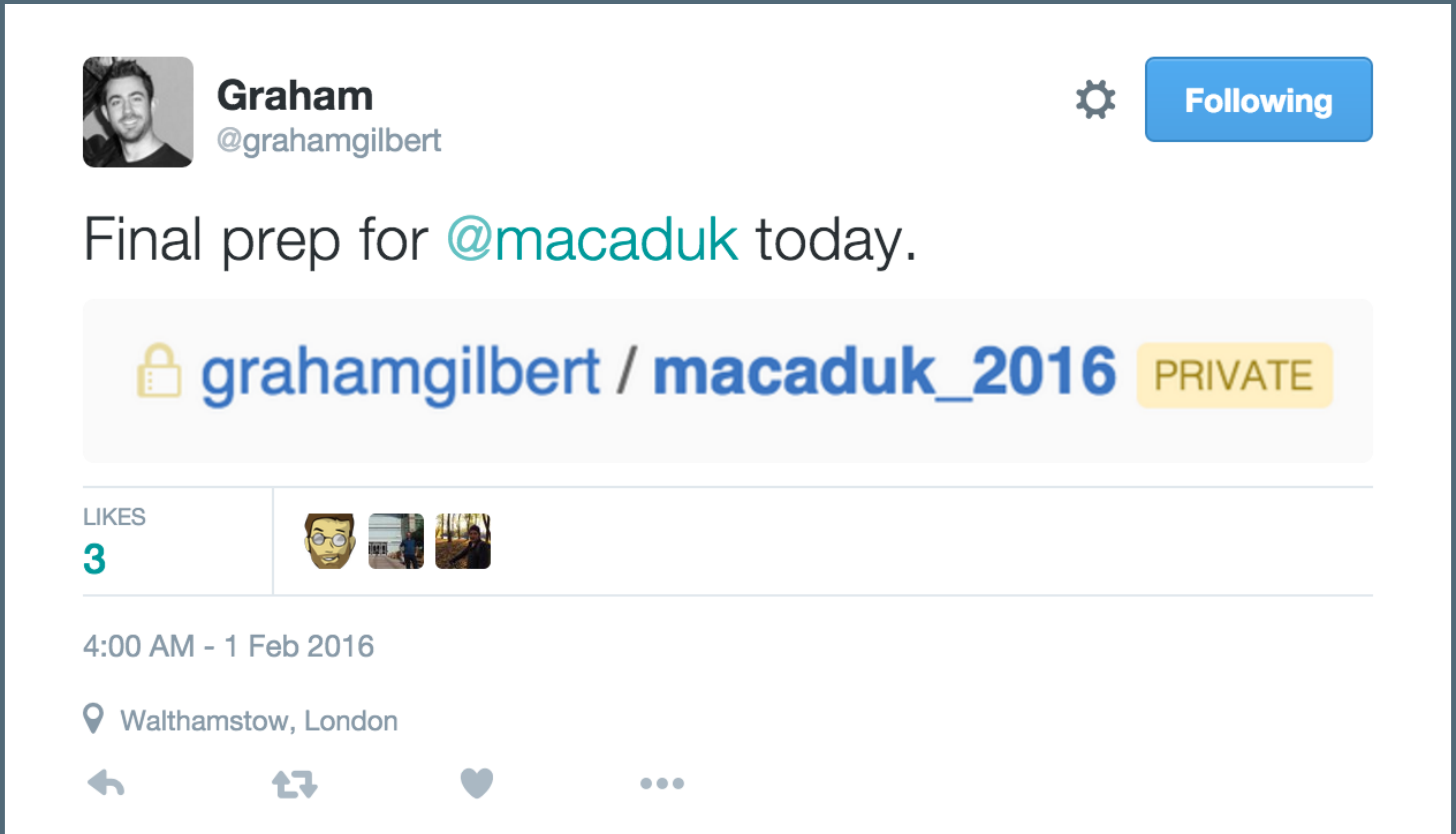
Cocoa Development With Objective-C And Python

James Barclay
R&D Engineer, Duo Security



Graham
@grahamgilbert

Final prep for @macaduk today.

grahamgilbert / macaduk_2016 PRIVATE

LIKES
3

4:00 AM - 1 Feb 2016

Walthamstow, London

I'm quite the slacker, so when I saw this Tweet from Graham I was all like...

(╯°□°)╯︵ ┻━┻

┬━┬ノ(ರ_ರノ)

Source Code

github.com/futureimperfect/macaduk-pyobjc-demo

github.com/futureimperfect/MacADUKDemo

Agenda

1. What is Cocoa?
2. Python Demo
3. Objective-C Demo
4. Wrap up and questions

Cocoa

Cocoa is a wrapper framework which includes Foundation, AppKit, and CoreData

- **Foundation:** Utility classes, primitive objects
- **AppKit:** UI system framework (UIKit in CocoaTouch)
- **CoreData:** Object persistence framework

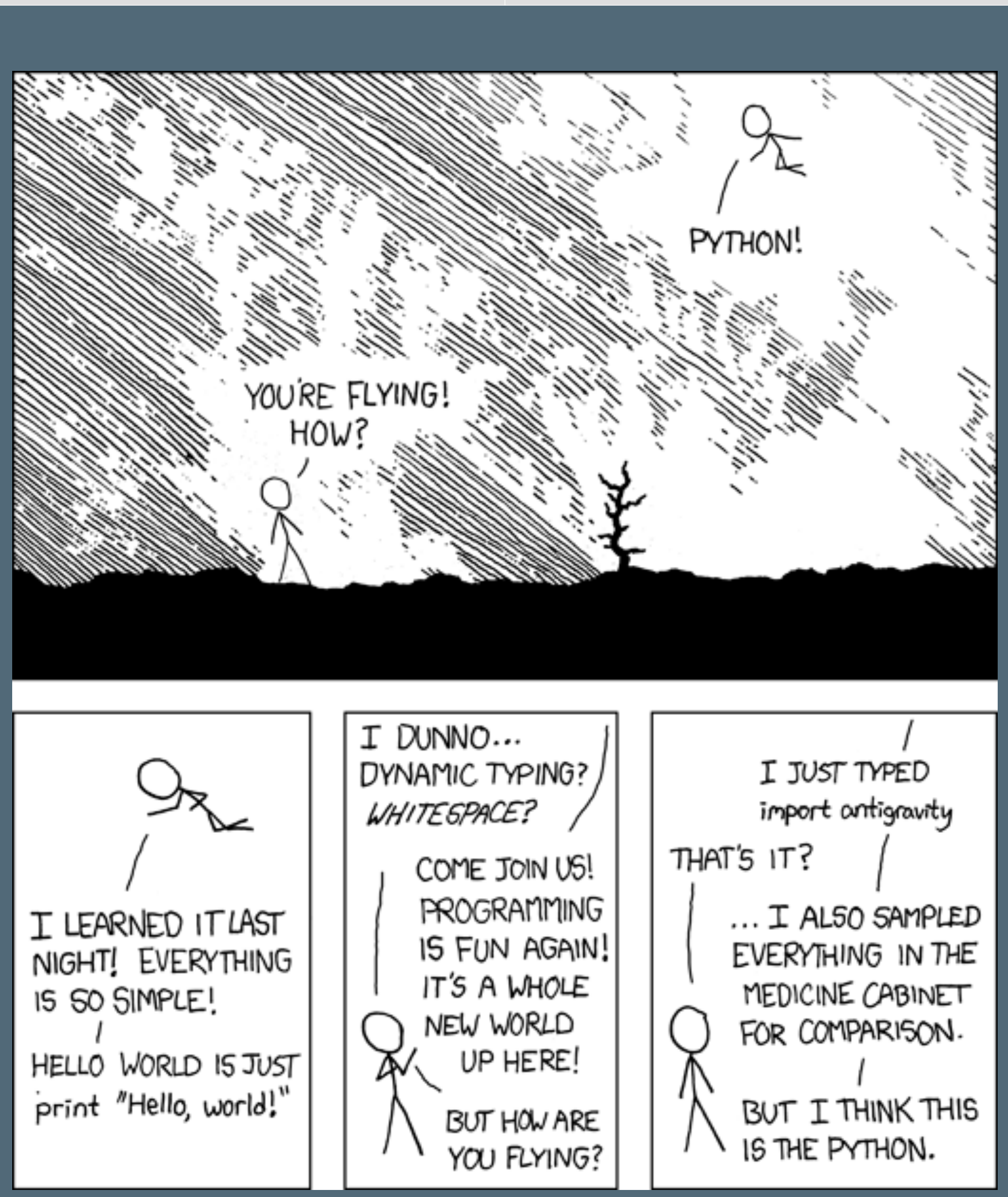
Foundation: Provides things like NSString, NSDictionary, NSArray, NSUserDefaults. It's root class is NSObject.

AppKit: Windows, buttons, text fields, etc.

CoreData: SQLite behind the scenes, but abstracts this from the developer.

Pyobjc

Pros	Cons
Rapid Prototyping	(Lack Of) Community Support
No brackets	lots.of_and_(underscores, ambiguity)


PYTHON!
YOU'RE FLYING! HOW?
I LEARNED IT LAST NIGHT! EVERYTHING IS SO SIMPLE!
HELLO WORLD IS JUST print "Hello, world!"
I DUNNO... DYNAMIC TYPING? WHITESPACE?
COME JOIN US! PROGRAMMING IS FUN AGAIN! IT'S A WHOLE NEW WORLD UP HERE!
BUT HOW ARE YOU FLYING?
I JUST TYPED import antigravity
THAT'S IT?
... I ALSO SAMPLED EVERYTHING IN THE MEDICINE CABINET FOR COMPARISON.
BUT I THINK THIS IS THE PYTHON.

Not that much easier to use despite being Python because you're using the same APIs. In some cases it might even be more awkward than Objective-C because all colons are replaced with underscores, and the arguments are pushed to the right, (between parentheses).

The message dispatch would read [lots of:underscores and:ambiguity]; in Objective-C.

From the official documentation:

"Objective-C objects communicate with each other by sending messages. The syntax for messages is somewhere in-between Python's positional and keyword arguments. Specificlaly, Objective-C message dispatch uses positional arguments, but parts of the message name (called "selector" in Objective-C terminology) are interleaved with the arguments."

"In order to have a lossless and unambiguous translation between Objective-C messages and Python methods, the Python method name equivalent is simply the selector with colons replaced by underscores. Since each colon in an Objective-C selector is a placeholder for an argument, the number of underscores in the PyObjC-ified method name is the number of arguments that should be given."

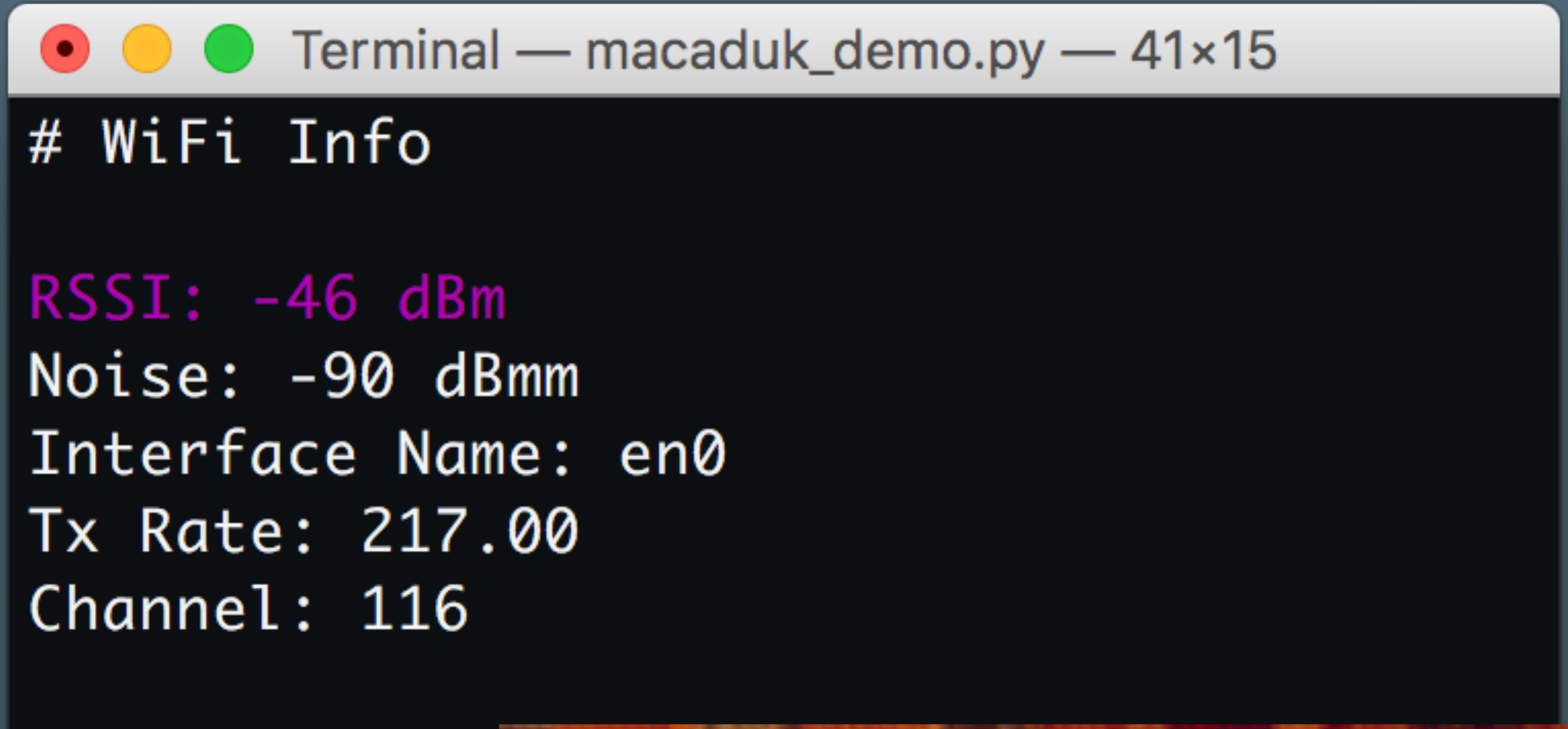
An Objective-C message looks like this:

```
[someObject doSomething:arg1
withSomethingElse:arg2];
```

Objective-C

Pros	Cons
Community Support	Not Swift
Performant	Brackets
Battle Tested	Pointers

What We're Building, Part 1



```
# WiFi Info

RSSI: -46 dBm
Noise: -90 dBmm
Interface Name: en0
Tx Rate: 217.00
Channel: 116
```

Where's the wireless router?
Is that what it is? I thought it was a cookie warmer

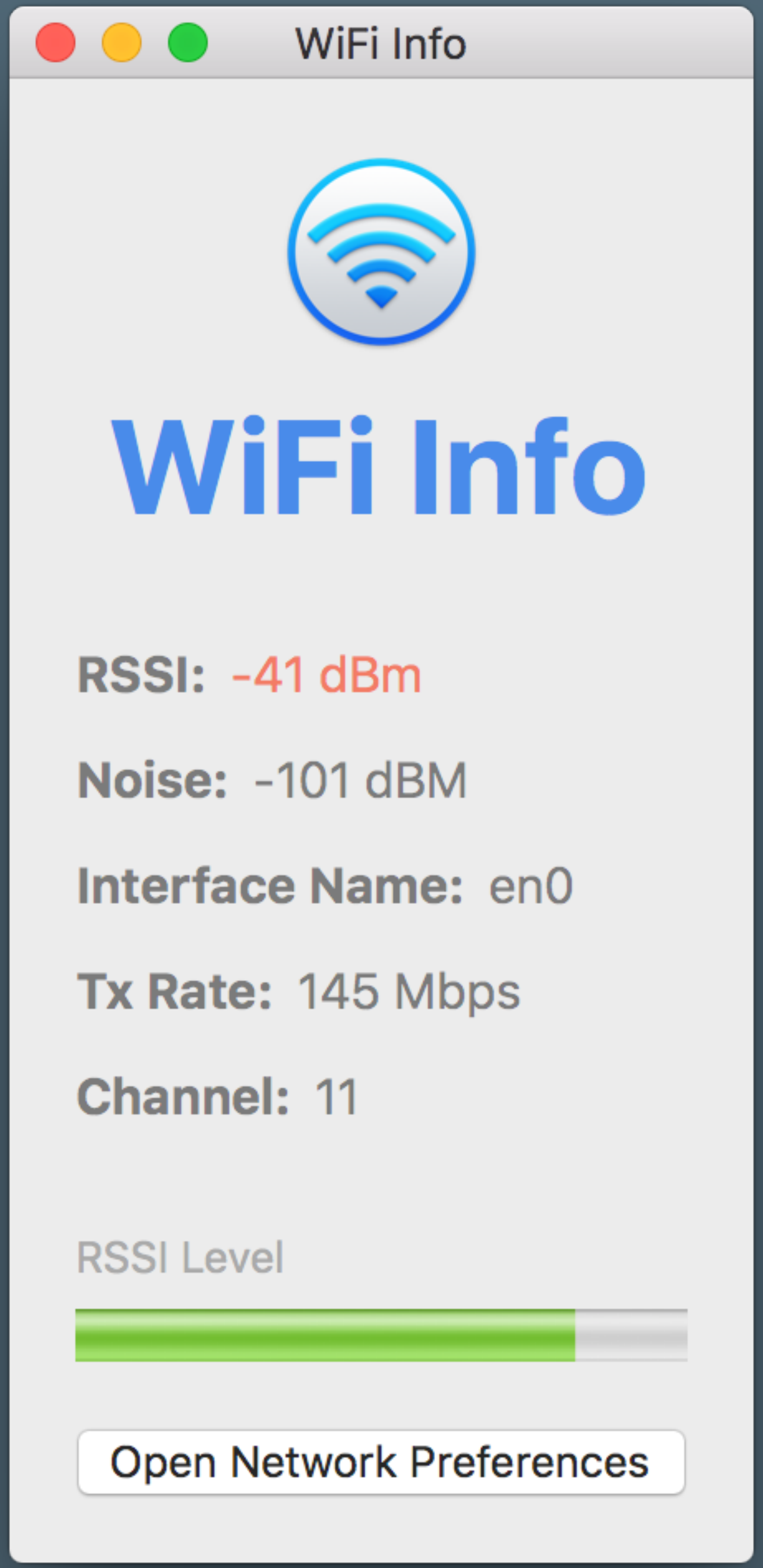
Use 🏡 🍺

Use pip

Use 👁 🐍

```
from Cocoa import CWInterface
interface = CWInterface.interface()
interface_name = interface.interfaceName()
rssi = interface.rssiValue()
noise = interface.noiseMeasurement()
tx_rate = interface.transmitRate()
channel = interface.channel()
do_stuff(interface_name_, rssi, noise,
tx_rate, channel)
```

What We're Building, Part 2



WiFi Info

RSSI: -41 dBm

Noise: -101 dBM

Interface Name: en0

Tx Rate: 145 Mbps

Channel: 11

RSSI Level

We used it to retrieve RSSI, channel, interface name, noise, and Tx Rate

Can also be used to configure the network and set AirPort power, for instance.

What We Covered

How to build a simple Cocoa app

How to use CoreWLAN in Python and Objective-C

How not to use GIFs in a presentation

developer.apple.com

pythonhosted.org/pyobjc