

I beacon, You beacon, We
all beacon for iBeacon

CocoaConf Boston
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KITTEHS INCLUD 4 FREE

Who Am I?

- Co-Founder and Engineering Lead at AppOrchard
- Worked at Apple (at the turn of the century)
- Latest Author on More iOS 6 Development
Don't tell my editor I'm not working on the iOS 7 version today

I HAS AN UNLIMITD SUPPLY OV KATS

iBeacons

- Ranging and Micro-Locations
 - Bluetooth LE beacons (transmitter)
 - Part of Bluetooth 4.0 Standard
- Micro-Location Geofencing
 - Region Monitoring from ~3m to 0.10m
- No limit to number of beacons
 - Vs. limit of 20 regions

More on Bluetooth LE

Check out:

**Bluetooth LE and iOS:
Demystifying the Hype**

Jamie Pinkham

Saturday, 2:30PM

I CAN HAS BLUETOOTH?

CLLocationManager

• “Standard” way of monitoring a region

```
- (void)startMonitoringRegion
{
    CLLocationCoordinate2D coordinate = CLLocationCoordinate2DMake(37.22980, 122.039475);
    _region = [CLCircularRegion alloc] initWithCenter: coordinate
                                             radius: 100.0 // in meters
                                             identifier: kHWGeofenceRegionIdentifier];

    _locationManager = [[CLLocationManager alloc] init];
    _locationManager.delegate = self;
    [_locationManager startMonitoringForRegion:_region];
}
```


How to monitor your iBeacons

Define your CLBeaconRegion

- `(id)initWithProximityUUID:(NSUUID *)uuid identifier:(NSString *)identifier`
- `(id)initWithProximityUUID:(NSUUID *)uuid
 major:(CLBeaconMajorValue)major
 identifier:(NSString *)identifier`
- `(id)initWithProximityUUID:(NSUUID *)uuid
 major:(CLBeaconMajorValue)major
 minor:(CLBeaconMinorValue)minor
 identifier:(NSString *)identifier`

- ProximityUUID is used to define your beacons
- Major value used to define a group of beacons
- Minor value used to identify a specific beacon

iBeacons

CLLocationManager

Tell CLLocationManager to start ranging

```
- (void)startMonitoring
{
    NSUUID *uuid = [NSUUID initWithUUIDString:kHWWGeofenceUUID];
    _region = [[CLBeaconRegion alloc] initWithProximityUUID: uuid
                                              major: majorValue
                                              minor: minorValue
                                              identifier: stringValue];

    _locationManager = [[CLLocationManager alloc] init];
    _locationManager.delegate = self;
    [_locationManager startRangingBeaconsForRegion:_region];
}
```


iBeacons

CLLocationManager

- CLBeaconRegion initializer used will determine the granularity of your beacon monitoring (all, group, specific)
- Call isRangingAvailable class method on CLLocationManager to make sure your device supports iBeacon ranging

How Do I know when I'm near an iBeacon?

CLLocationManagerDelegate methods

- (void)locationManager:(CLLocationManager *)manager
didRangeBeacons:(NSArray *)beacons
inRegion:(CLBeaconRegion *)region
- (void)locationManager:(CLLocationManager *)manager
rangingBeaconsDidFailForRegion:(CLBeaconRegion *)region
withError:(NSError *)error

How close is my iBeacon?

CLBeacon class has a proximity property

```
typedef NS_ENUM(NSInteger, CLProximity) {  
    CLProximityUnknown,  
    CLProximityImmediate,  
    CLProximityNear,  
    CLProximityFar,  
} NS_ENUM_AVAILABLE_IOS(7_0);
```

Exact meaning of each constant depends on signal strength, so keep things relative.

IM IN UR BEACONS, INTERFERIN WIF UR
SIGNAL

Monitoring Regions

- You can use CLLocationManager's startMonitoringRegion on a CLBeaconRegion
- But you are limited to monitoring 20 regions
- Even if you specify your CLBeaconRegion with only a ProximityUUID, it doesn't seem to recognize more than 20 iBeacons

IZ VRY CONFUSIN

DEMO

iBeacon Background Notifications

- CLLocationManager signals region entry and exit
 - Even if you're not monitoring or ranging it!
- via CLLocationManagerDelegate

```
- (void)locationManager:(CLLocationManager *)manager  
    didDetermineState:(CLRegionState)state  
    forRegion:(CLRegion *)region
```

```
typedef NS_ENUM(NSInteger, CLRegionState) {  
    CLRegionStateUnknown,  
    CLRegionStateInside,  
    CLRegionStateOutside  
} NS_ENUM_AVAILABLE_IOS(7_0);
```


iBeacon Background Notifications

```
- (void)locationManager:(CLLocationManager *)manager
    didDetermineState:(CLRegionState)state
    forRegion:(CLRegion *)region
{
    CLBeaconRegion *beaconRegion = (CLBeaconRegion *)region;
    if ([beaconRegion.identifier isEqualToString:BEACON_CATS_ID]) {
        UILocalNotification *notification = [[UILocalNotification alloc] init];
        if (state == CLRegionStateInside) {
            notification.alertBody = @"I HAZ KITTEZ";
        }
        else if (state == CLRegionStateOutside) {
            notification.alertBody = @"OH NOES! DEREZ NO KITTEZ!";
        }
        else {
            return;
        }

        // If the application is in the foreground, it will get a callback to
        // application:didReceiveLocalNotification:.
        // If its not, iOS will display the notification to the user.
        [[UIApplication sharedApplication] presentLocalNotificationNow:notification];
    }
}
```


iBeacon Background Notifications

- In Your AppDelegate
 - Give it a CLLocationManager ivar
 - Make it CLLocationManagerDelegate

THAZ IT

DEMO

Thanks

- <http://github.com/kykim/CocoaConfBoston2013>
- kevin.kim@apporchard.com
- @kykim
- <http://facebook.com/friendsofkittyloft>

I HAS SAD