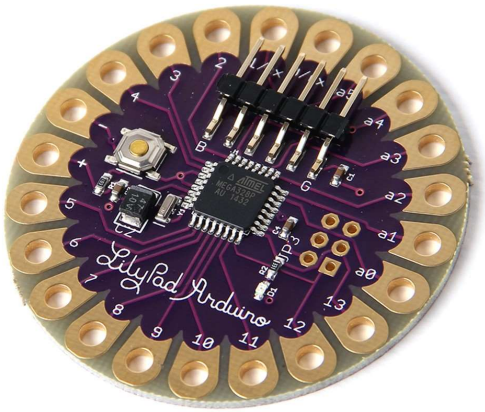
Arduino Module LilyPad

Model:DEV-09266



How to Attach:

Sew this board to your project using conductive thread. Stitch from tabs on the LilyPad board to tabs on the components. Make sure to make tight connections between your thread and the board by stitching through each tab at least three times.

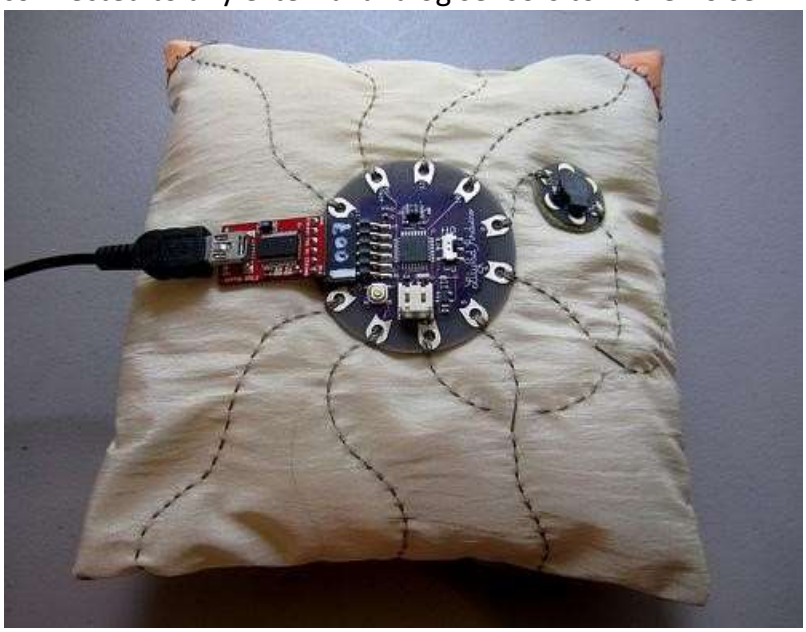
Washing:

Hand wash in cold water with a gentle detergent. Do not dry clean.

Projects:

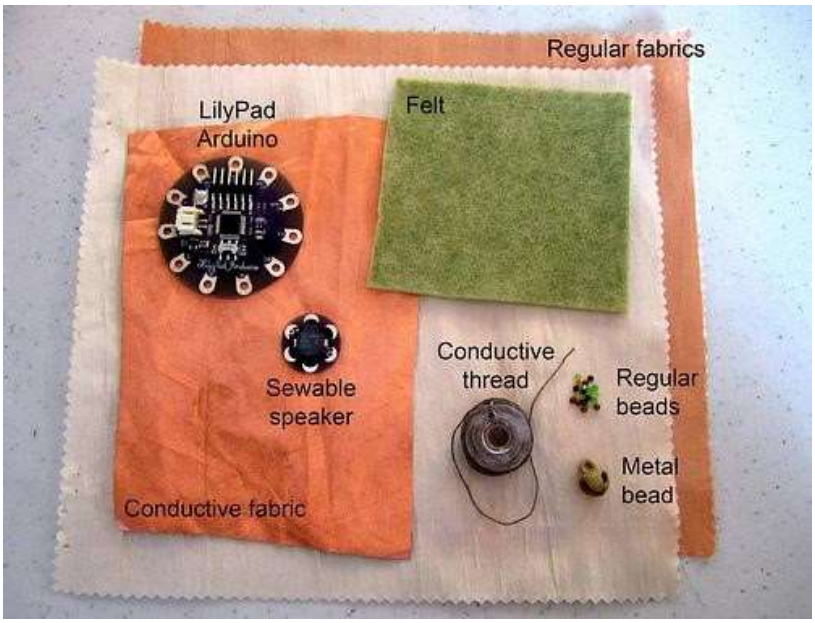
These are examples of projects that were created with LilyPad.

An example using the **lilypad arduino** sewn to a pillow with a speaker and fabric tilt sensor, playing a different note for each petal of the sensor. The pillow also has an analog pin broken out to one of its corners to be connected to any external analog sensors to make noise

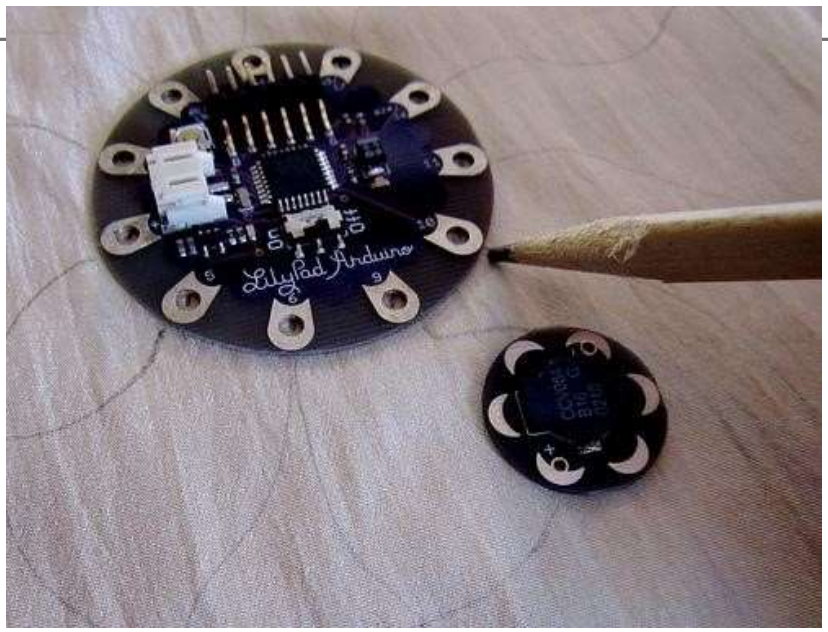


Making-of:

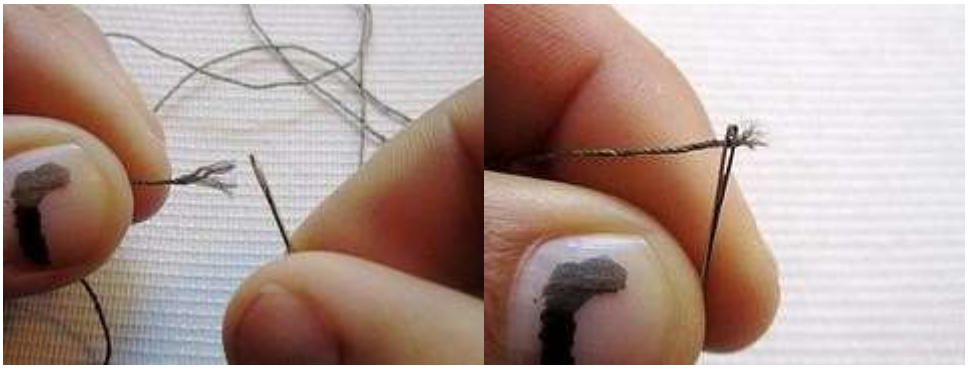
Materials and tools:



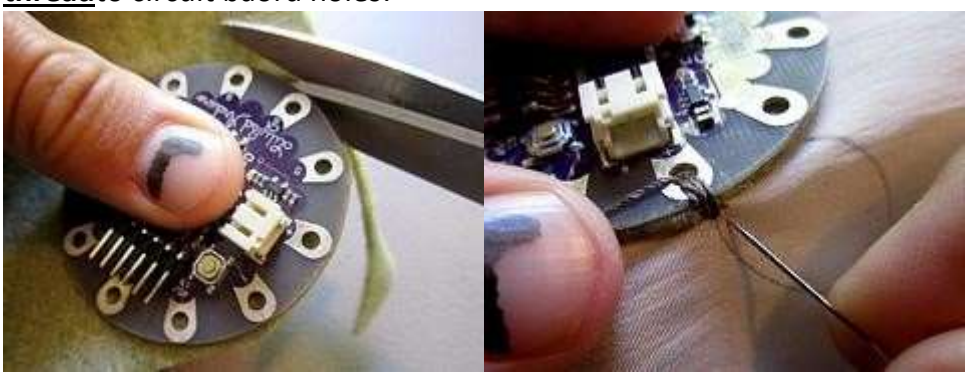
Sketch out your circuit connections:



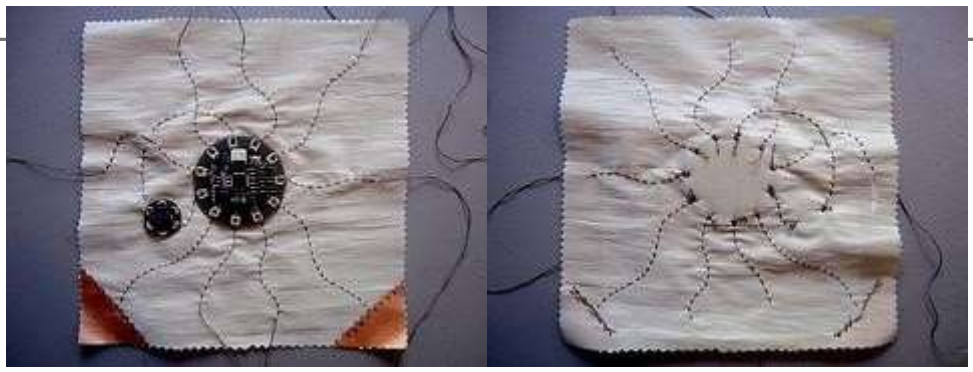
Thread needle:



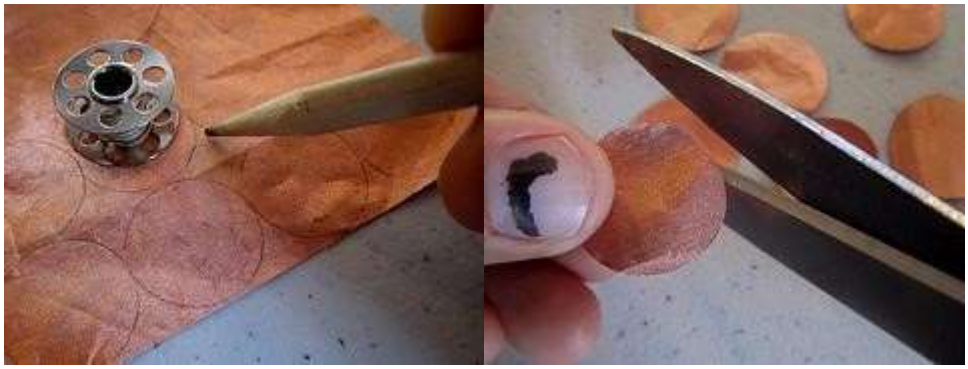
Cut out a piece of **felt** to mount behind LilyPad for improved electrical contact when sewing with **conductive thread**to circuit baord holes:



Tie knots at the ends of your thread and keep ends short. Use nail varnish on ends to stop fraying.



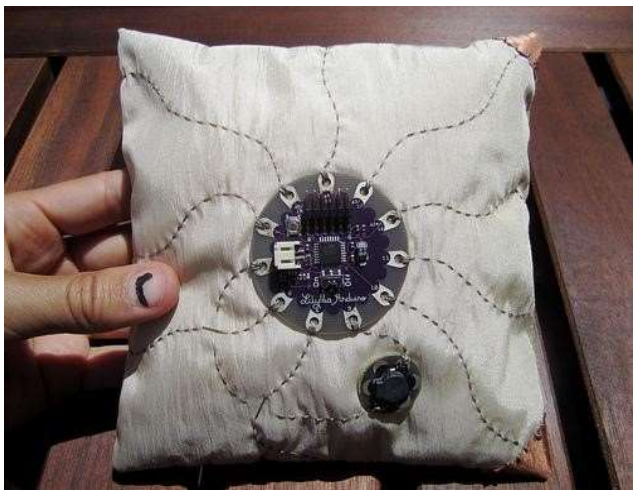
Trace shapes on **conductive fabric** with **fusible interfacing** and cut out:



Fuse to pillow fabric with an iron:


Or sew the patches down if your fusible doesn't hold:-)

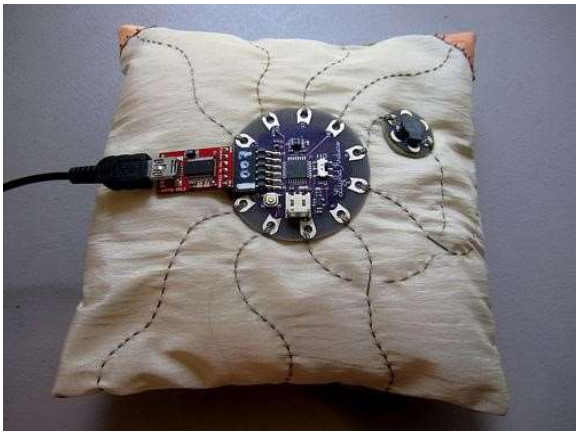

Finished back:



Finished front:

Close-ups:



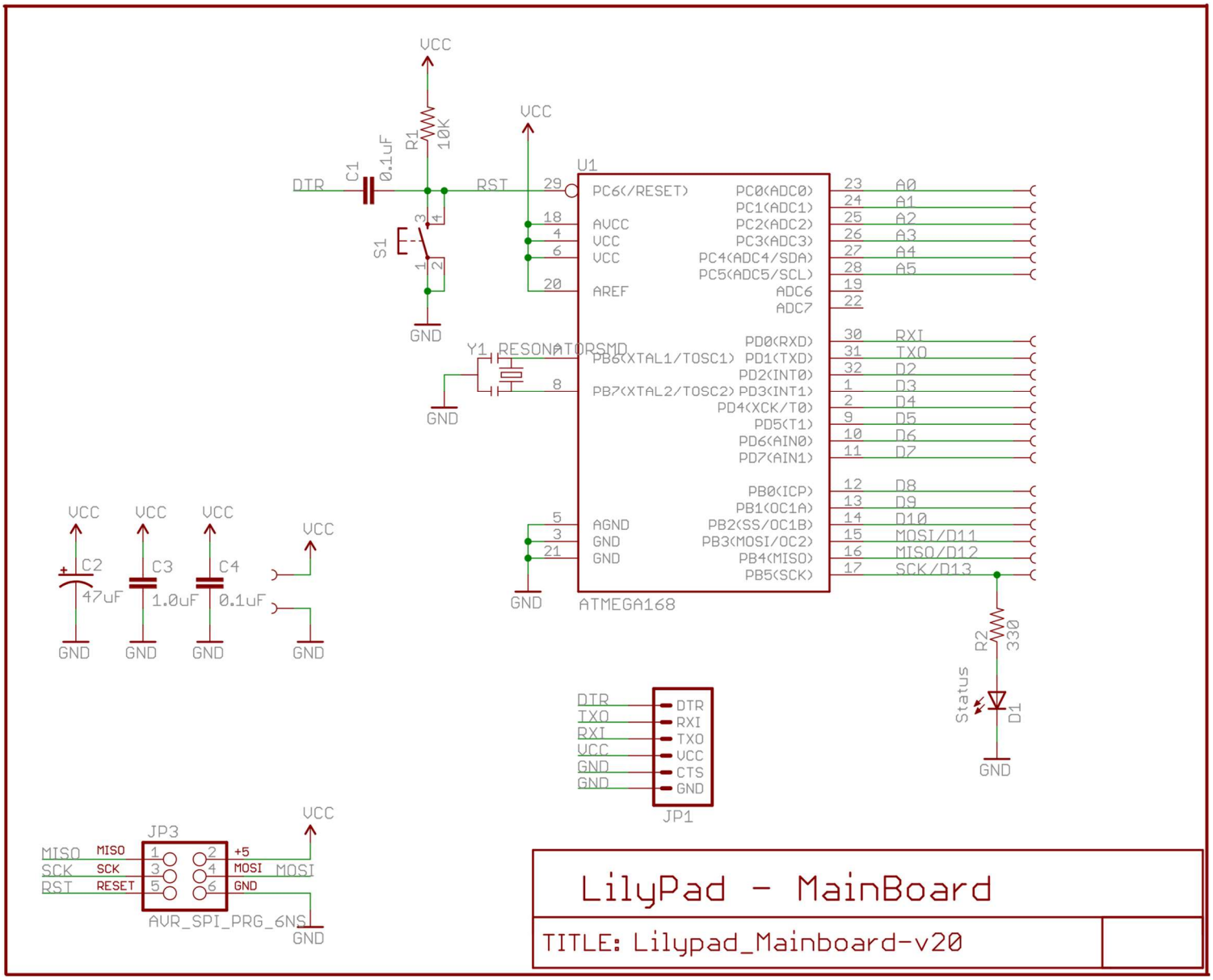

Program the LilyPad Arduino:


Arduino Code:

```
#include “pitches.h”

// declare array of input pins connected to tilt sensor petals:
int tiltPetals[] = {
5,6,11,16,18,19}; // declare
pin variables: int
analogCorner = 3; int
GNDcorner = 10; int
speakerPin = 9; // declare
storage variables:
int tiltValue; int
cornerValue;
// declare array of notes associated with each tilt petal:
int notes[] = {
NOTE_A1, NOTE_B2, NOTE_C3, NOTE_D4, NOTE_E5, NOTE_F6};
void setup() {
// declare tilt sensor petals pins as digital inputs:
for(int i = 0; i<6; i++){
pinMode(tiltPetals[i], INPUT);
```

```
digitalWrite(tiltPetals[i], HIGH); // set internal pull-up resistors
}
// declare analog corner pin as analog input pinMode(analogCorner, INPUT);
digitalWrite(17, HIGH); // set internal pull-up resistor (analog pin 3 = digital pin 17)
// declare other corner as output and set to be GND:
pinMode(GNDcorner, OUTPUT);
digitalWrite(GNDcorner, LOW);
// declare speaker pin as output:
pinMode(speakerPin, OUTPUT);
Serial.begin(9600); // begin serial communication for debugging
} void loop() { for(int
i = 0; i<6; i++){
tiltValue = digitalRead(tiltPetals[i]);
Serial.print(tiltValue); // print value to serial monitor for debugging
if(tiltValue == 0) {
tone(speakerPin, notes[i], 1000);
}
}
Serial.println(); // print a linebreak after each for loop
cornerValue = analogRead(analogCorner);
if(cornerValue < 1000) { tone(speakerPin,
cornerValue, 250);
}
//Serial.println(cornerValue); // print analog value for debugging
delay(10);
}
```


VCC
R1
10K
C1
0.1uF
DTR
RST
S1
GND
U1
PC6(/RESET)
AVCC
VCC
VCC
AREF
PC0(ADC0)
PC1(ADC1)
PC2(ADC2)
PC3(ADC3)
PC4(ADC4/SDA)
PC5(ADC5/SCL)
ADC6
ADC7
PB6(XTAL1/TOSC1)
PB7(XTAL2/TOSC2)
PD0(RXD)
PD1(TXD)
PD2(INT0)
PD3(INT1)
PD4(XCK/T0)
PD5(T1)
PD6(AIN0)
PD7(AIN1)
PB0(ICP)
PB1(OC1A)
PB2(SS/OC1B)
PB3(MOSI/OC2)
PB4(MISO)
PB5(SCK)
AGND
GND
GND
A0
A1
A2
A3
A4
A5
RXI
TXO
D2
D3
D4
D5
D6
D7
D8
D9
D10
MOSI/D11
MISO/D12
SCK/D13
Y1 RESONATORSMD
ATMEGA168
C2
47uF
C3
1.0uF
C4
0.1uF
R2
330
Status
D1
DTR
TXO
RXI
VCC
GND
GND
CTS
JP1
JP3
MISO
SCK
RST
+5
MOSI
AVR_SPI_PRG_6NS
LilyPad - MainBoard
TITLE: Lilypad_Mainboard-v20