

Apple gyroscope sample code

Asked 14 years, 5 months ago Modified 10 years, 9 months ago

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I am planning to develop an gyroscope based project like rotating an **opengl texture using gyroscope data**, is there any sample code released from apple about gyroscope or any tutorial about integrating gyroscope with OpenGL... I searched google i didn't find anything except [core motion guide](#) and [event handling guide](#).



Updated: Please let me know if any sample available..

iphone

cocoa-touch

ios4

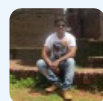
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edited Oct 30, 2010 at 9:16

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asked Jul 14, 2010 at 11:47



Chandan Shetty SP

5,117 ● 6 ● 44 ● 63

I found this clear video tutorial based on the MotionGraphs example from Apple: [youtube.com/watch?v=Xk5cJlhePCI](https://www.youtube.com/watch?v=Xk5cJlhePCI)
– mm24 Jun 13, 2013 at 10:20

4 Answers

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59

To get gyro updates you need to create a motion manager object and optionally (but recommended) a reference attitude object



So in your interface definition you add:



```
CMMotionManager *motionManager;  
CMAAttitude *referenceAttitude;
```



According to the docs you should only create one of these managers per application. I recommend making the motionManager accesible through a singleton but thats some extra work which you might not need to do if you only instantiate your class once.

Then in your init method you should allocate the motion manager object like so;

```
motionManager = [[CMMotionManager alloc] init];  
referenceAttitude = nil;
```

When you want to enable the motion updates you could create an enableMotion method or just call it from the init method. The following will store the initial device attitude and cause the device to continue sampling the gyro and updating its attitude property.

```
-(void) enableMotion{  
    CMDeviceMotion *deviceMotion = motionManager.d
```

```

        CMAttitude *attitude = deviceMotion.attitude;
        referenceAttitude = [attitude retain];
        [motionManager startDeviceMotionUpdates];
    }

```

For virtual reality applications using the gyro and OpenGL is pretty simple. You need to get the current gyro attitude (rotation) and then store it in an OpenGL compatible matrix. The code below retrieves and saves the current device motion.

```

GLfloat rotMatrix[16];

-(void) getDeviceGLRotationMatrix
{
    CMDeviceMotion *deviceMotion = motionManager.deviceMotion;
    CMAttitude *attitude = deviceMotion.attitude;

    if (referenceAttitude != nil) [attitude
multiplyByInverseOfAttitude:referenceAttitude];
    CMRotationMatrix rot=attitude.rotationMatrix;
    rotMatrix[0]=rot.m11; rotMatrix[1]=rot.m21; rotMatrix[3]=0;
    rotMatrix[4]=rot.m12; rotMatrix[5]=rot.m22; rotMatrix[7]=0;
    rotMatrix[8]=rot.m13; rotMatrix[9]=rot.m23; rotMatrix[11]=0;
    rotMatrix[12]=0;      rotMatrix[13]=0;      rotMatrix[15]=1;
}

```

Depending on what you want to do with that you may have to invert it which is very easy. The inverse of a rotation is just its transpose which means swapping the columns and rows. So the above becomes:

```
rotMatrix[0]=rot.m11; rotMatrix[4]=rot.m21; rotMatrix[8]=rot.m31;
rotMatrix[12]=0;
rotMatrix[1]=rot.m12; rotMatrix[5]=rot.m22; rotMatrix[9]=rot.m32;
rotMatrix[13]=0;
rotMatrix[2]=rot.m13; rotMatrix[6]=rot.m23; rotMatrix[10]=rot.m33;
rotMatrix[14]=0;
rotMatrix[3]=0;          rotMatrix[7]=0;          rotMatrix[11]=0;
rotMatrix[15]=1;
```

If you want the yaw, pitch and roll angles then you can access them easily using

```
attitude.yaw
attitude.pitch
attitude.roll
```

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edited Mar 26, 2014 at 20:24

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cooperz

23 ● 3

answered Oct 16, 2010 at 18:19



twerdster

5,007 ● 4 ● 42 ● 72

2 does anyone know after all this code, how i simply grab the x,y,z values of the gyro ?? simply? not with a matrix and stuff ? – [Curnelious](#) Aug 31, 2011 at 14:12

@Rant What do you need to do with the gyro? Do you just want what heading youre facing? – [twerdster](#) Aug 31, 2011 at 16:01

I liked the formatting of the GLfloat matrix on this question: stackoverflow.com/questions/4449565/... GLfloat rotMat[] = { mat.m11, mat.m21, mat.m31, 0, mat.m12, mat.m22,

mat.m32, 0, mat.m13, mat.m23, mat.m33, 0, 0, 0, 0, 1 };
– [drewish](#) Nov 14, 2011 at 4:11

@twerdster Can i know how to use ur concept to find a solution to this question
stackoverflow.com/questions/11106102/... – [sam](#) Jul 22, 2012 at 5:44

deviceMotion is always null, do I miss something ?
– [cyrilchampier](#) Sep 27, 2012 at 17:26



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I have been searching for some sample code as a very simple project. After several days of searching, I finally found it. Here you go you guys!



<http://cs491f10.wordpress.com/2010/10/28/core-motion-gyroscope-example/>



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answered Sep 30, 2011 at 23:26



[SamB](#)

3,185 ● 4 ● 38 ● 41



5

CoreMotion is how to get gyroscope data. Look at CMGyrodata for raw data or use the DeviceMotion attitude and rotation rate properties.



I'd recommend watching the 'Device Motion' WWDC session if you're a registered apple developer.



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answered Jul 14, 2010 at 11:57



[Michael Behan](#)

3,443 ● 2 ● 29 ● 39

no, its under a non disclosure agreement so only paid up devs can get it and the sample code in it cant be reproduced publicly. It will probably be a while before there is a lot of sample gyro code out there, might be worth the \$99 if you have it. – [Michael Behan](#) Jul 14, 2010 at 12:16

- 7 The videos do not require the paid iPhone developer. Use the same apple developer account used to download the sdk. The paid membership **is** required to test on an actual device. Given that you are targeting hardware features, you will have to upgrade. – [falconcreek](#) Jul 14, 2010 at 15:44
-

This said, some videos remain confidential. At the bottom of each one, there is the following line: "These are confidential sessions -- please refrain from streaming, blogging, or taking pictures". Moreover, on the left column of WWDC Videos webpage it says "The content presented within the session videos and slides is Apple Confidential Information and is subject to the Registered Apple Developer Agreement." . Apple want these videos to be available only for developers (free or paid) because they need to agree with their conditions. – [mrcendre](#) May 9, 2013 at 18:56



Here's some of Apple's sample code for the CoreMotion framework:

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http://developer.apple.com/library/ios/#samplecode/pARk/Introduction/Intro.html#//apple_ref/doc/uid/DTS40011083



And the older style UIAccelerometer (but it's got some good sample code for working with OpenGL):



http://developer.apple.com/library/ios/#samplecode/GLGravity/Listings/Classes_GLGravityView_m.html#//apple_ref

[/doc/uid/DTS40007327-Classes_GLGravityView_m-DontLinkElementID_6](#)

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answered Nov 14, 2011 at 4:09

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drewish

9,368 ● 9 ● 41 ● 51
