Sensor Camera by makaka.org: Gyroscope & Accelerometer

Sensor Camera — Unity Asset that uses a Motion Sensor (Gyroscope or Accelerometer) on the player's mobile device to control the game camera from a first-person view (just like in FPS Games).

It doesn't use live video input from the Back/Rear Camera of a Mobile Device like in AR Camera Lite.

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Features of Sensor Camera

Bring the enchanting Power of Mobile Sensors into your amazing Game or App:

- First-Person Camera controlled by Motion Sensors.
- Auto Selection of Sensor: Gyroscope or Accelerometer.
- Auto Rotation: Portrait, Landscape.
- Gyroscope Mode: 3DoF — it can track rotational motion, but not translational.
- Accelerometer Mode (horizontal rotation is limited): tilting the phone to the left or right rotates the camera around the Y-axis.
- Quick Testing in Unity Editor without a Phone through the Right Mouse Button & WASDQE keys.

Package Contains

- Demo with Cubes.
- Menu Scene with Safety Tutorial.
- Loading Screen to switch scenes seamlessly.

Check the Map of Unity Assets to choose the product that best suits your needs.

Gyro vs. Accelerometer

90% of all mobile devices have an accelerometer and video camera, but only 40% have a gyroscope.

If the user's smartphone has a Gyroscope, then it will be used for camera motion first. Otherwise, an Accelerometer will be used because it has less accuracy & stability than a Gyroscope in the case of the First-Person View.

Limitations

Hardware nuances of the gyroscope & accelerometer (asset code does not affect it):

- Different devices have different sensors, and therefore different deviations and drifts.
- Drift is natural for the mobile sensors.

Pro Gamer Tip

Accelerometer & Gyroscope are used in games and apps to control gameplay like in PUBG MOBILE game. Sometimes these sensors can be set up incorrectly for some reason & break the gameplay. If you guess that your drift of gyro or

accelerometer is not normal, then try to calibrate them with system tools provided by your smartphone manufacturer.

Use Cases of Sensor Camera

With adding live video input from the Back/Rear Camera of a Mobile Device, Sensor Camera can be used as a “Pseudo AR Camera” to display 2D or 3D objects as though they were in the real world.

This technique was implemented in AR Camera Lite (docs).

AR Shooter (docs).

AR Basketball (docs).

AR Throw & Score (docs).

AR Throwing (docs).

Tutorial

> *This tutorial is relevant for Sensor Camera 1.0+.*
> *Tutorial for the previous version can be found only in the asset folder.*

Getting Started with Sensor Camera

Folders & Files in the package by default:

- Makaka Games.

Steps

>

If you have any issues with the first launch, then just Reach Support with Invoice Number and Get Help.

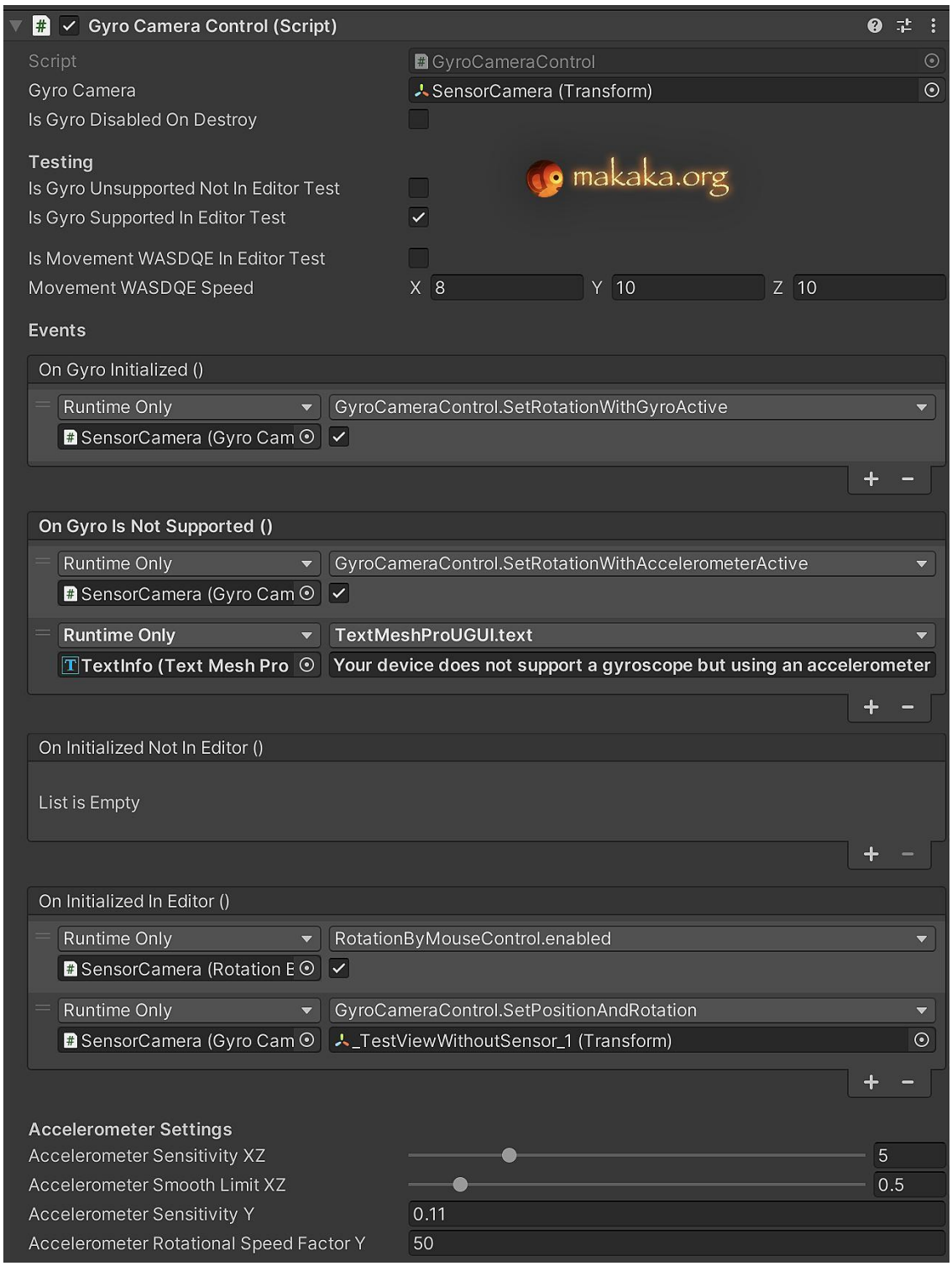
If you read this tutorial from PDF, first check the latest docs online to get actual information.

1. Create New Unity Project with Unity 2021.3.21 & “3D” Template.
2. File > Build Settings > iOS or Android > Switch Platform.
3. Download and import Sensor Camera into Unity.
4. Window > TextMeshPro > Import TMP Essential Resources.
5. Reopen Unity Project.
6. Open Scene: Makaka Games > Sensor Camera > Scenes > Demo.
7. File > Build Settings > Add Scenes to build:
   - ⭐ Menu,
   - ⭐ LoadScreen,
   - ⭐ Demo.
8. Test in the Unity Editor or Build for Mobile.

Useful Article: How to Test iOS App without Developer Account?

Script Manual

Sensor Camera prefab & GyroCameraControl.cs



SensorCamera prefab has a main camera control script: GyroCameraControl.cs.

Optional Flag: Is Gyro Disabled On Destroy

If it's 'true' then Gyro's "Y" Rotation is reset on Scene Closing or Reloading. Useful if you need to Control the Start Rotation of the Camera when Restart.

Optional Flag: Is Gyro Unsupported Not In Editor Test

If it's 'true' then Accelerometer will be used on Gyro supported devices.

Optional Event: On Gyro Initialized

The case when the smartphone has the gyroscope.

Optional Event: On Gyro Is Not Supported

The case when the smartphone has not the gyroscope. By default, you will see a screen message: “Your device does not support gyroscope...”.

Optional Event: On Initialized in Editor

The case when Play Mode in Unity Editor.

Optional Event: On Initialized Not in Editor

The case when Runtime on Device.

Testing

There are 2 ways of testing without building an app:

- ⭐ Testing with Unity Remote & Smartphone connected to Computer.
- ⭐ Testing without a Smartphone.

Testing without the Smartphone

You can test camera rotation quickly in Unity Editor without Smartphone through the Right Mouse Button.

Also, you can use WASDQE keys to move the camera.

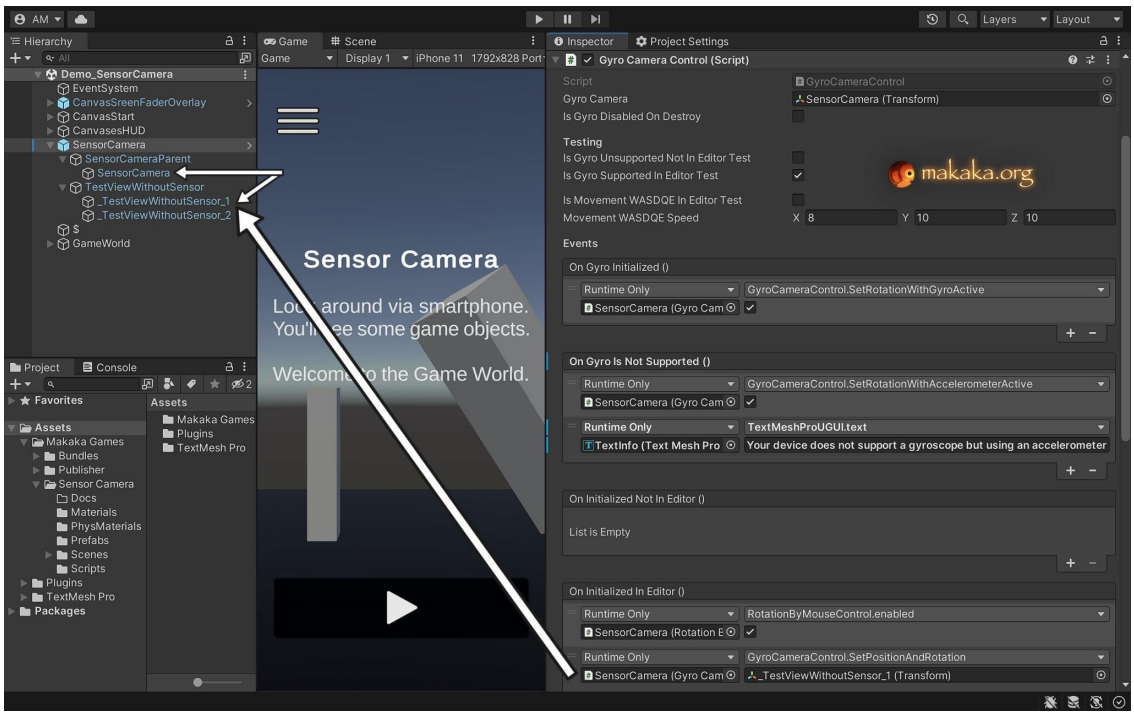
> *Use Fullscreen of Game View in Unity Editor while testing to get a seamless experience.*

Accelerometer Instead of Gyro

You can forcibly test Game Version with **accelerometer** on **gyro** supported devices:
Hierarchy View > *SensorCamera* > *GyroCameraControl* > *Is Gyro Unsupported Not In Editor Test* > *Check*, then Build And Run.

Predefined Data

Also, you can start the scene with Predefined Data of position & rotation. It's a convenient way to frequently testing the same positions and rotations of the camera: "GyroCamera" Game Object.



So, you can save these data with custom Transform components on Game Objects as shown on the screenshot: as children of "TestViewWithoutSensor" Game Object.

These transform components are parameters for the function called SetPositionAndRotation (Transform transform) which is executed on game start when "OnInitializedInEditor" event is called.

Use Case

I used this testing method when developing AR Basketball (docs). I needed to periodically test Normal Ball (with touching of Ring) & Clear Ball (without touching of Ring). Since throw "Clear Ball" is a hard task, I saved 2 different camera Transform components to change them when needed:

1. Right Above the Ring;
2. A Few Meters from the Ring.

Testing Time was decreased well because I didn't need to take the mobile phone every time in my hands after changes in the game logic & move the phone manually. Instead of it, I had predefined data.

Tested with Devices

Mobiles:

- iOS on iPhone 6, 8, XS Max.
- Android on Samsung Galaxy A71.

Tablets:

- UWP on Microsoft Surface Pro 5, Acer Switch 5.

If you need WebGL support, please use a 3rd party asset called Gyroscope Accelerometer WebGL.

Known issues

Unity AR bugs: Gyroscope

Hardware Issue: INPUT.GYRO.ATTITUDE returns zero values on Motorola Moto G4 and G5.

Support

First, read the latest docs online.
If it didn't help, get the support.

Changelog

Check the current version of Sensor Camera on Asset Store.
The latest versions will be added as soon as possible.

1.0:

Improvements:

- Unity 2021.3.21.