

Hedwig User Manual



A-Level Coursework by
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2014 / 2015

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Introduction

Welcome to Hedwig!

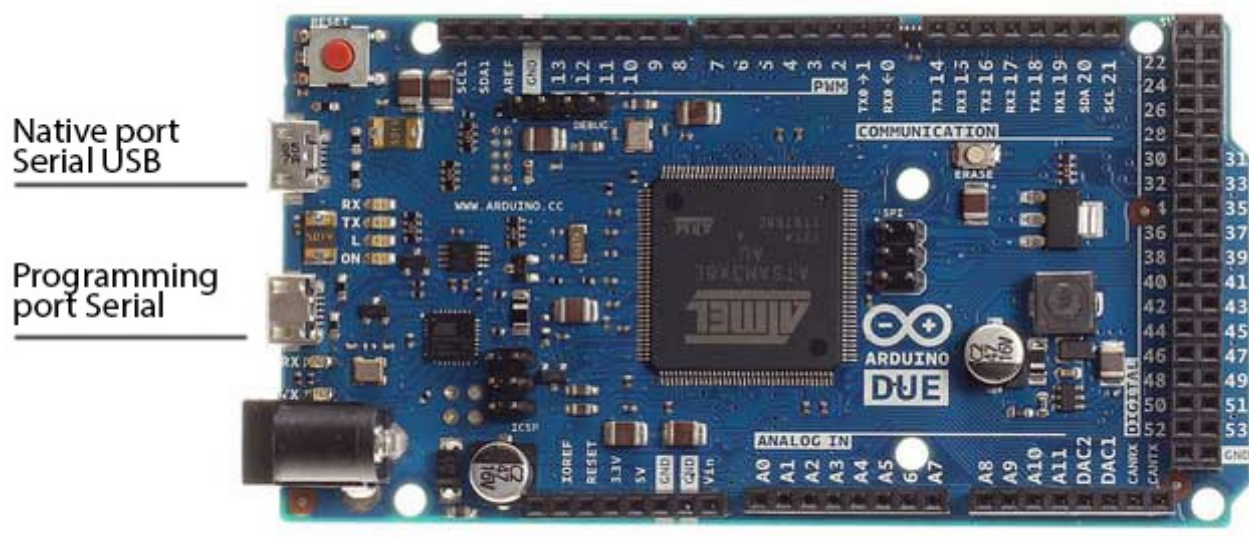
This manual will help you to understand how to use your new robot system.

Hedwig is pre implemented and is simple and easy to use, however there are a few things you should know before getting started.

Follow these simple instructions and it will bring you years of pleasure.

Setup

Re-Installing the Code



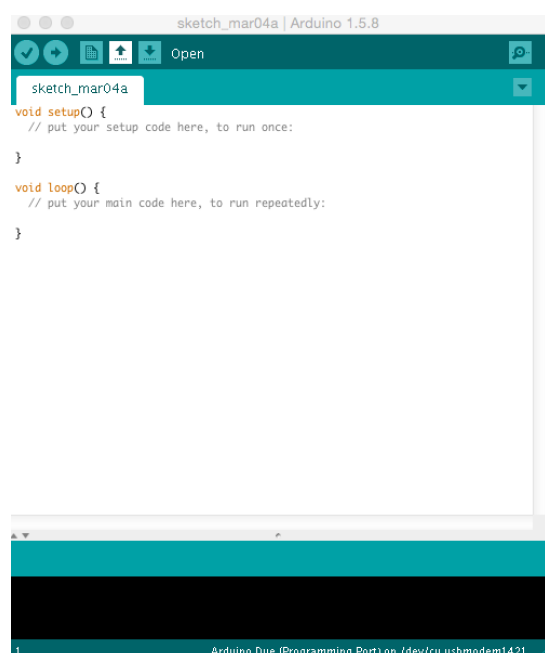
Hardware Name : Arduino Due

If the code has not been pre implemented or has been reset, connect a micro USB cable to Programming port Serial.

The USB connector of the Native port is directly connected to the USB host pins of the SAM3X. Using the Native port enables you to use the Due as a client USB peripheral.

Please be cautious when connecting the USB cable.

Download the Arduino software form : <http://arduino.cc/en/main/software>



Open the application.


Tools > Board > Arduino Due (Programming Port)

Tools > Port > dev/ tty.usbmodem1411

Download the codes from the dropbox page :

[https://www.dropbox.com/home/Headwig%20Code\(s\)](https://www.dropbox.com/home/Headwig%20Code(s))

File > Open > Select the program you want to upload

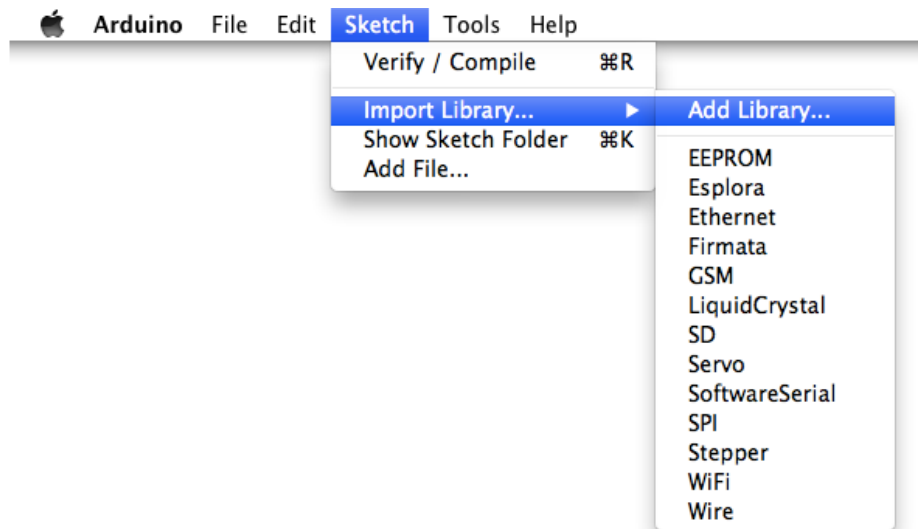
Next open the code and Press the  button to upload the code to Arduino.

Importing Library

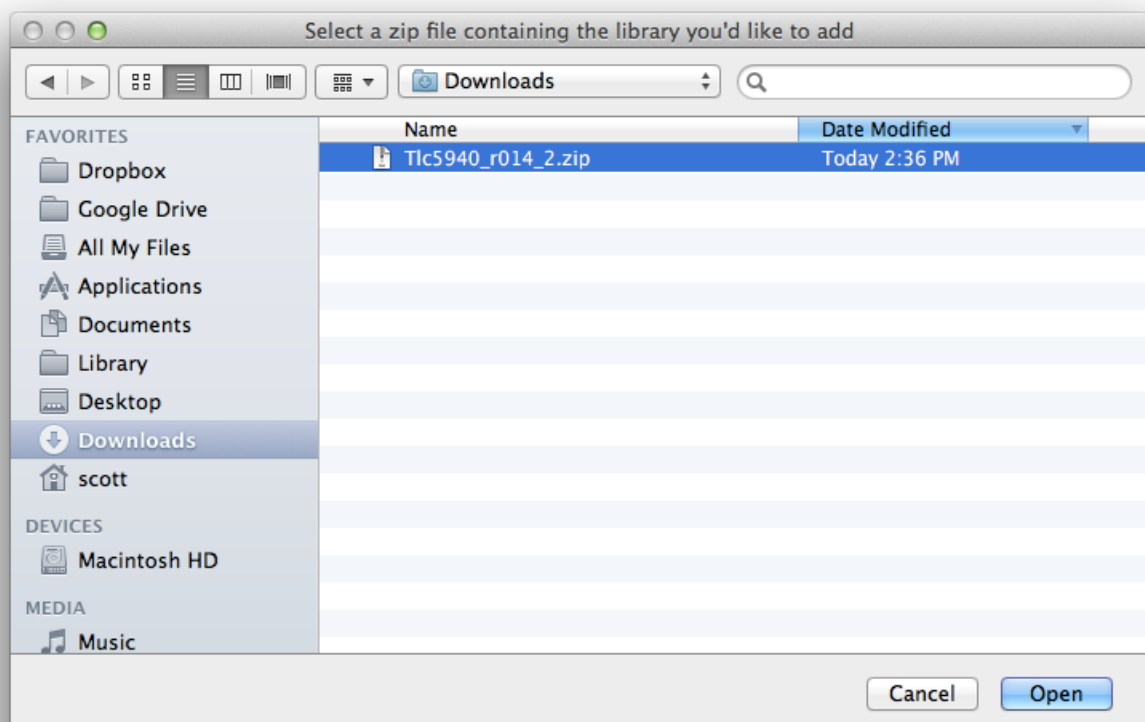
Starting with version 1.0.5, you can install 3rd party libraries in the IDE.

Do not unzip the downloaded library, leave it as is.

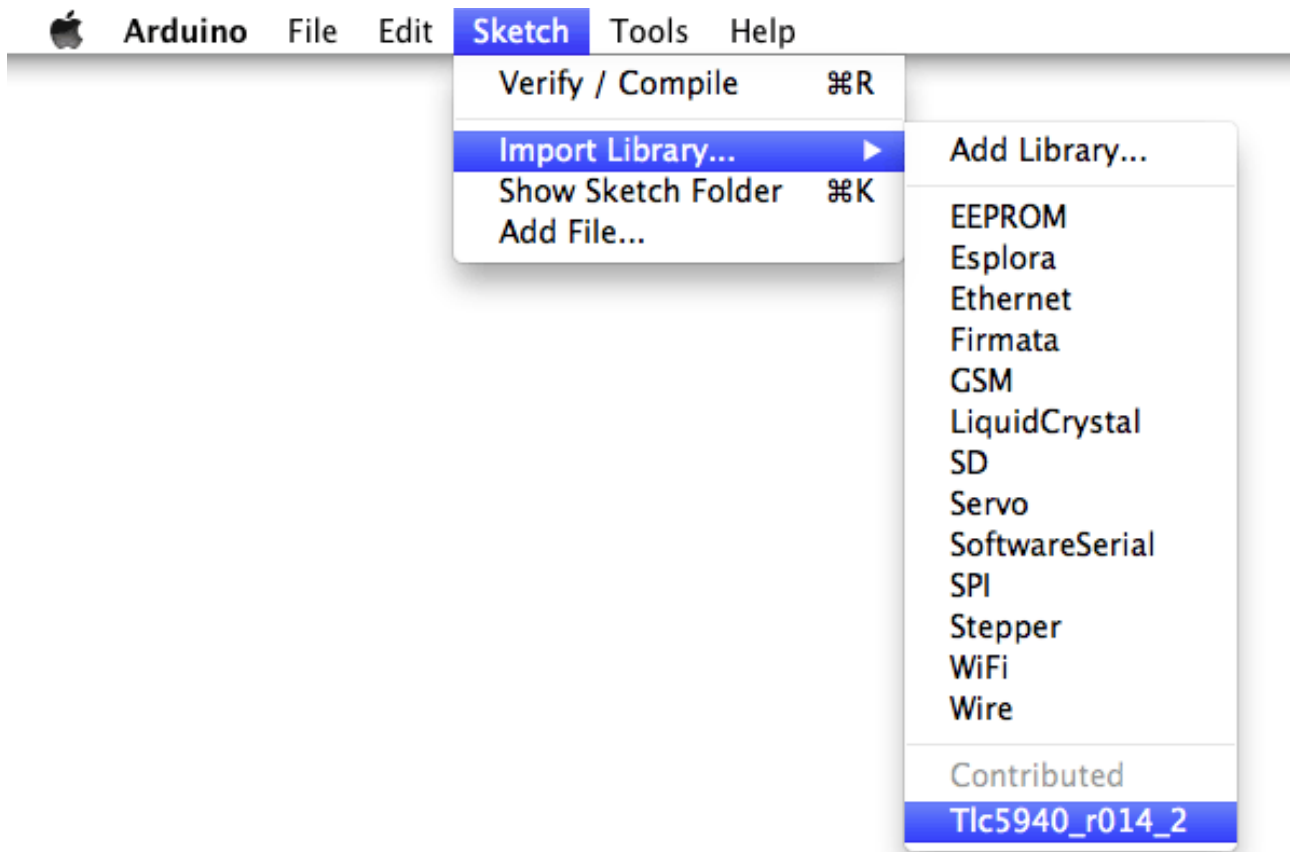
In the Arduino IDE, navigate to Sketch > Import Library. At the top of the drop down list, select the option to "Add Library".



You will be prompted to select the library you would like to add. Navigate to the .zip file's location and open it.



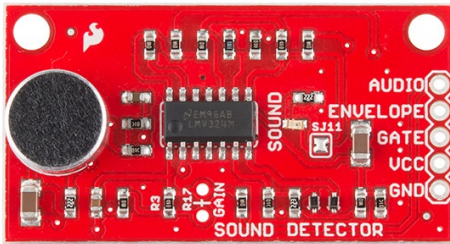
Return to the Sketch > Import Library menu. You should now see the library at the bottom of the drop-down menu. It is ready to be used in your sketch.



The zip file will have been expanded in the libraries folder in your Arduino sketches directory.

Note : Libraries are a collection of code that makes it easy for you to connect to a sensor, display, module, etc.

Connecting the Sound Sensors

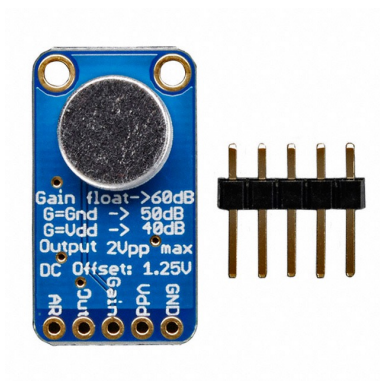


Hardware Name : SparkFun Sound Detector - SEN-12642 ROHS

PIN on AUDIO on the left sensor will go to ANALOG IN A0 and the right sensor will be connected to ANALOG IN A1

VCC PINS on both will connect to 3.3 V pin.

GND PINS on both will connect to GND pins on the Arduino.



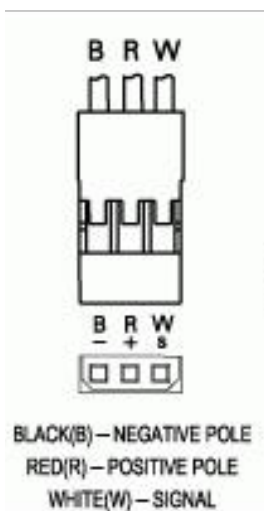
Hardware Name : Electret Microphone Amplifier - MAX9814 with Auto Gain Control

PIN on Out will be connected to ANALOG IN A0.

Vdd PIN will be connected to 3.3 V pin.

GND PIN will goto GND pin on the Arduino.

Connecting the Motor



Hardware Name : Servo - Generic High Torque Full Rotation - ROB-09347

Black wire has to be connected to GND on the Arduino.

The Red wire has to be connected to 5.0 V.

The Wire must be connected to PWM 9.

Connecting the LED 8x8

Hardware Name : Adafruit Bicolor LED Square Pixel Matrix with I2C Backpack

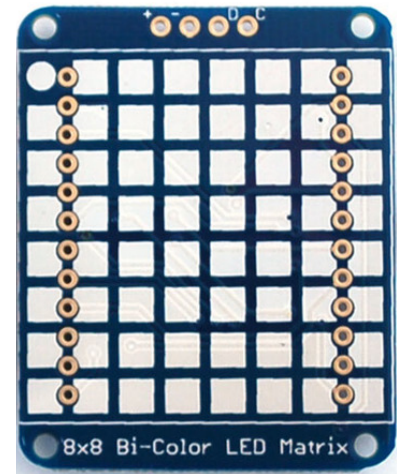
The Matrix backpack has 4 pins, connected as follows:

'+' -> 5v

'-' -> GND

D -> SDA (Analog Pin 4)

C -> SCL (Analog Pin 5)



URL to re-purchase hardware(s)

Arduino Due

URL: <https://www.coolcomponents.co.uk/arduino-due.html>

SparkFun Sound Detector

URL: <https://www.sparkfun.com/products/12642>

Electret Microphone Amplifier

URL: <http://www.adafruit.com/product/1713>

Servo

URL: <https://www.sparkfun.com/products/9347>

Adafruit Bicolor LED 8x8

URL: <http://www.adafruit.com/products/902>

Trouble Shooting

Should you have any problems with Hedwig this table should help you sort them out. Otherwise, please email sventar@hotmail.com .

Problem	Cause	Fix
Hedwig does not respond	The hardware was damaged e.g overheated	Purchase a new hardware, and re-upload the code by following the instructions on Page 4
	The wire(s) has been disconnected	Refer to the User Manual's Setup Section (Page 5)
The Servo turns Continuously	One of or multiple of gears inside the servo has been damaged	Purchase a new servo

Glossary

Abbreviation	Description	Function
VCC	Voltage at the Common Collector	Positive power supply
VDD	Voltage Drain Drain	Positive power supply
GND	Ground	A common return path for electric current
SDA	Serial Data Line	Data Line
SCL	Serial Clock Line	Data Line
PWM	Pulse Width Modulation	Technique for getting analog results with digital means