Interaction Design & Virtual Reality

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Assistant Prof.

2016.11.11

Download **go-wireless-sample-project v2.zip**

https://www.dropbox.com/s/kiaw97pyk4kmafp/go-wireless-sample-project%20v2.zip?dl=0

Adafruit Feather M0 WiFi

Step-by-step: https://learn.adafruit.com/adafruit-feather-m0-wifi-atwinc1500?view=all

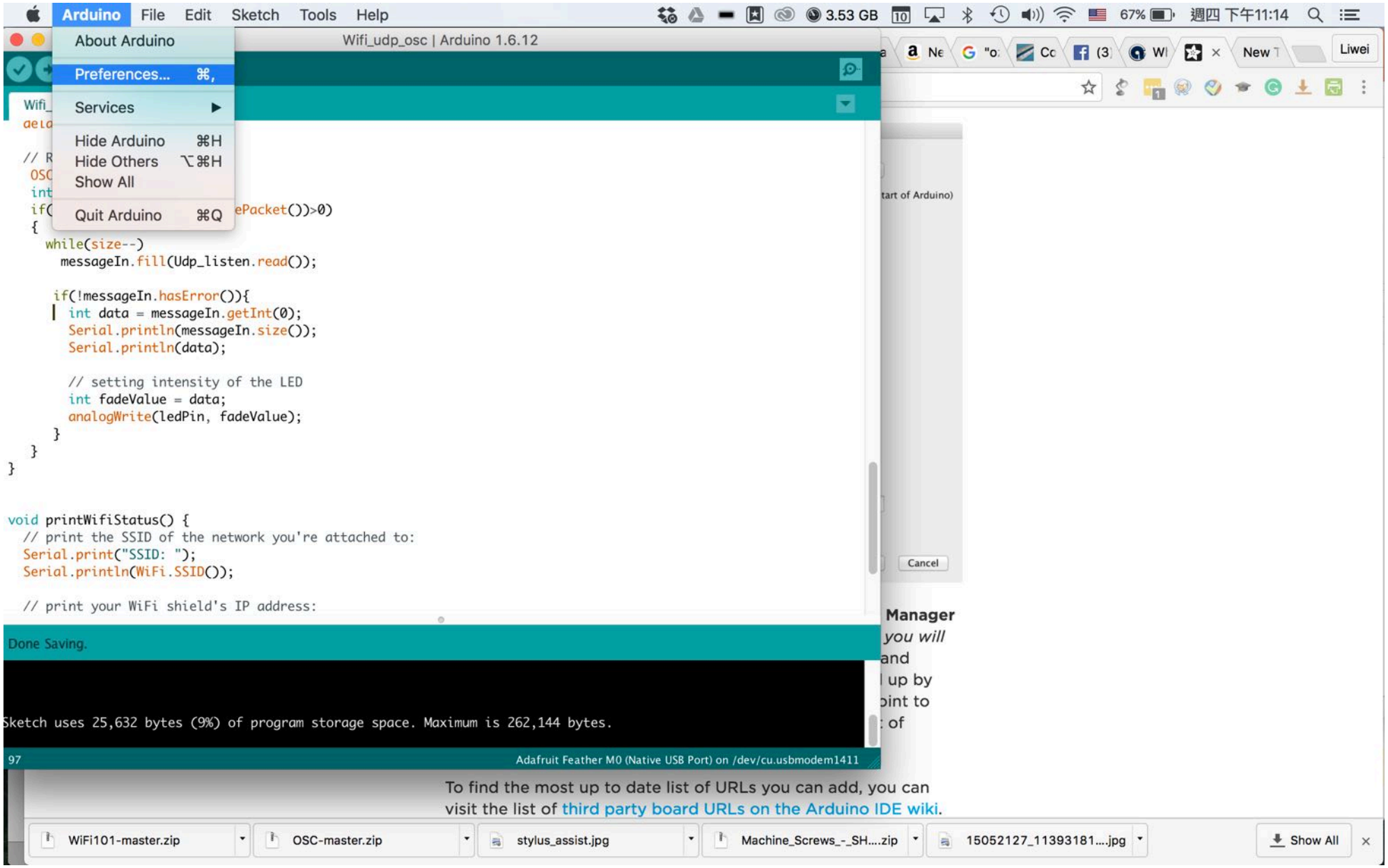
Arduino Libraries: Wifi101 and OSC

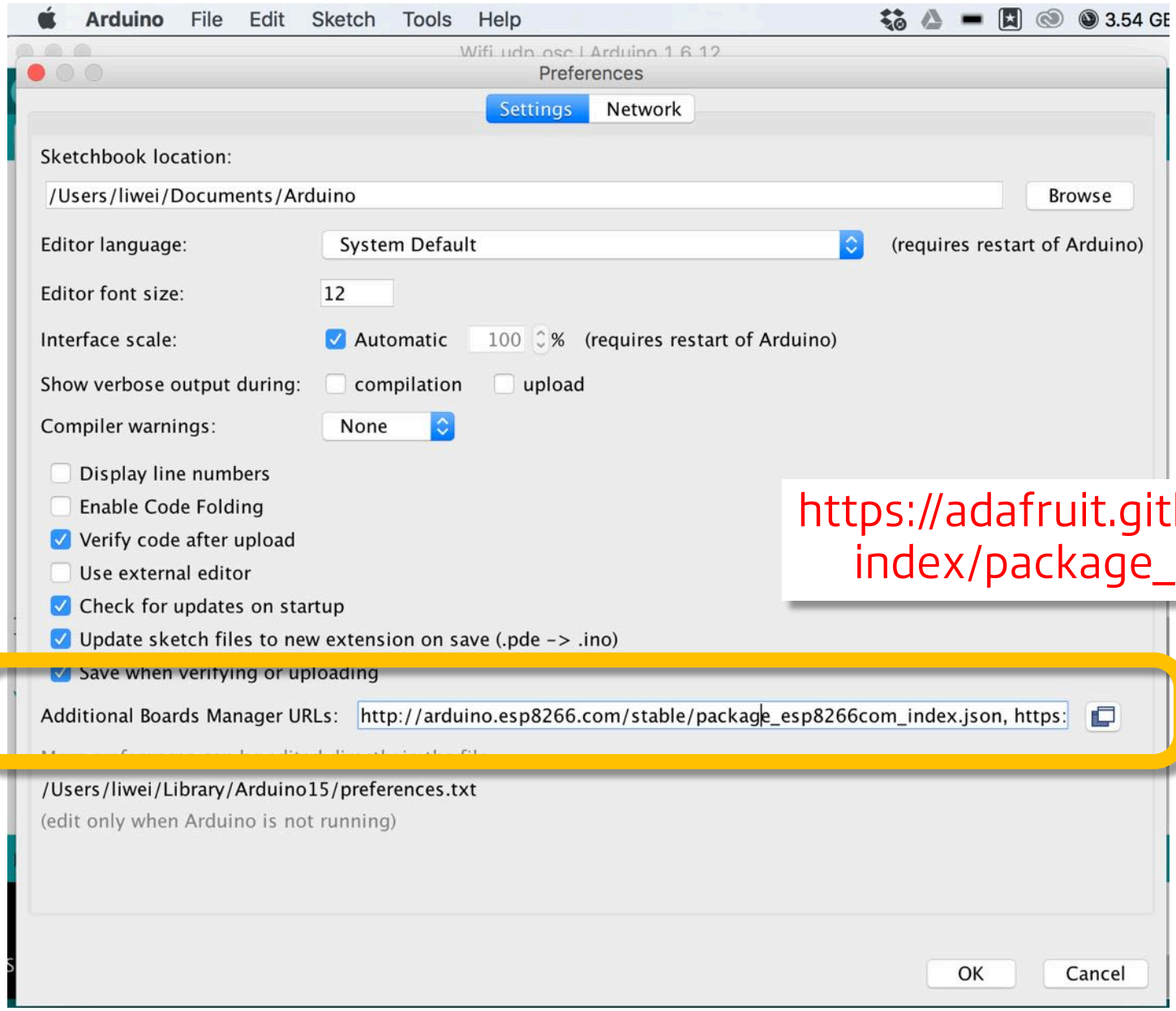
https://github.com/CNMAT/OSC
https://github.com/arduino-libraries/WiFi101

Unity Assets: UniOSC and DOTween

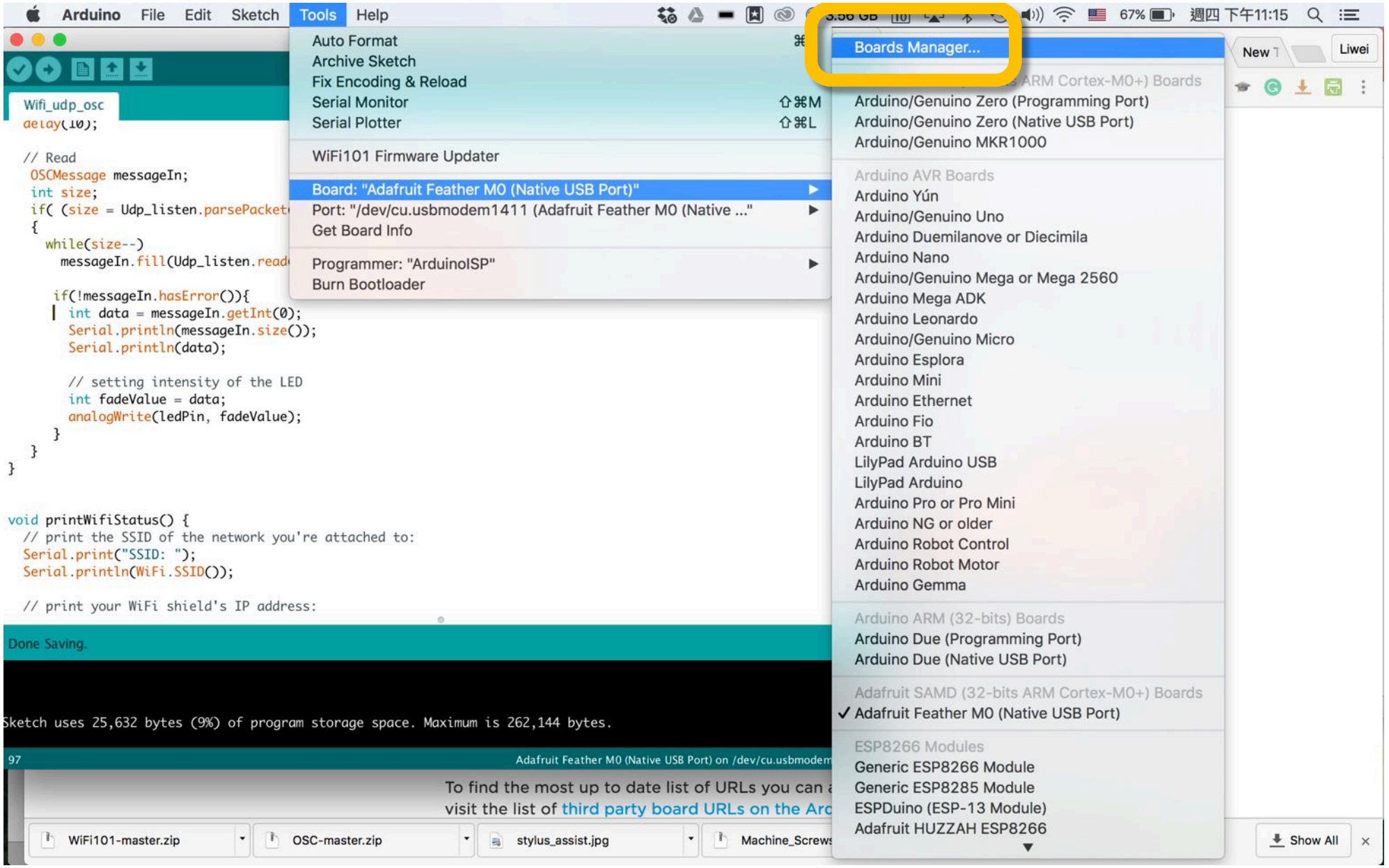
https://www.assetstore.unity3d.com/en/#!/content/17658
http://dotween.demigiant.com/
DL: https://www.dropbox.com/sh/26was0knbenkpda/AAASAyumj1wAlfZ4PUcztpeja?dl=0

Install Adafruit Wifi board package

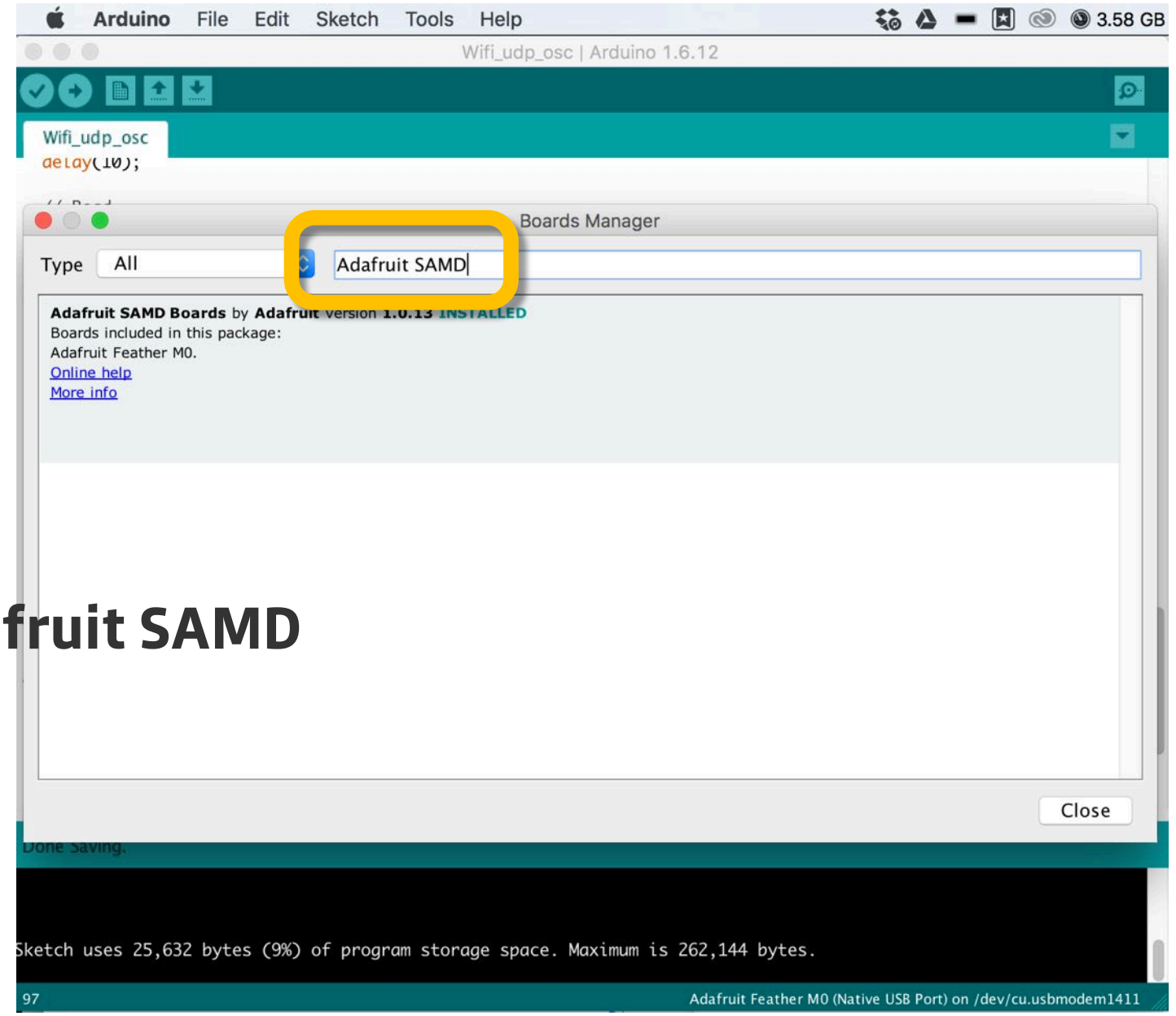

Arduino File Edit Sketch Tools Help
About Arduino
Preferences... ⌘,
Services
Hide Arduino ⌘H
Hide Others ⌥⌘H
Show All
Quit Arduino ⌘Q
Wifi_udp_osc | Arduino 1.6.12
ePacket())>0)
while(size--)
messageIn.fill(Udp_listen.read());
if(!messageIn.hasError()){
int data = messageIn.getInt(0);
Serial.println(messageIn.size());
Serial.println(data);
// setting intensity of the LED
int fadeValue = data;
analogWrite(ledPin, fadeValue);
}
}
}
void printWifiStatus() {
// print the SSID of the network you're attached to:
Serial.print("SSID: ");
Serial.println(WiFi.SSID());
// print your WiFi shield's IP address:
Done Saving.
Sketch uses 25,632 bytes (9%) of program storage space. Maximum is 262,144 bytes.
97
Adafruit Feather M0 (Native USB Port) on /dev/cu.usbmodem1411
Cancel
Manager
you will
and
up by
oint to
of
To find the most up to date list of URLs you can add, you can
visit the list of third party board URLs on the Arduino IDE wiki.
WiFi101-master.zip
OSC-master.zip
stylus_assist.jpg
Machine_Screws_-_SH....zip
15052127_11393181....jpg
Show All



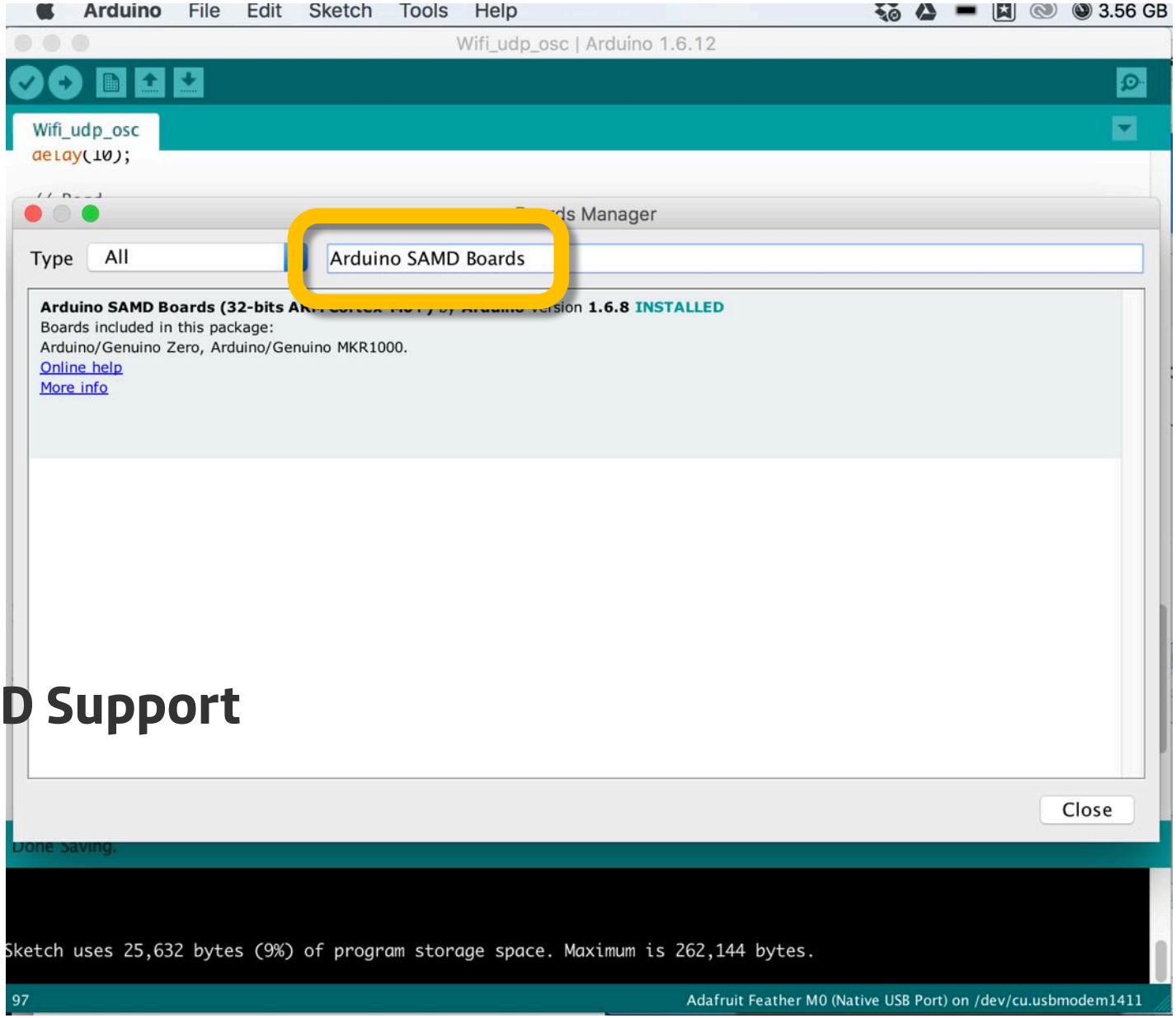
https://adafruit.github.io/arduino-board-index/package_adafruit_index.json


Arduino File Edit Sketch Tools Help
Auto Format
Archive Sketch
Fix Encoding & Reload
Serial Monitor
Serial Plotter
WiFi101 Firmware Updater
Board: "Adafruit Feather M0 (Native USB Port)"
Port: "/dev/cu.usbmodem1411 (Adafruit Feather M0 (Native ..."
Get Board Info
Programmer: "ArduinoISP"
Burn Bootloader
Boards Manager...
Arduino/Genuino Zero (Programming Port)
Arduino/Genuino Zero (Native USB Port)
Arduino/Genuino MKR1000
Arduino AVR Boards
Arduino Yún
Arduino/Genuino Uno
Arduino Duemilanove or Diecimila
Arduino Nano
Arduino/Genuino Mega or Mega 2560
Arduino Mega ADK
Arduino Leonardo
Arduino/Genuino Micro
Arduino Esplora
Arduino Mini
Arduino Ethernet
Arduino Fio
Arduino BT
LilyPad Arduino USB
LilyPad Arduino
Arduino Pro or Pro Mini
Arduino NG or older
Arduino Robot Control
Arduino Robot Motor
Arduino Gemma
Arduino ARM (32-bits) Boards
Arduino Due (Programming Port)
Arduino Due (Native USB Port)
Adafruit SAMD (32-bits ARM Cortex-M0+) Boards
Adafruit Feather M0 (Native USB Port)
ESP8266 Modules
Generic ESP8266 Module
Generic ESP8285 Module
ESPDuino (ESP-13 Module)
Adafruit HUZZAH ESP8266
Wifi_udp_osc
Done Saving.
Sketch uses 25,632 bytes (9%) of program storage space. Maximum is 262,144 bytes.
Adafruit Feather M0 (Native USB Port) on /dev/cu.usbmodem
WiFi101-master.zip
OSC-master.zip
stylus_assist.jpg
Show All

Install Adafruit SAMD

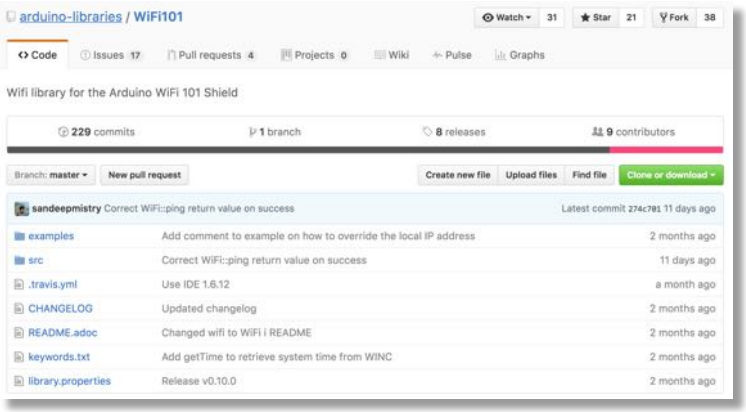


Install SAMD Support



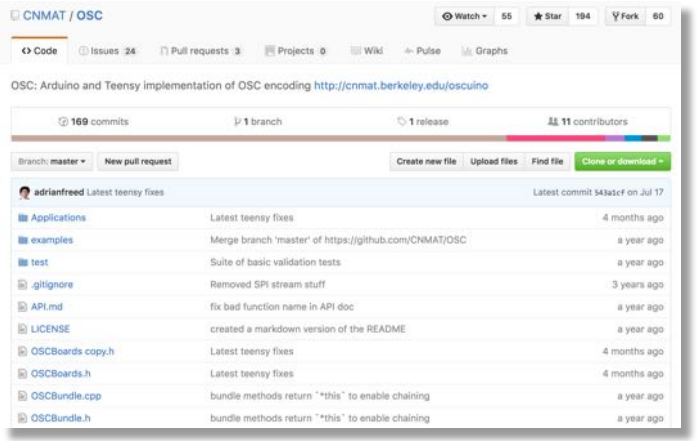
WiFi101

https://github.com/arduino-libraries/WiFi101



OSC for Aruduino

https://github.com/CNMAT/OSC



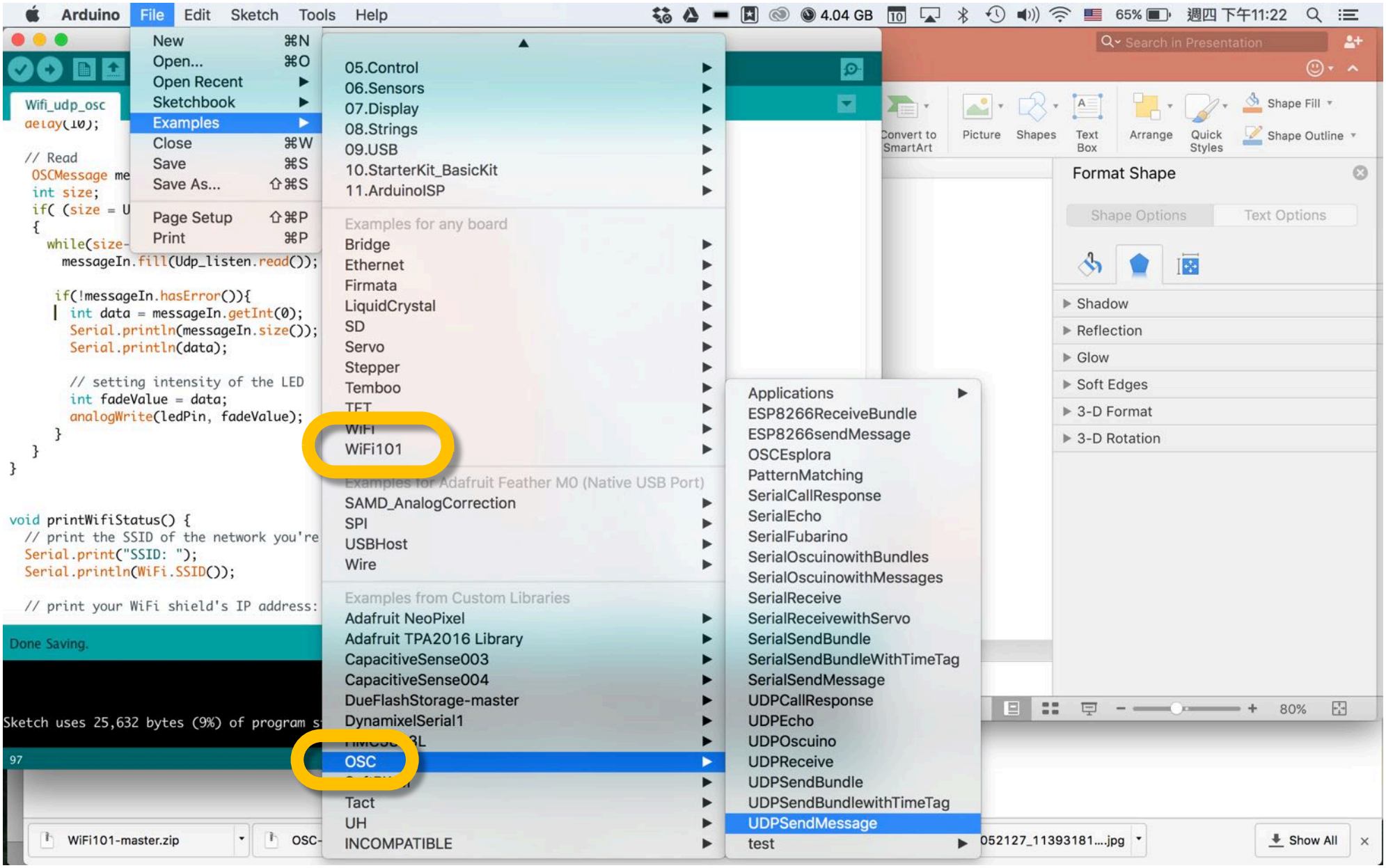
Install libraries

Wifi101 and OSC

https://github.com/CNMAT/OSC

https://github.com/arduino-libraries/WiFi101

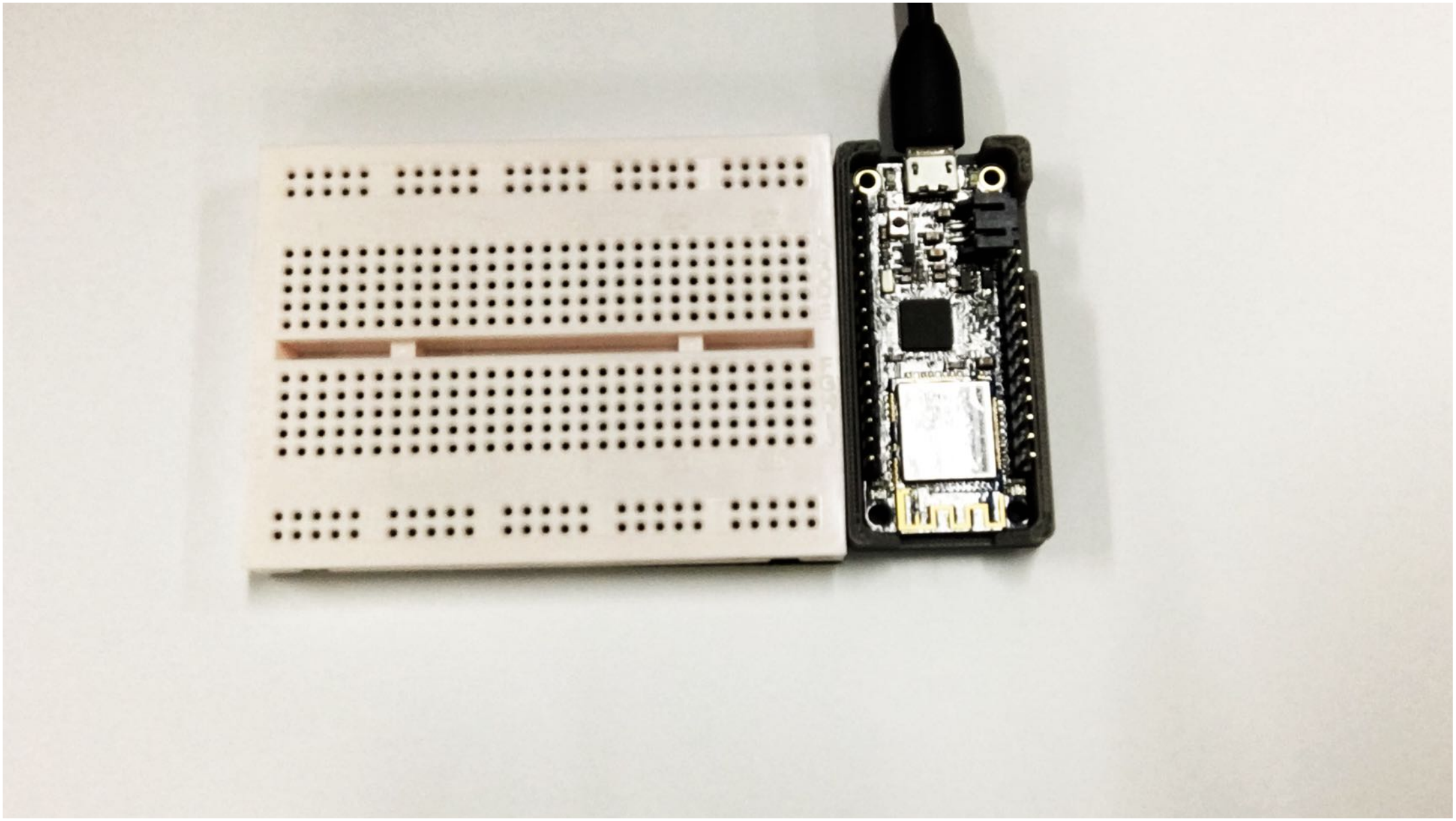
Unzip them in the folder “Arduino/Libraries/

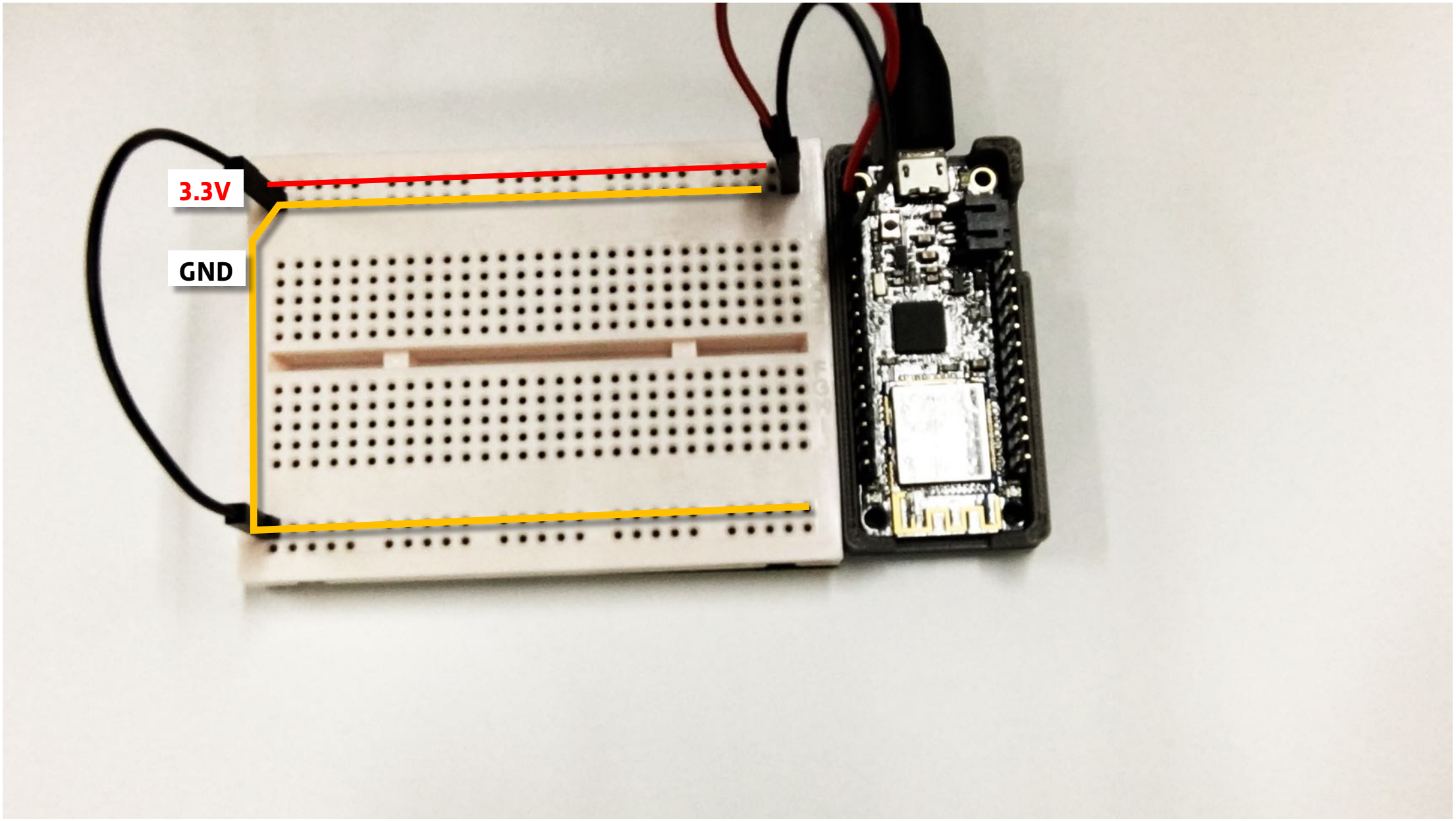

Arduino
File
Edit
Sketch
Tools
Help
New ⌘N
Open... ⌘O
Open Recent
Sketchbook
Examples
Close ⌘W
Save ⌘S
Save As... ⇧⌘S
Page Setup ⇧⌘P
Print ⌘P
05.Control
06.Sensors
07.Display
08.Strings
09.USB
10.StarterKit_BasicKit
11.ArduinoISP
Examples for any board
Bridge
Ethernet
Firmata
LiquidCrystal
SD
Servo
Stepper
Temboo
WiFi101
Examples for Adafruit Feather M0 (Native USB Port)
SAMD_AnalogCorrection
SPI
USBHost
Wire
Examples from Custom Libraries
Adafruit NeoPixel
Adafruit TPA2016 Library
CapacitiveSense003
CapacitiveSense004
DueFlashStorage-master
DynamixelSerial1
OSC
Tact
UH
INCOMPATIBLE
Applications
ESP8266ReceiveBundle
ESP8266sendMessage
OSCEsplora
PatternMatching
SerialCallResponse
SerialEcho
SerialFubarino
SerialOscuinowithBundles
SerialOscuinowithMessages
SerialReceive
SerialReceivewithServo
SerialSendBundle
SerialSendBundleWithTimeTag
SerialSendMessage
UDPCallResponse
UDPEcho
UDPOscuino
UDPReceive
UDPSendBundle
UDPSendBundlewithTimeTag
UDPSendMessage
test
Wifi_udp_osc
Done Saving.
Sketch uses 25,632 bytes (9%) of program s
WiFi101-master.zip
Format Shape
Shape Options
Text Options
Shadow
Reflection
Glow
Soft Edges
3-D Format
3-D Rotation
Show All

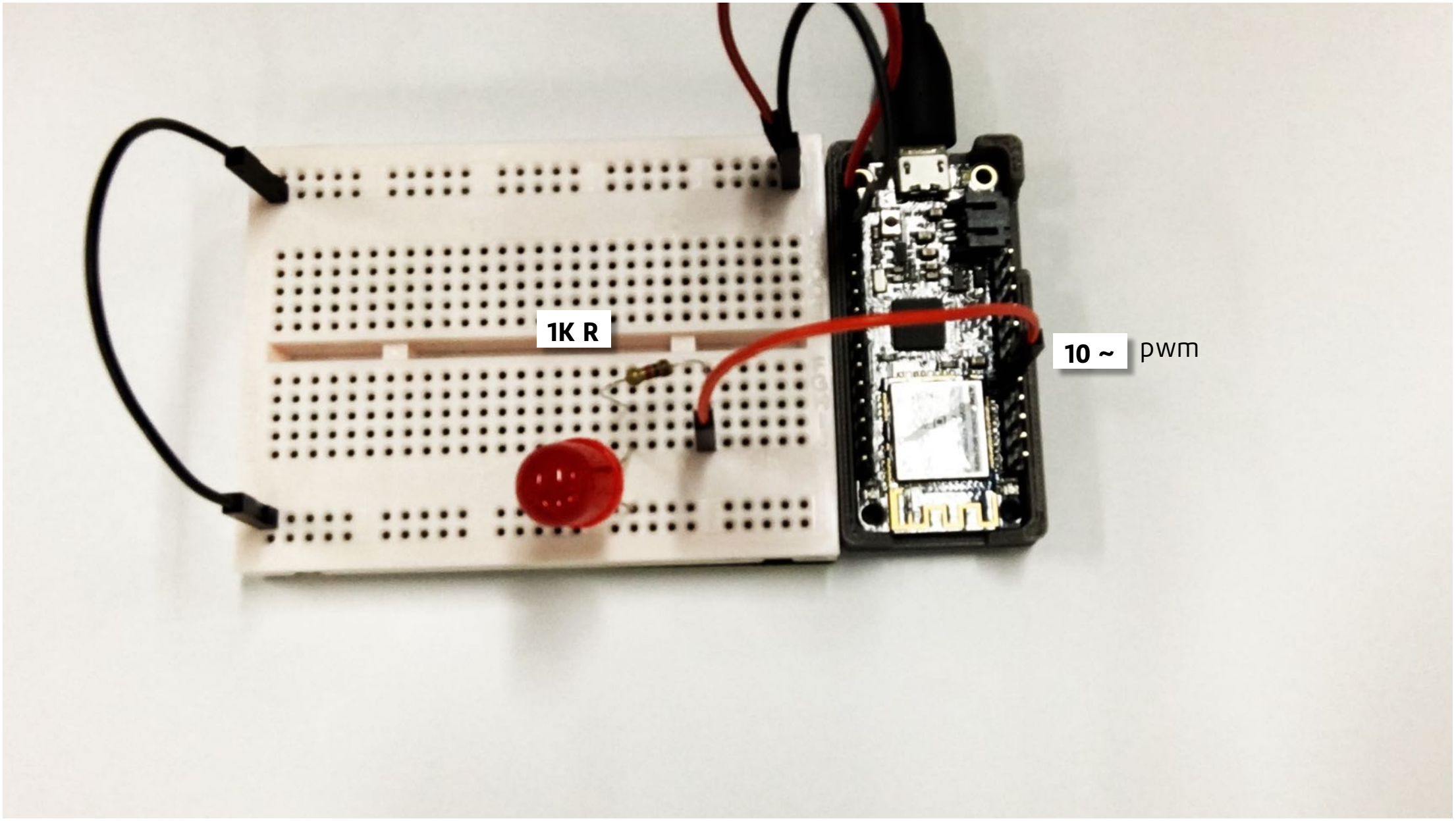
Quit and reopen the Arduino IDE

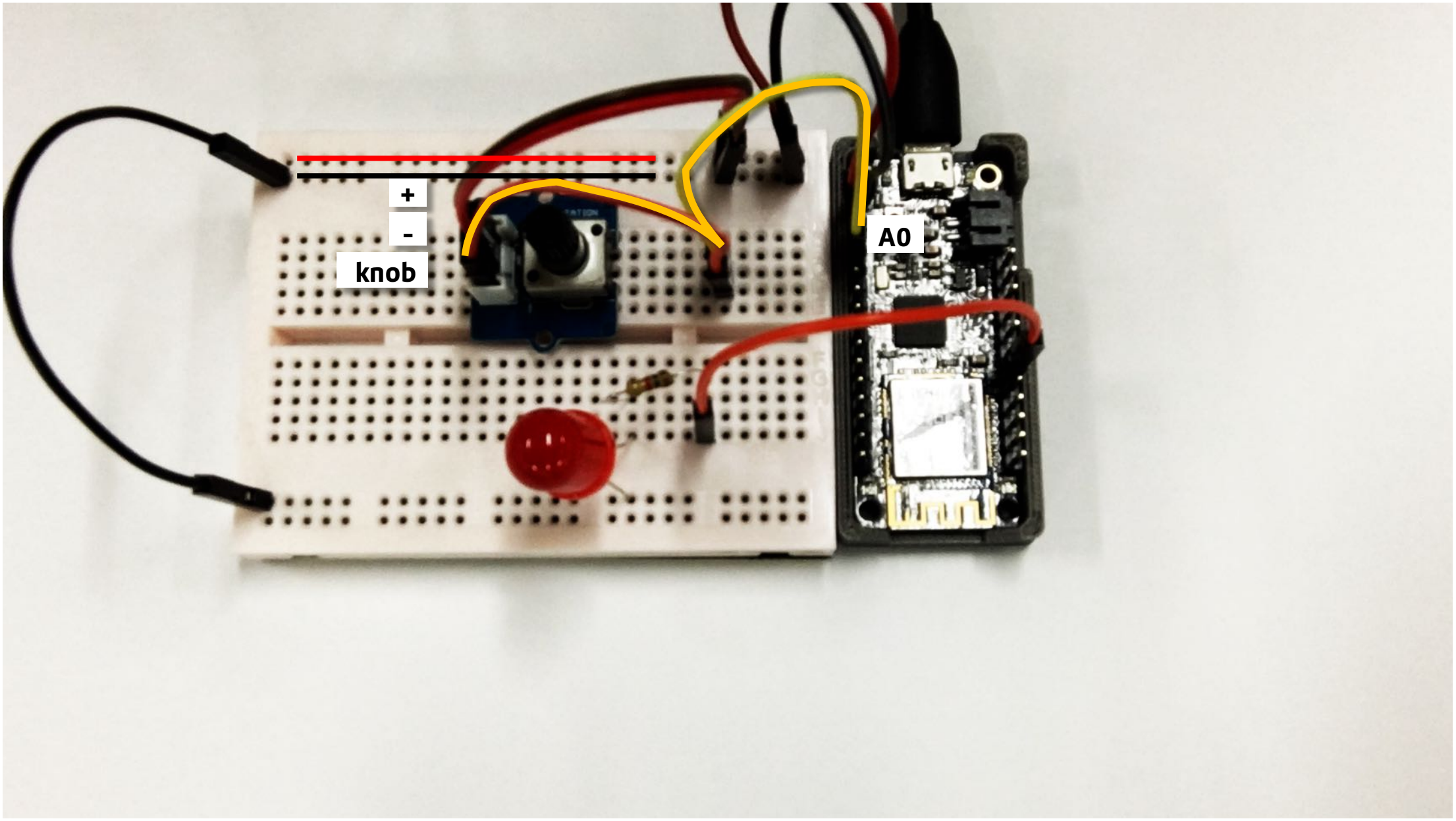
assignment project presentation

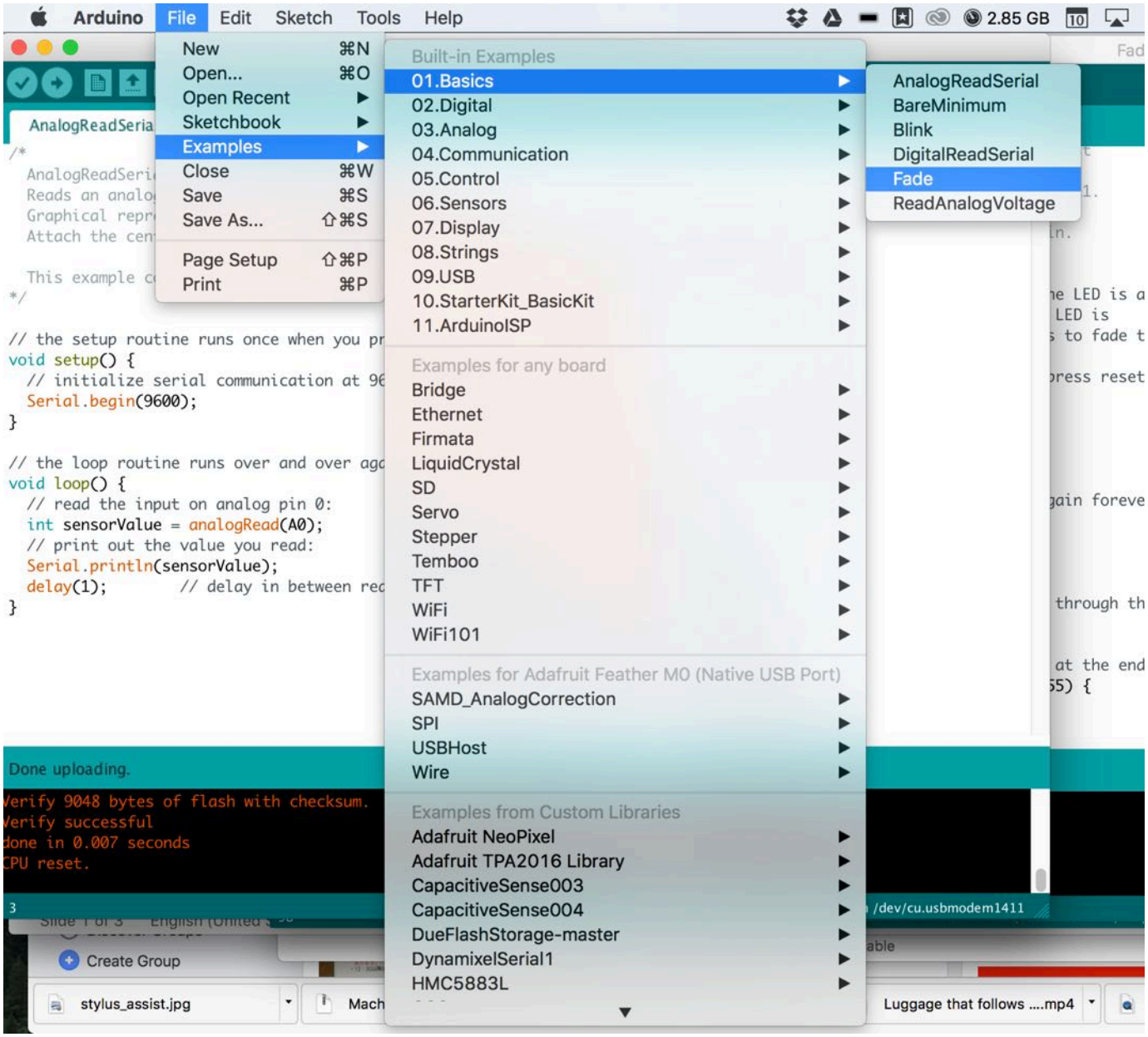
Floor projection
Heat and Vibration
Add challenge to player too.
Toward multi-player
Balance




3.3V
GND


1K R
10 ~
pwm


+
-
knob
A0


Arduino
File
Edit
Sketch
Tools
Help
2.85 GB
New ⌘N
Open... ⌘O
Open Recent
Sketchbook
Examples
Close ⌘W
Save ⌘S
Save As... ⇧⌘S
Page Setup ⇧⌘P
Print ⌘P
Built-in Examples
01.Basics
02.Digital
03.Analog
04.Communication
05.Control
06.Sensors
07.Display
08.Strings
09.USB
10.StarterKit_BasicKit
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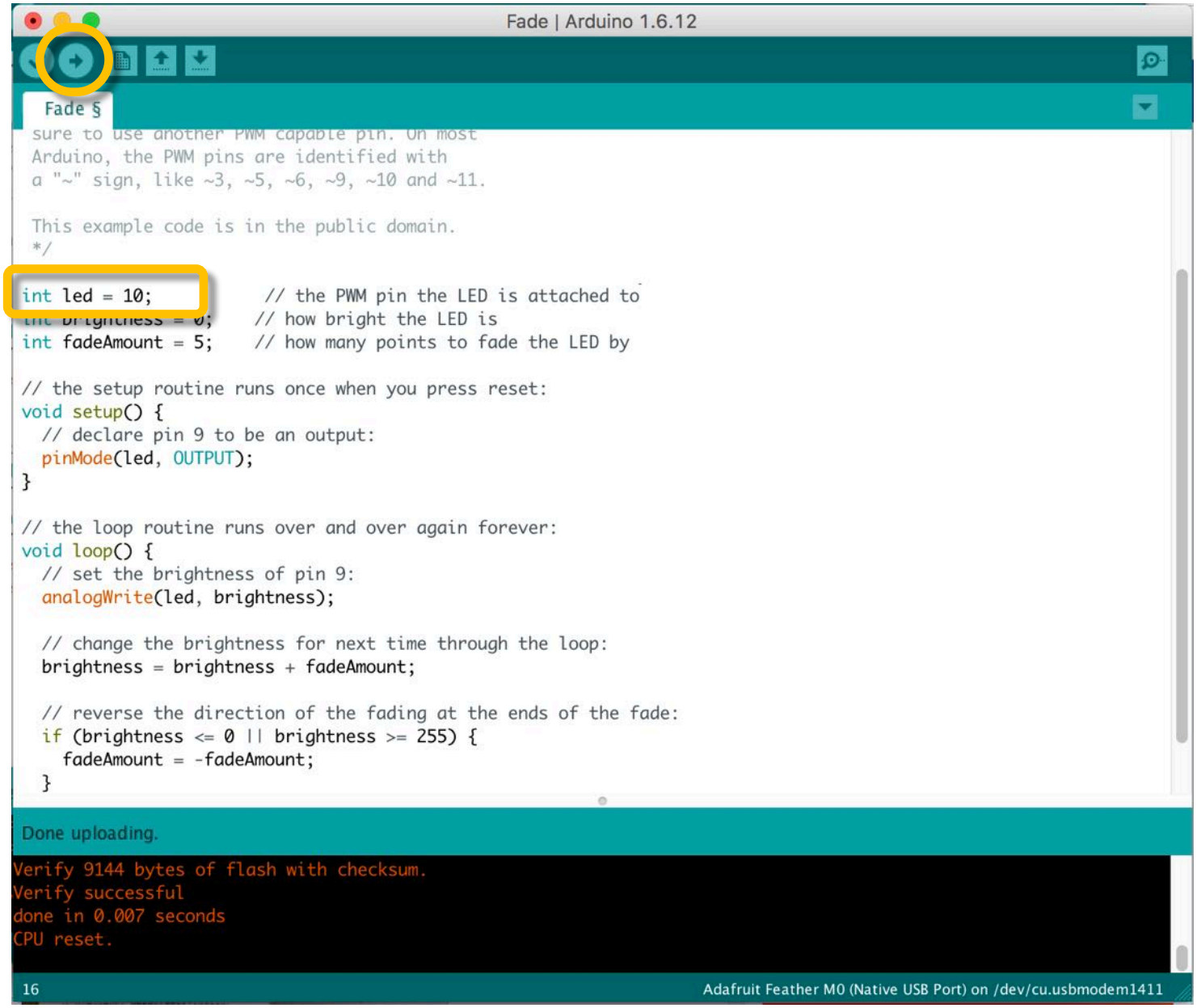
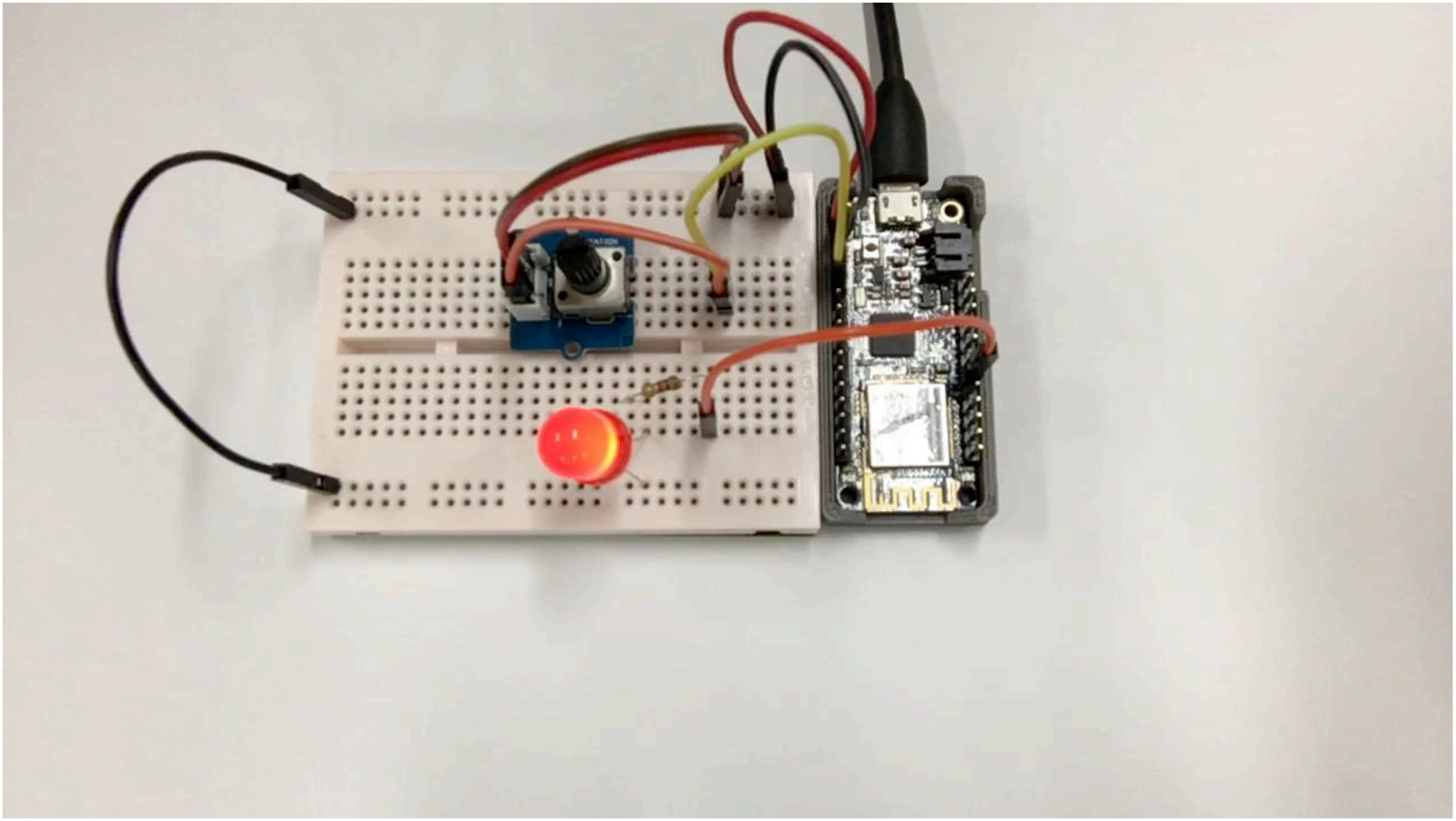
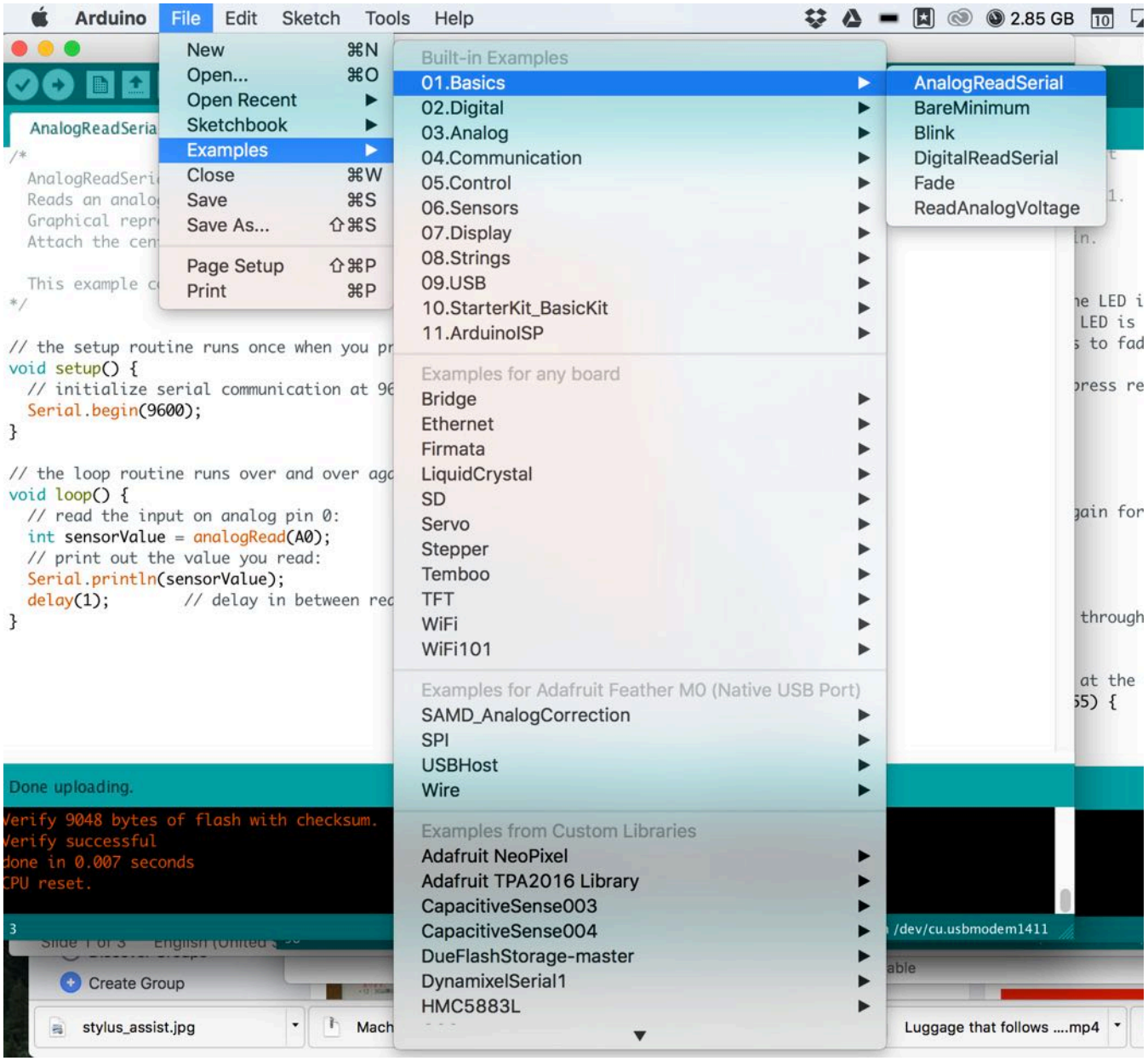
Adafruit NeoPixel
Adafruit TPA2016 Library
CapacitiveSense003
CapacitiveSense004
DueFlashStorage-master
DynamixelSerial1
HMC5883L
AnalogReadSerial
BareMinimum
Blink
DigitalReadSerial
Fade
ReadAnalogVoltage
AnalogReadSeria
// the setup routine runs once when you pr
void setup() {
// initialize serial communication at 96
Serial.begin(9600);
}
// the loop routine runs over and over aga
void loop() {
// read the input on analog pin 0:
int sensorValue = analogRead(A0);
// print out the value you read:
Serial.println(sensorValue);
delay(1); // delay in between rea
}
Done uploading.
Verify 9048 bytes of flash with checksum.
Verify successful
done in 0.007 seconds
CPU reset.
/dev/cu.usbmodem1411
Create Group
stylus_assist.jpg
Luggage that follows mp4


Fade | Arduino 1.6.12
Fade §
sure to use another PWM capable pin. On most
Arduino, the PWM pins are identified with
a "~" sign, like ~3, ~5, ~6, ~9, ~10 and ~11.
This example code is in the public domain.
*/
int led = 10; // the PWM pin the LED is attached to
int brightness = 0; // how bright the LED is
int fadeAmount = 5; // how many points to fade the LED by
// the setup routine runs once when you press reset:
void setup() {
// declare pin 9 to be an output:
pinMode(led, OUTPUT);
}
// the loop routine runs over and over again forever:
void loop() {
// set the brightness of pin 9:
analogWrite(led, brightness);
// change the brightness for next time through the loop:
brightness = brightness + fadeAmount;
// reverse the direction of the fading at the ends of the fade:
if (brightness <= 0 || brightness >= 255) {
fadeAmount = -fadeAmount;
}
Done uploading.
Verify 9144 bytes of flash with checksum.
Verify successful
done in 0.007 seconds
CPU reset.
16
Adafruit Feather M0 (Native USB Port) on /dev/cu.usbmodem1411




Arduino
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Edit
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2.85 GB
New ⌘N
Open... ⌘O
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Sketchbook
Examples
Close ⌘W
Save ⌘S
Save As... ⇧⌘S
Page Setup ⇧⌘P
Print ⌘P
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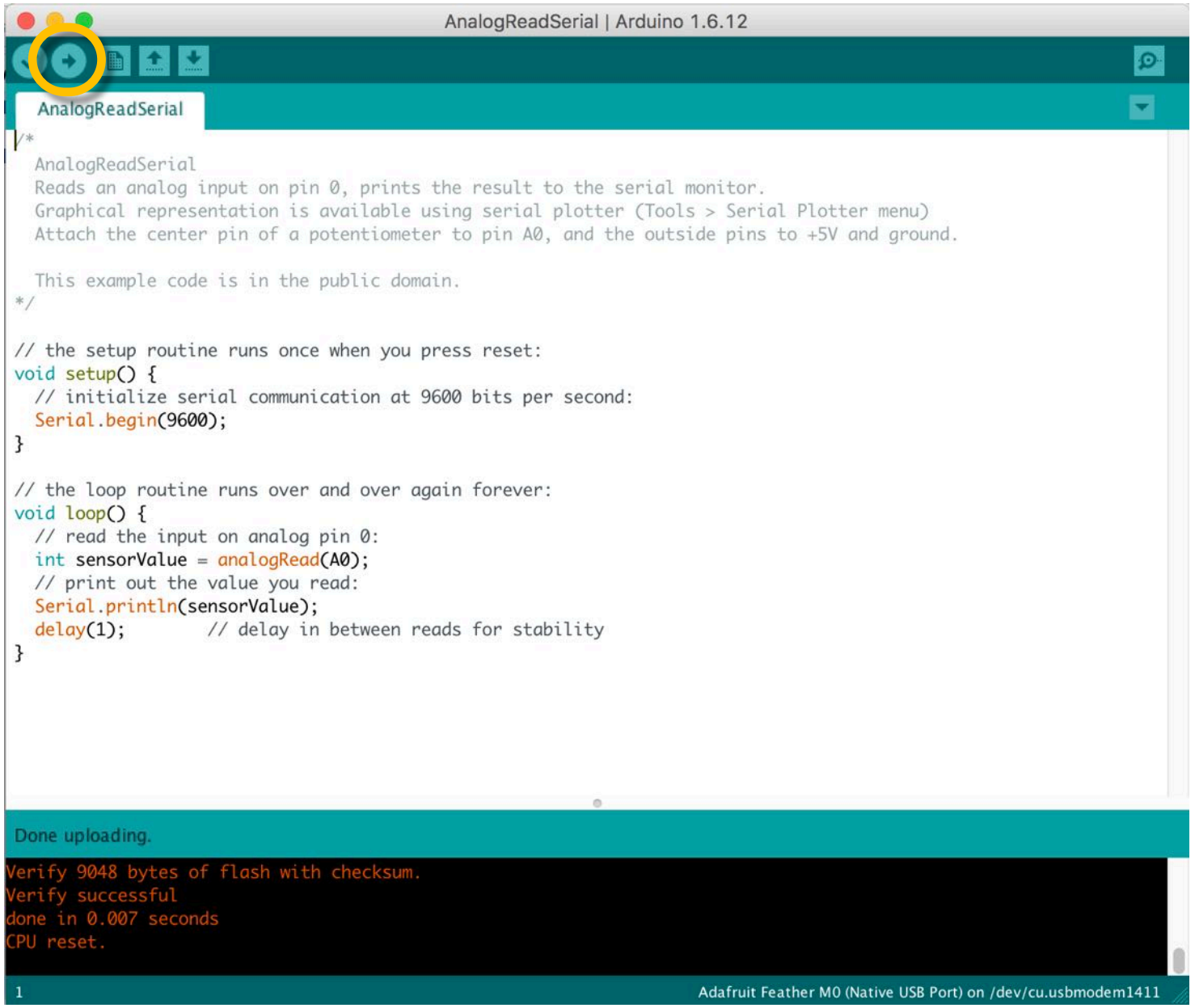
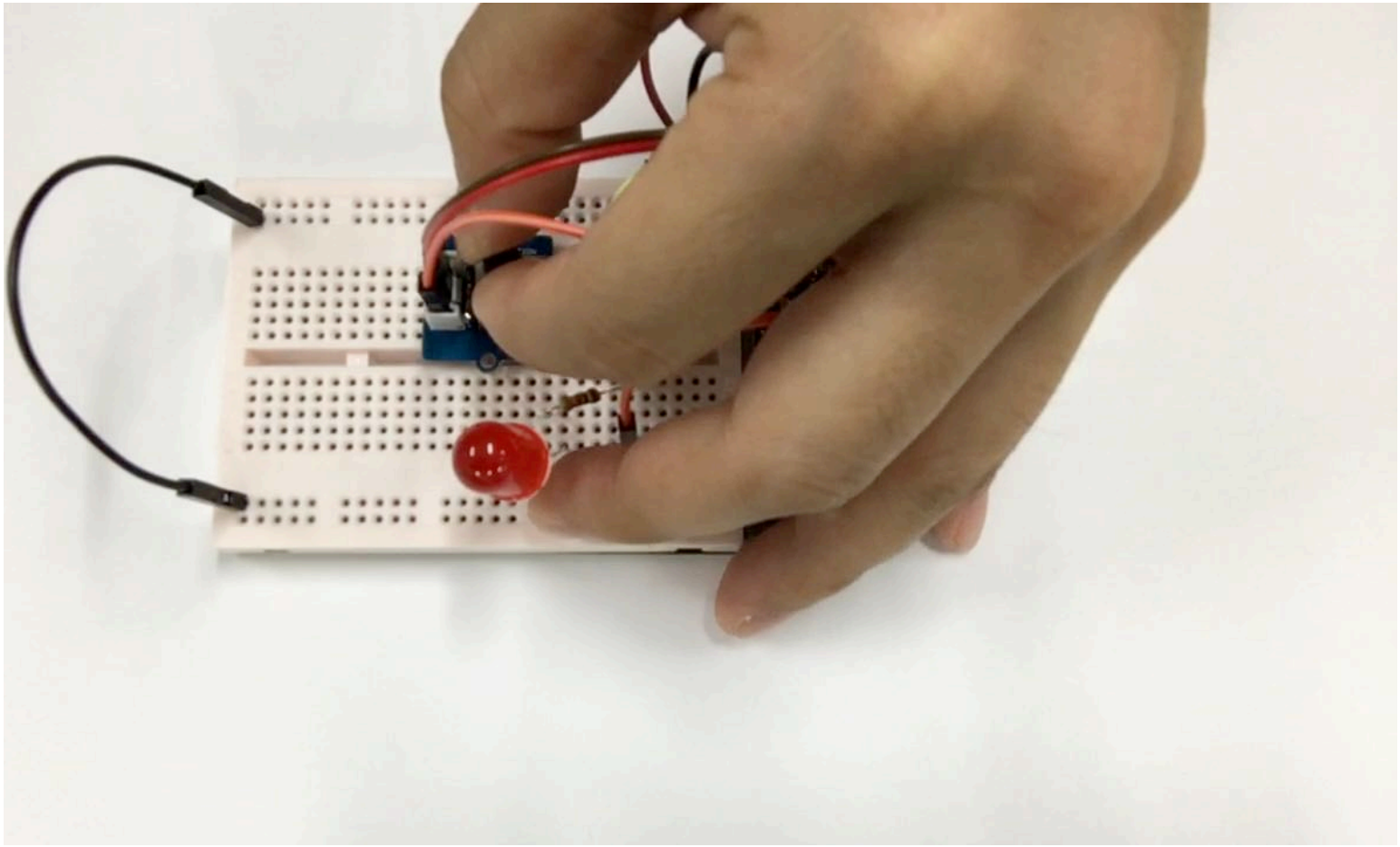
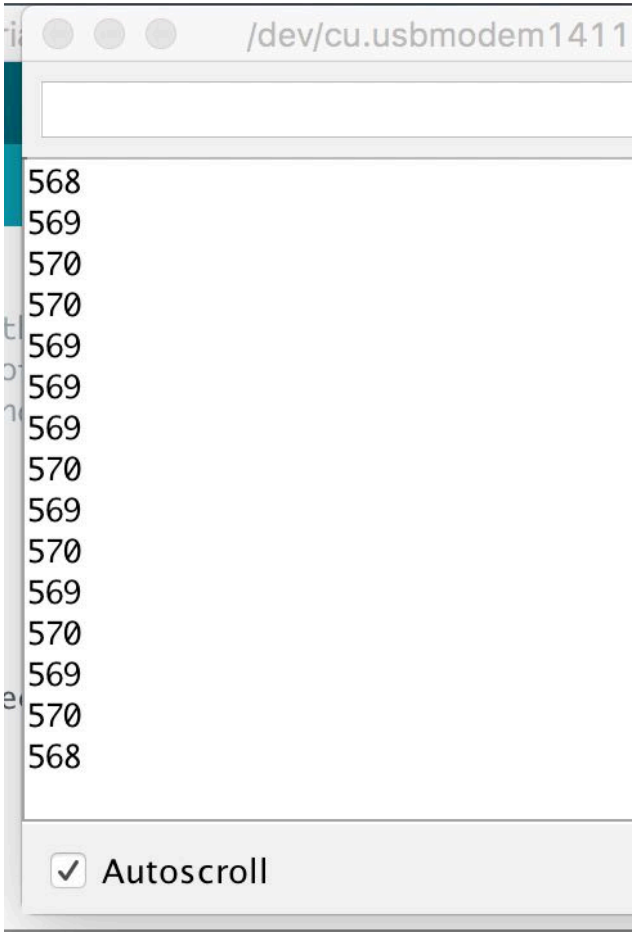
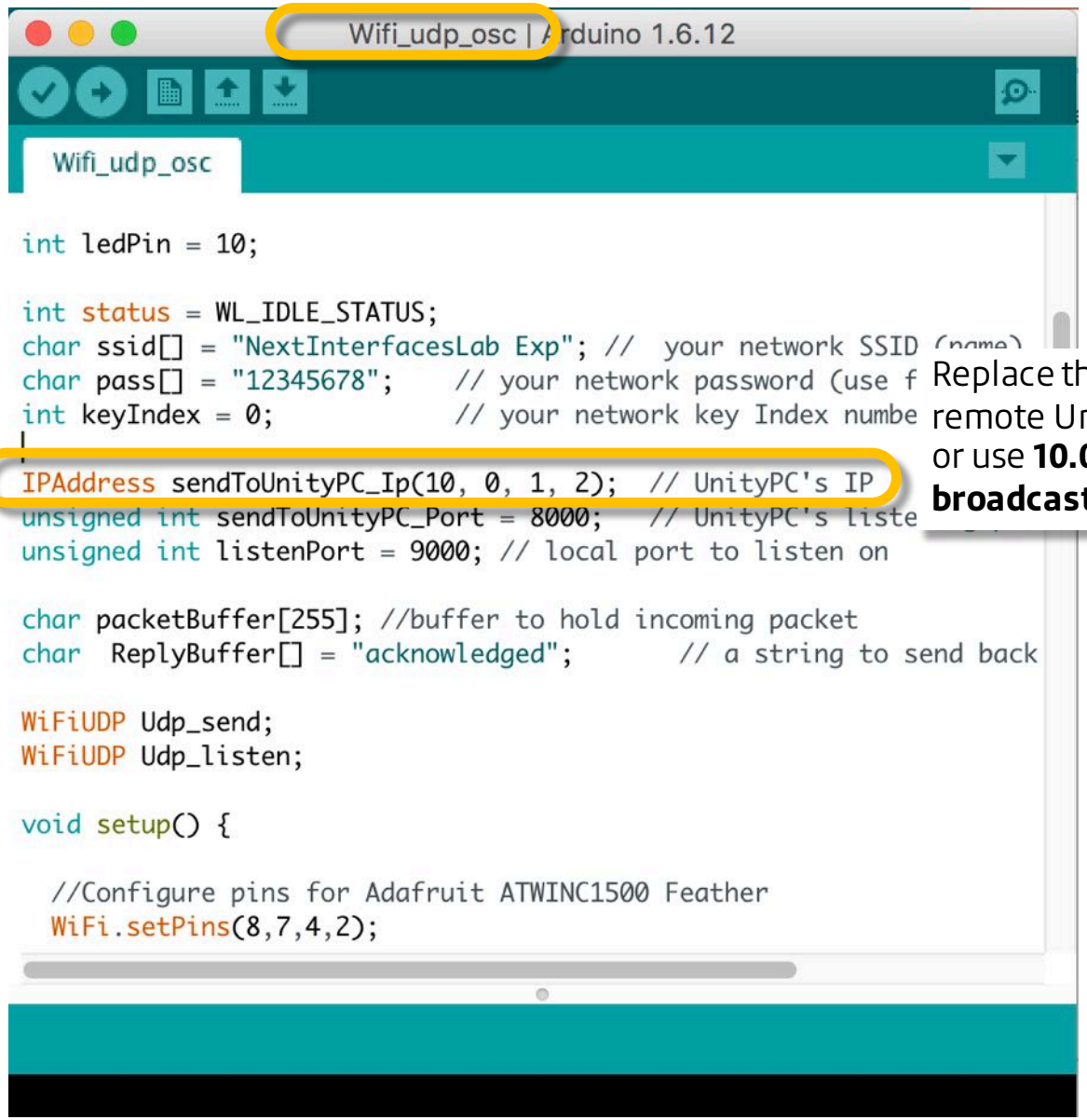
CapacitiveSense003
CapacitiveSense004
DueFlashStorage-master
DynamixelSerial1
HMC5883L
AnalogReadSeria
/*
AnalogReadSeri
Reads an analo
Graphical repr
Attach the cen
This example c
*/
// the setup routine runs once when you pr
void setup() {
// initialize serial communication at 96
Serial.begin(9600);
}
// the loop routine runs over and over aga
void loop() {
// read the input on analog pin 0:
int sensorValue = analogRead(A0);
// print out the value you read:
Serial.println(sensorValue);
delay(1); // delay in between rea
}
Done uploading.
Verify 9048 bytes of flash with checksum.
Verify successful
done in 0.007 seconds
CPU reset.
/dev/cu.usbmodem1411
Create Group
stylus_assist.jpg
Luggage that follows mp4


AnalogReadSerial | Arduino 1.6.12
AnalogReadSerial
/*
AnalogReadSerial
Reads an analog input on pin 0, prints the result to the serial monitor.
Graphical representation is available using serial plotter (Tools > Serial Plotter menu)
Attach the center pin of a potentiometer to pin A0, and the outside pins to +5V and ground.
This example code is in the public domain.
*/
// the setup routine runs once when you press reset:
void setup() {
// initialize serial communication at 9600 bits per second:
Serial.begin(9600);
}
// the loop routine runs over and over again forever:
void loop() {
// read the input on analog pin 0:
int sensorValue = analogRead(A0);
// print out the value you read:
Serial.println(sensorValue);
delay(1); // delay in between reads for stability
}
Done uploading.
Verify 9048 bytes of flash with checksum.
Verify successful
done in 0.007 seconds
CPU reset.
1
Adafruit Feather M0 (Native USB Port) on /dev/cu.usbmodem1411

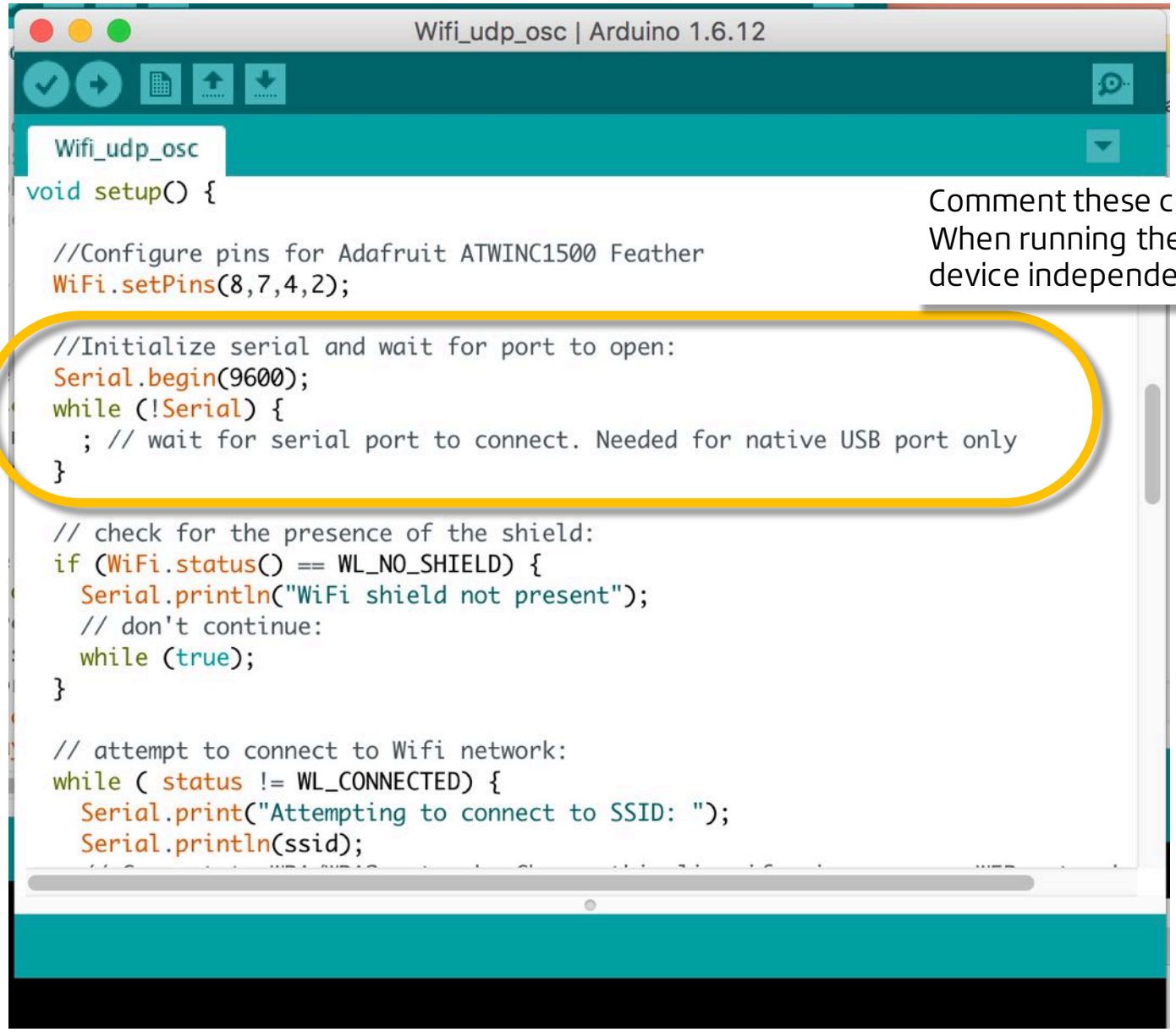
Serial Monitor





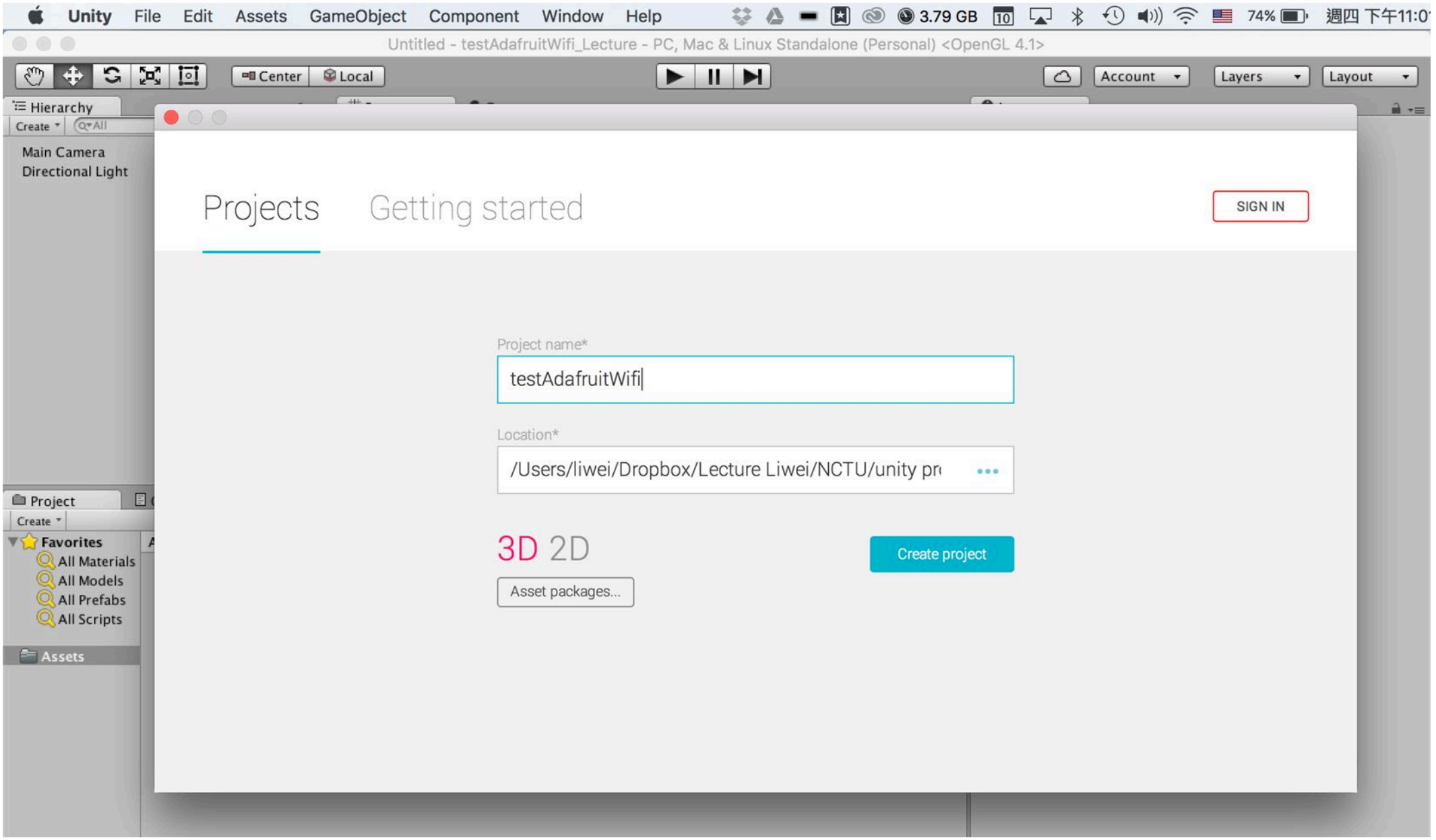


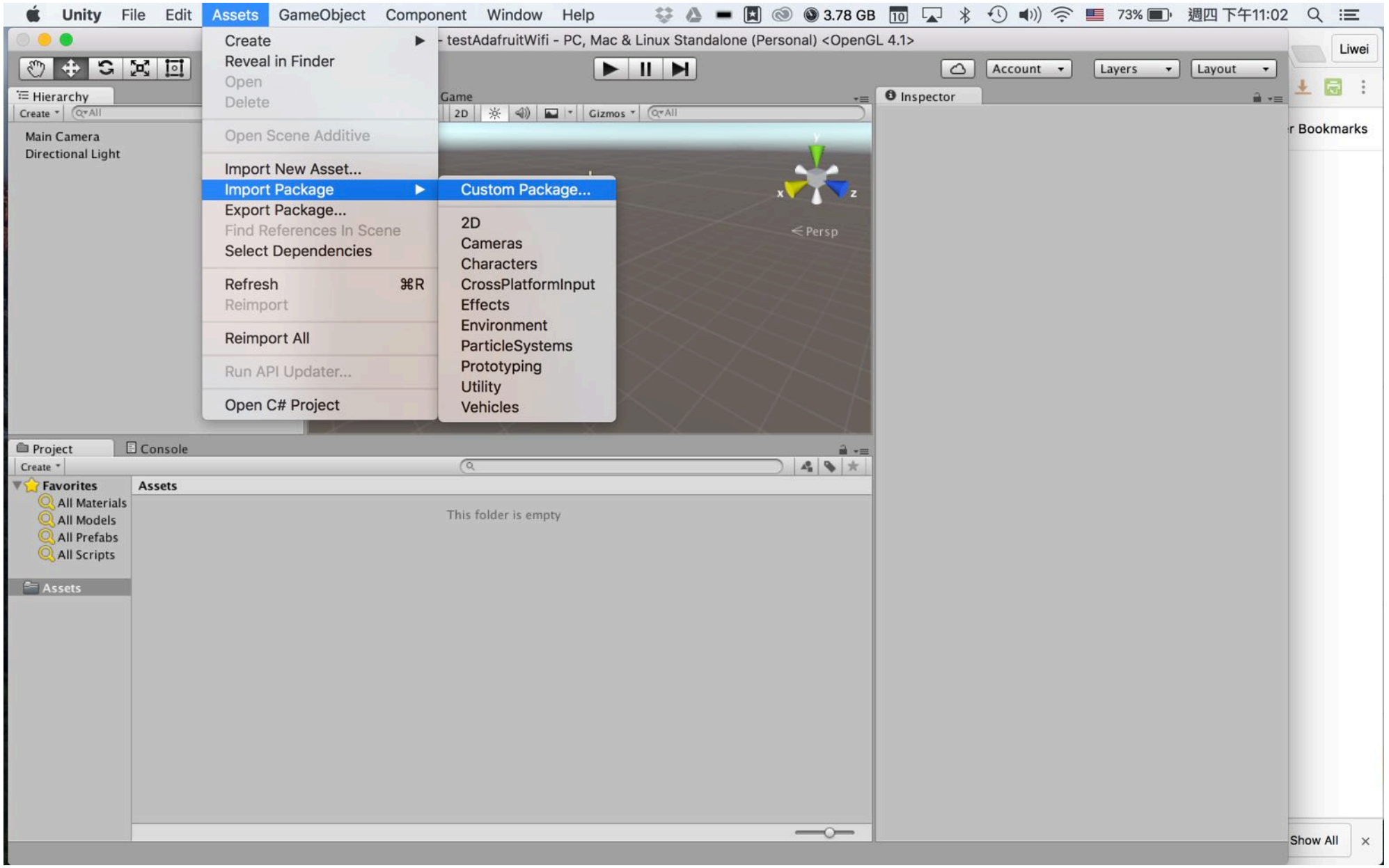
Replace this with your remote Unity PC's IP, or use **10.0.1.255** for **broadcasting**

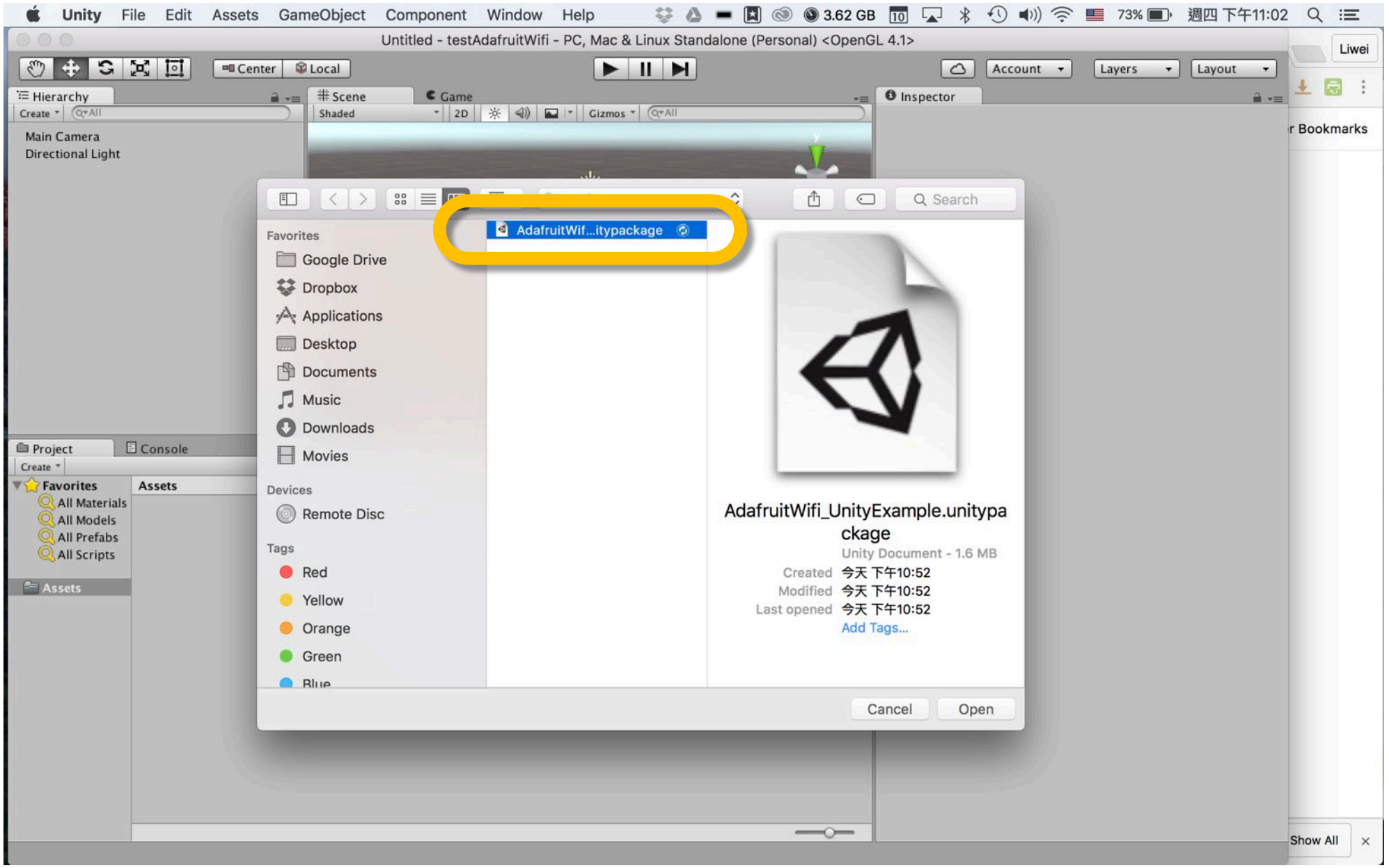

Wifi_udp_osc | Arduino 1.6.12
Wifi_udp_osc
void setup() {
//Configure pins for Adafruit ATWINC1500 Feather
WiFi.setPins(8,7,4,2);
//Initialize serial and wait for port to open:
Serial.begin(9600);
while (!Serial) {
; // wait for serial port to connect. Needed for native USB port only
}
// check for the presence of the shield:
if (WiFi.status() == WL_NO_SHIELD) {
Serial.println("WiFi shield not present");
// don't continue:
while (true);
}
// attempt to connect to Wifi network:
while (status != WL_CONNECTED) {
Serial.print("Attempting to connect to SSID: ");
Serial.println(ssid);
Comment these codes,
When running the
device independently

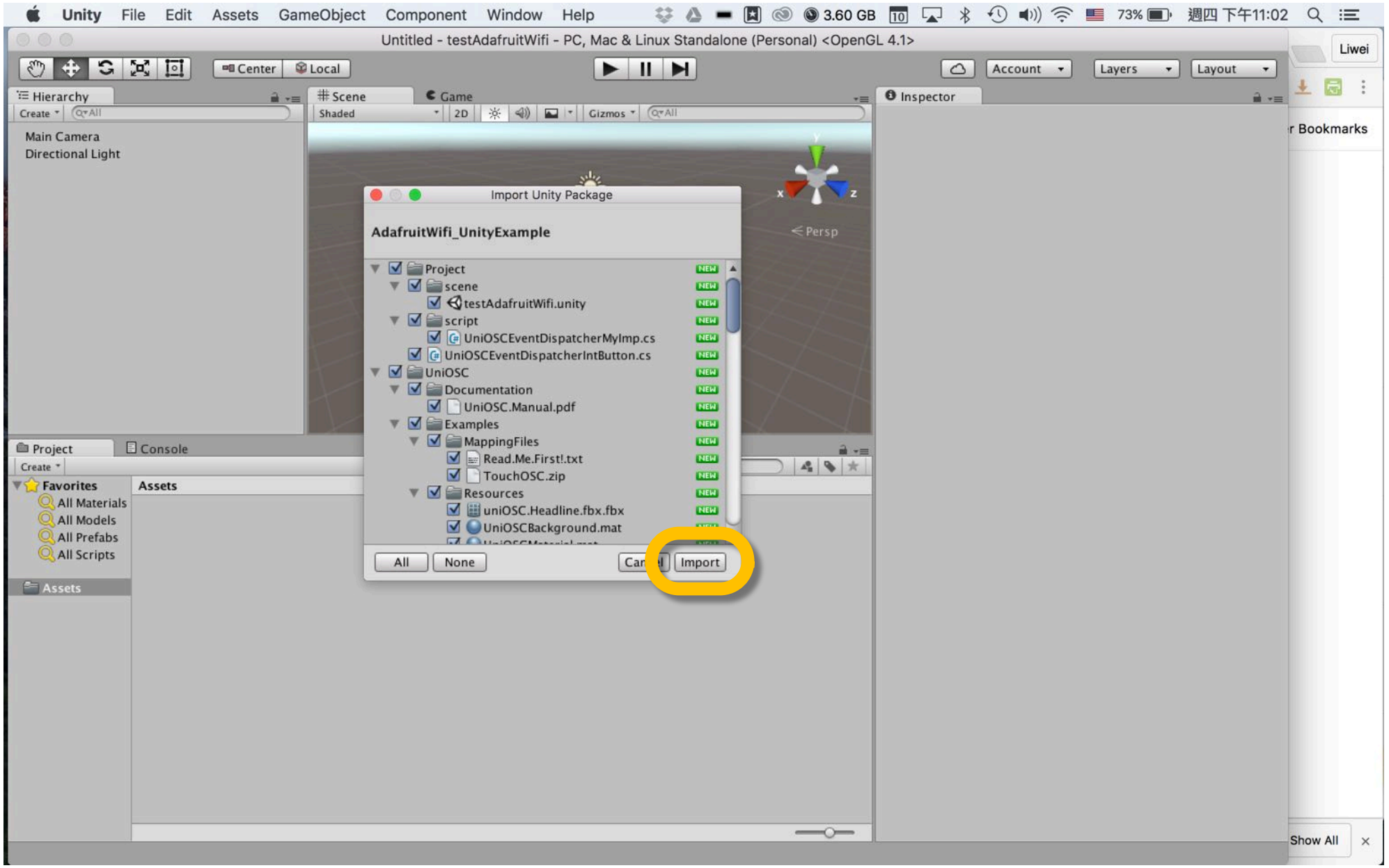
Wifi
SSID: NextInterfacesLab Exp
PW: **12345678**

Unity


Unity File Edit Assets GameObject Component Window Help
Untitled - testAdafruitWifi_Lecture - PC, Mac & Linux Standalone (Personal) <OpenGL 4.1>
Center Local
Account Layers Layout
Hierarchy
Create
Main Camera
Directional Light
Project
Create
Favorites
All Materials
All Models
All Prefabs
All Scripts
Assets
Projects
Getting started
SIGN IN
Project name*
testAdafruitWifi
Location*
/Users/liwei/Dropbox/Lecture Liwei/NCTU/unity pr
3D 2D
Create project
Asset packages...


Unity File Edit Assets GameObject Component Window Help
Create
Reveal in Finder
Open
Delete
Open Scene Additive
Import New Asset...
Import Package
Export Package...
Find References In Scene
Select Dependencies
Refresh ⌘R
Reimport
Reimport All
Run API Updater...
Open C# Project
Custom Package...
2D
Cameras
Characters
CrossPlatformInput
Effects
Environment
ParticleSystems
Prototyping
Utility
Vehicles
testAdafruitWifi - PC, Mac & Linux Standalone (Personal) <OpenGL 4.1>
Hierarchy
Main Camera
Directional Light
Game
Inspector
Project
Console
Favorites
All Materials
All Models
All Prefabs
All Scripts
Assets
This folder is empty
Persp
Account
Layers
Layout
Liwei
Bookmarks
Show All


Unity File Edit Assets GameObject Component Window Help
Untitled - testAdafruitWifi - PC, Mac & Linux Standalone (Personal) <OpenGL 4.1>
Center Local
Account Layers Layout
Hierarchy
Create
Main Camera
Directional Light
Scene
Game
Shaded 2D Gizmos
Inspector
Project Console
Create
Favorites
All Materials
All Models
All Prefabs
All Scripts
Assets
Assets
AdafruitWif...itypackage
Search
Favorites
Google Drive
Dropbox
Applications
Desktop
Documents
Music
Downloads
Movies
Devices
Remote Disc
Tags
Red
Yellow
Orange
Green
Blue
AdafruitWifi_UnityExample.unitypackage
Unity Document - 1.6 MB
Created 今天 下午10:52
Modified 今天 下午10:52
Last opened 今天 下午10:52
Add Tags...
Cancel
Open
Liwei
Bookmarks
Show All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Main Camera
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Scene
Game
Shaded 2D Gizmos
Persp
Inspector
Import Unity Package
AdafruitWifi_UnityExample
Project
scene
testAdafruitWifi.unity
script
UniOSCEventDispatcherMyImp.cs
UniOSCEventDispatcherIntButton.cs
UniOSC
Documentation
UniOSC.Manual.pdf
Examples
MappingFiles
Read.Me.First!.txt
TouchOSC.zip
Resources
uniOSC.Headline.fbx.fbx
UniOSCBackground.mat
NEW
All
None
Import
Project
Console
Favorites
All Materials
All Models
All Prefabs
All Scripts
Assets
Liwei
Bookmarks
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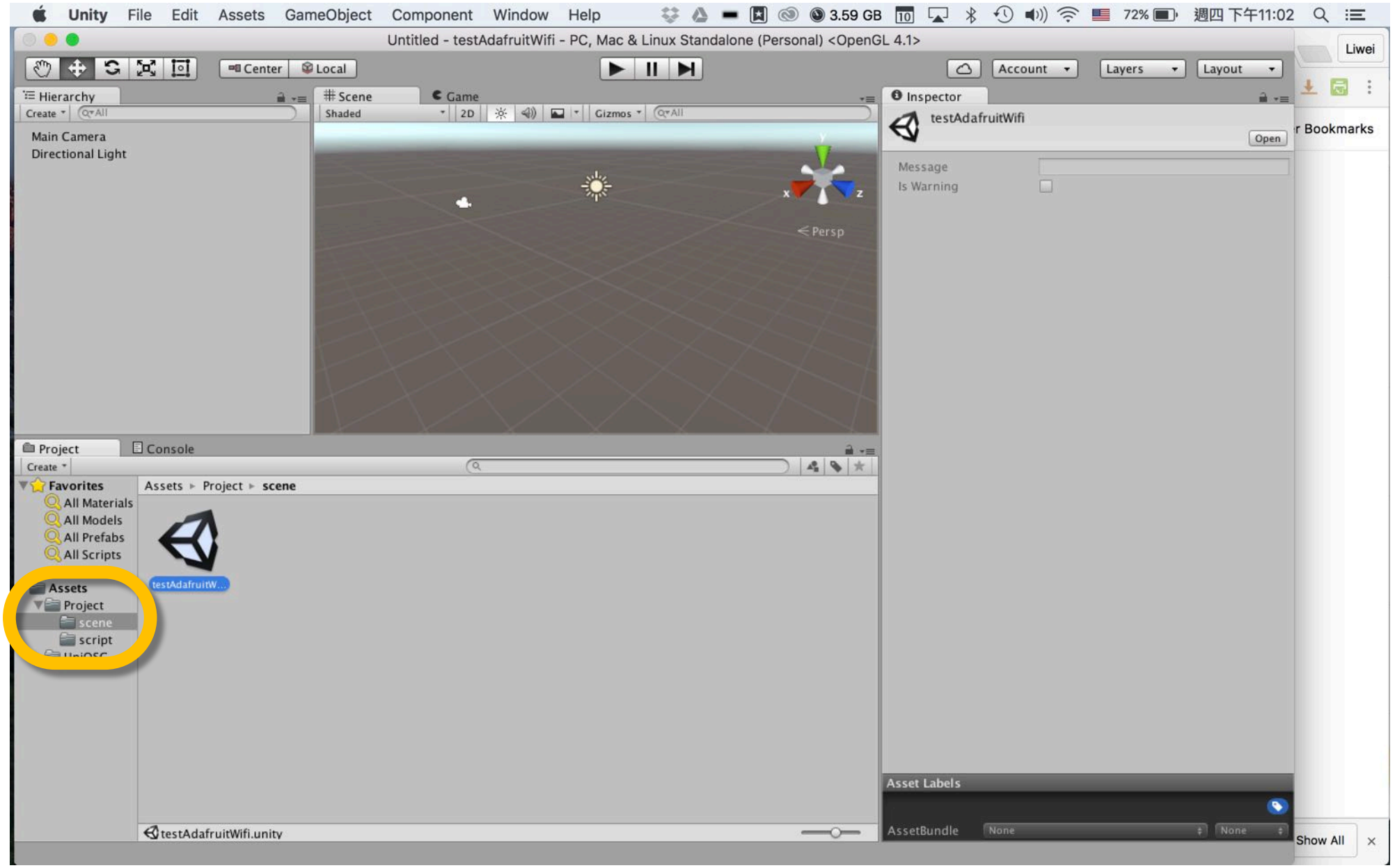
Unity File Edit Assets GameObject Component Window Help
Untitled - testAdafruitWifi - PC, Mac & Linux Standalone (Personal) <OpenGL 4.1>
Center
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Layers
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Hierarchy
Create
Main Camera
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Scene
Game
Shaded
2D
Gizmos
Persp
Inspector
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All Materials
All Models
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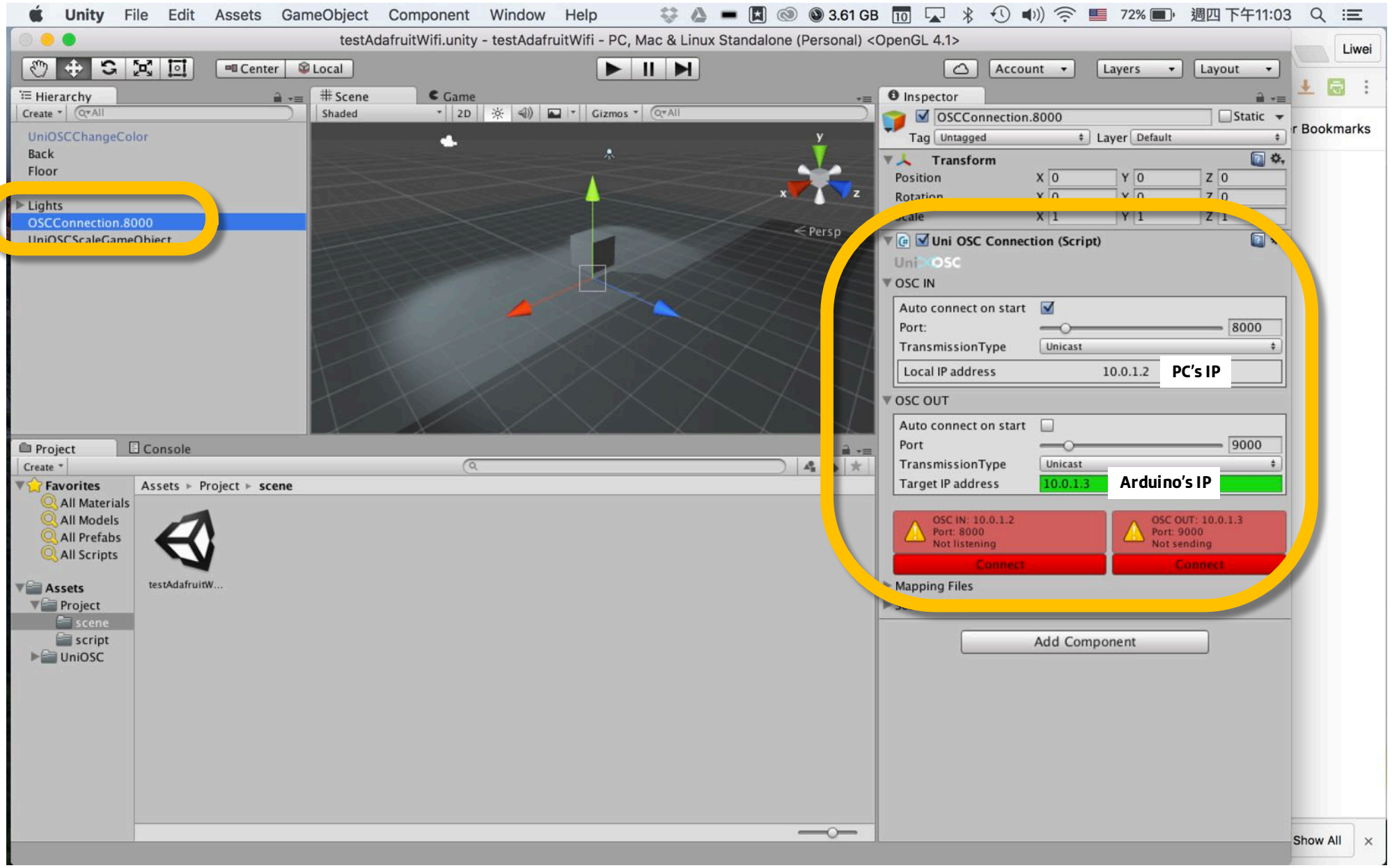
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testAdafruitWifi.unity - testAdafruitWifi - PC, Mac & Linux Standalone (Personal) <OpenGL 4.1>
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Inspector
OSCConnection.8000
Transform
Position
Uni OSC Connection (Script)
OSC IN
Auto connect on start
Port: 8000
TransmissionType Unicast
Local IP address 10.0.1.2
PC's IP
OSC OUT
Auto connect on start
Port 9000
TransmissionType Unicast
Target IP address 10.0.1.3
Arduino's IP
OSC IN: 10.0.1.2
Port: 8000
Not listening
OSC OUT: 10.0.1.3
Port: 9000
Not sending
Connect
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Mapping Files
Add Component
Project
Console
Favorites
All Materials
All Models
All Prefabs
All Scripts
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Assets ▸ Project ▸ scene
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Liwei
Bookmarks
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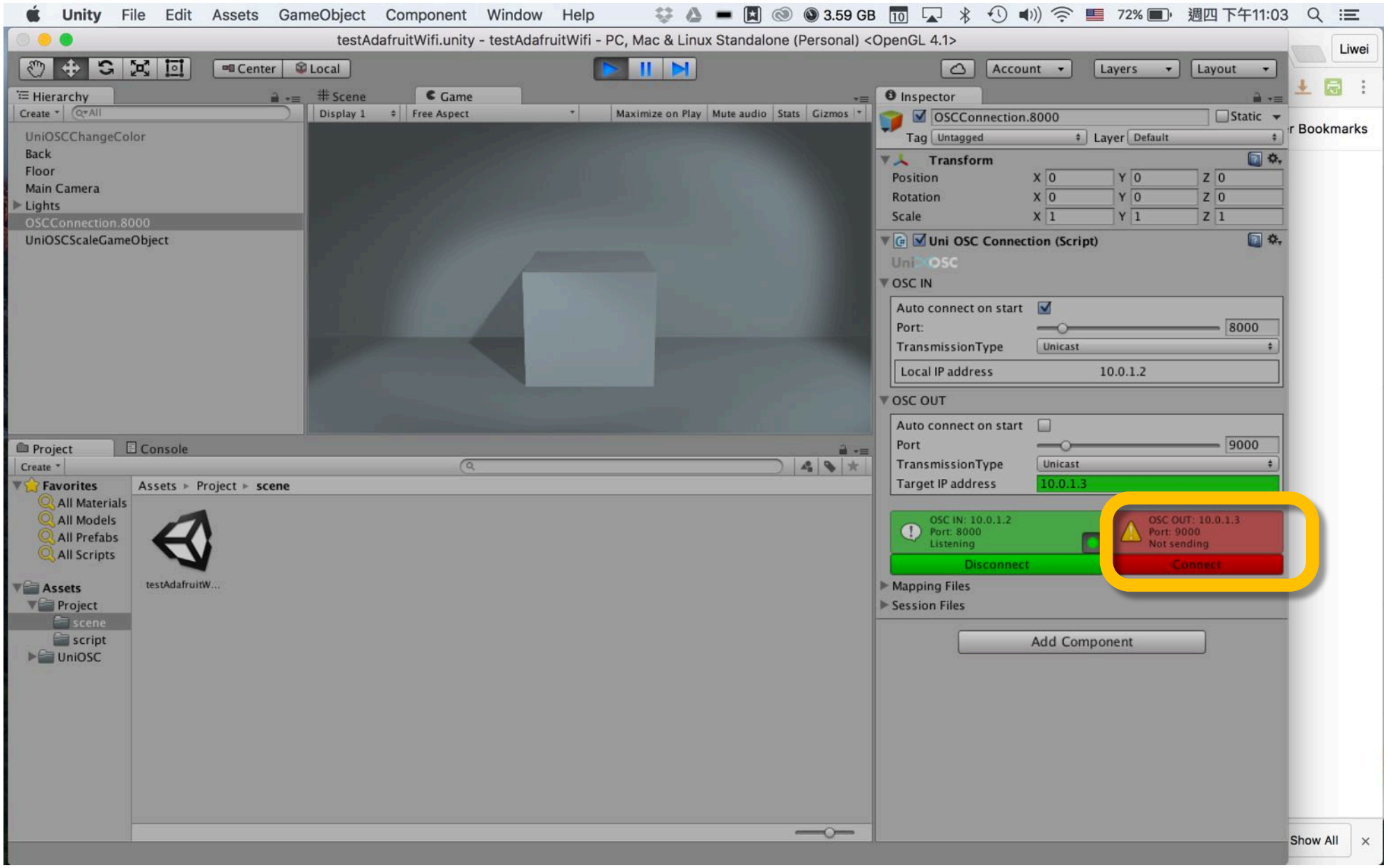
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Hierarchy
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Back
Floor
Main Camera
Lights
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UniOSCScaleGameObject
Scene Game
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Transform
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Rotation X 0 Y 0 Z 0
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Project Console
Create
Favorites
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Liwei
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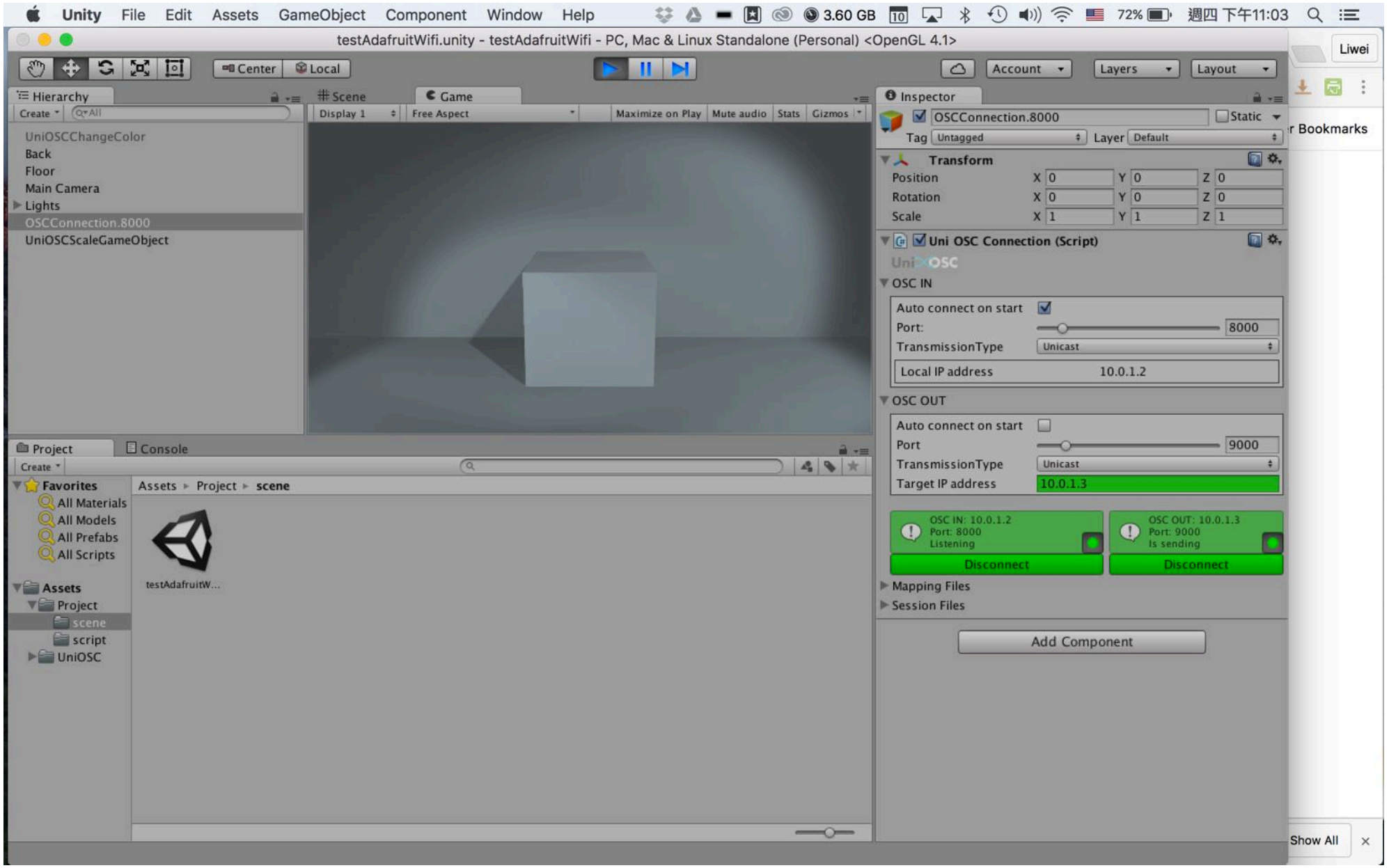
Show All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Session Files
Add Component
Project Console
Create
Favorites
All Materials
All Models
All Prefabs
All Scripts
Assets
Project
scene
script
UniOSC
Assets ▸ Project ▸ scene
testAdafruitW...
Liwei
Bookmarks
Show All