TrackIMU

User Start Guide

Step 1 (First-time user): Install driver

TrackIMU's main processor is an Arduino-compatible chip, Atmega 32U4. The driver it needs is the same driver for Arduino boards, and can be downloaded from www.arduino.cc. You can also download the fully packaged version from www.movsens.com.

Step 2: Install the software

After step 1, your TrackIMU can now communicate to your PC. In order to get the best head tracking performance in your games, you need additional 2 software. One is "TrackIMU User Interface" made by MovSens, which helps you calibrate your device and validate the tracking performance intuitively. Download TrackIMU 1.0 (www.movsens.com) and install it. The other one is "OpenTrack", which is an open source software that communicates tracking data to your game. For some games, you do not need "open track", then you will setup within the game settings.

Step 3: Calibrate compass of TrackIMU and star tracking

TrackIMU is enabled by a 9-DOF IMU (Inertial measurement unit), including 3-axis gyroscope, 3-axis accelerometer and 3-axis compass. Through signal processing, an accurate and drift-free head rotation tracking can be achieved. The performance of being "accurate and drift-free" relies on compass calibration. Don't panic, "TrackIMU User Interface" software provides a convenient and user-friendly way to do that. Follow the steps below:

a. Open the software, and you will see a graphic interface;
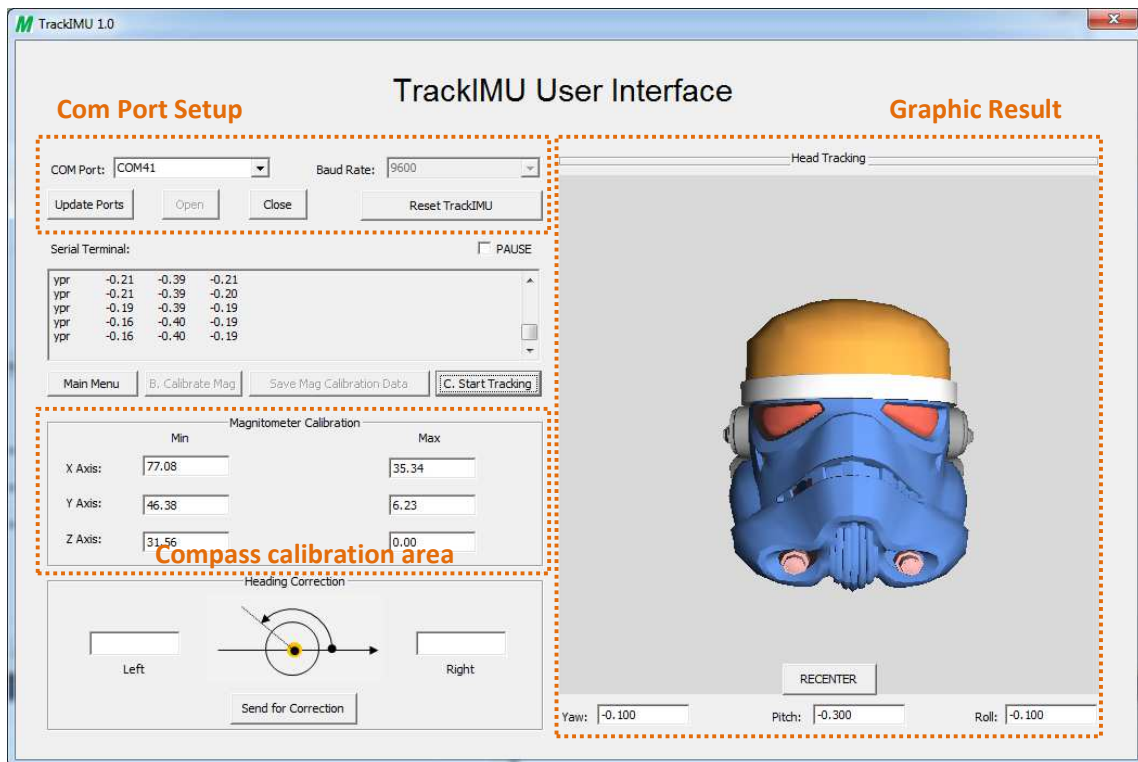
b. Select the COM port of your TrackIMU, baud rate (115200), and click "Open" button. Now you can see data streaming in the textbox and the helmet turns to certain position;

c. Click "Main Menu" button and the options is displayed in the textbox;

d. Click "B. Calibrate Mag" button; (*You do not need to know technical details, but pay attention to the Compass calibration box, where minimum and maximum magnetic field data along 3 axis are recorded*);

f. Rotate TrackIMU along each axis until you see values in the boxes no longer change;

g. Click "Save Mag Calibration Data" button to save the compass calibration data to the on-board memory in TrackIMU;

h. The information box will display main menu again. At this moment, you can click "C. Start Tracking" button to start head tracking;

You can click "RECENTER" button to set the center or "zero" position of your head, if necessary. Now, you can rotate you head left and right, up and down, or along any vertical axis to see how the cartoon helmet moves with your head.
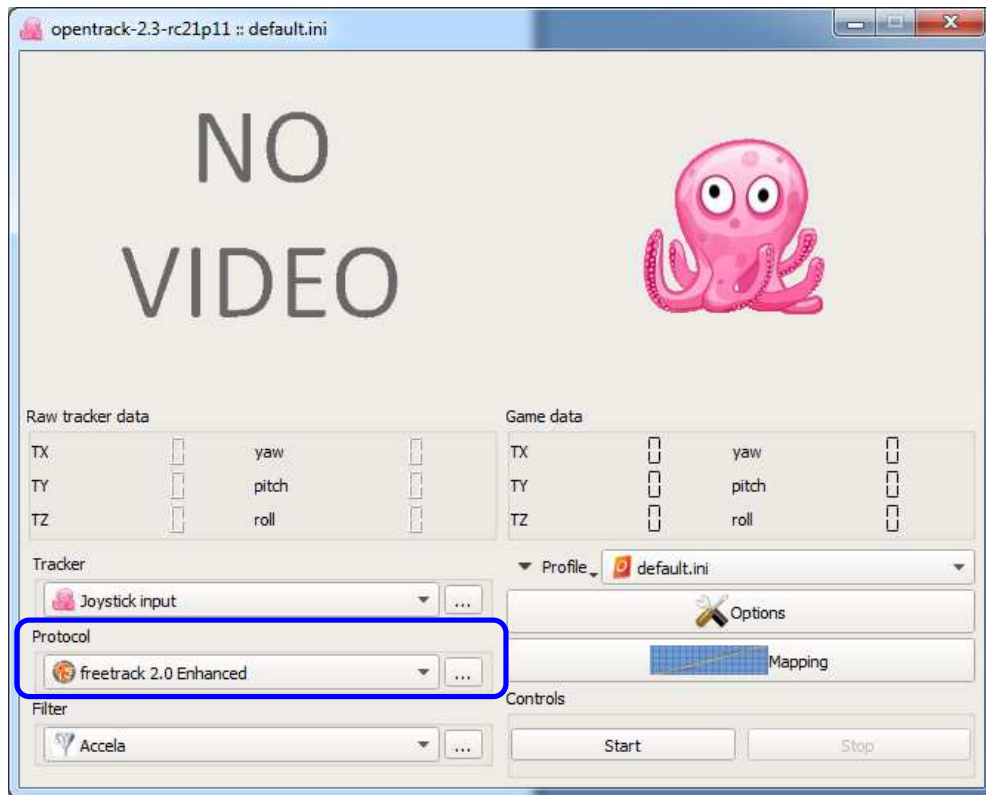
## Step 4: Open "opentrack" software
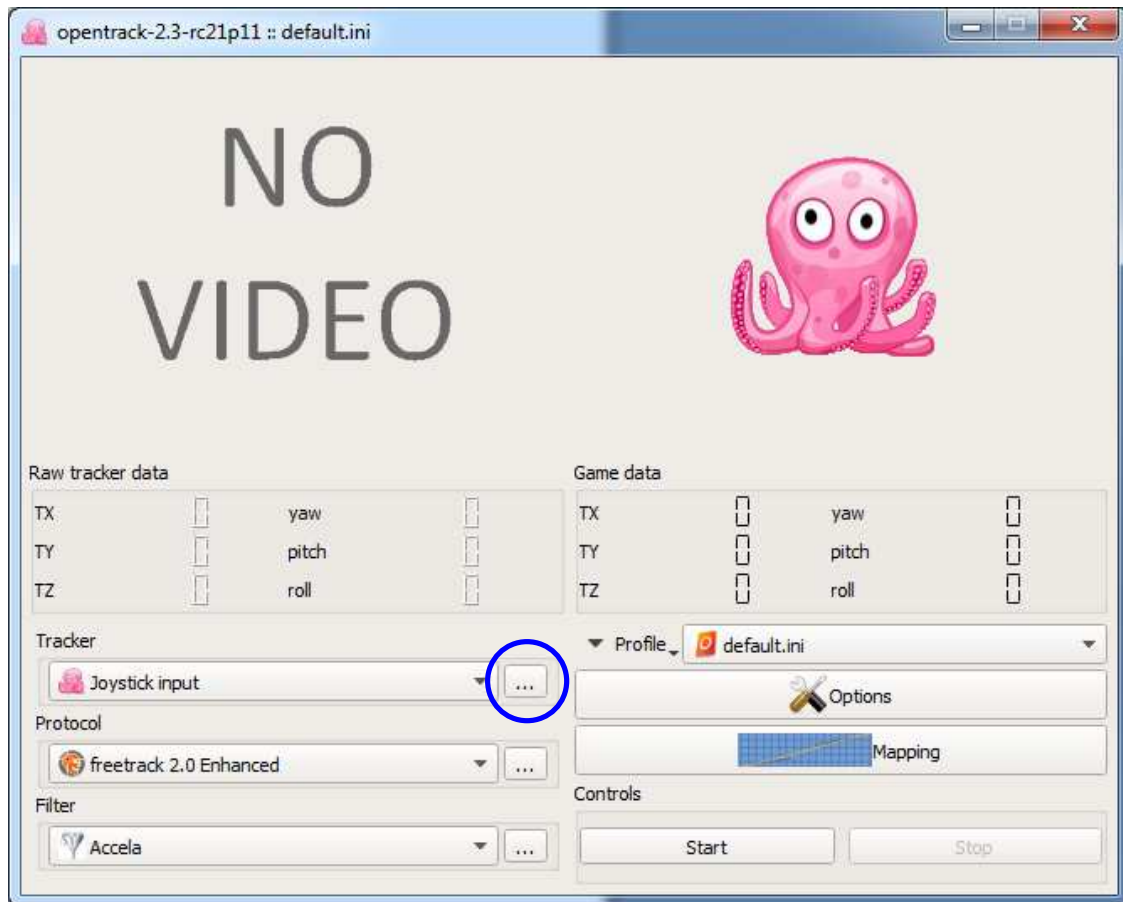
a. in the "Tracker" combo box, select "Joystick input", and click the button next to it, you will open a new window;
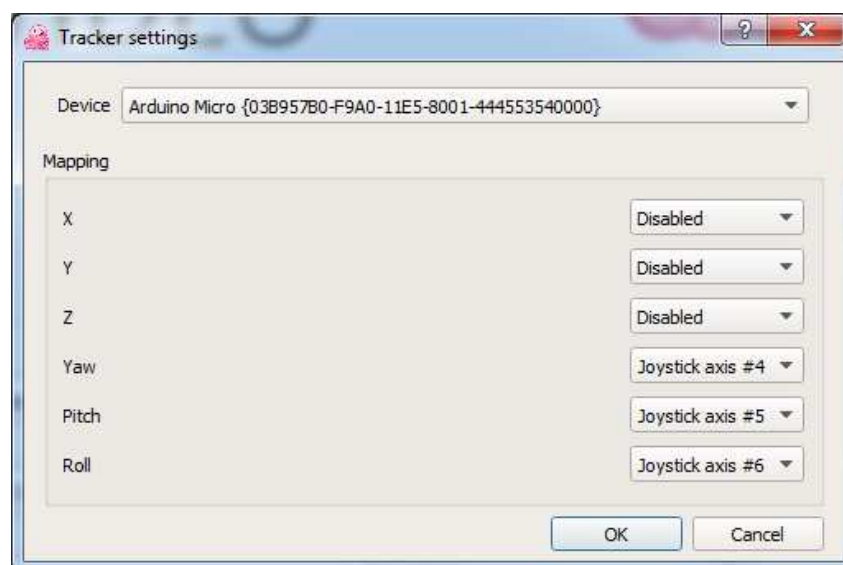
b. in Device combo box, select "Arduino Micro", and set the mapping as shown in the figure. Then, click OK to return to opentrack;


c. In Protocol area, select "freetrack 2.0 Enhanced", and click the button next to it, and select either one or both. Generally, it will just work. Unless you have other hardware that causes conflict.
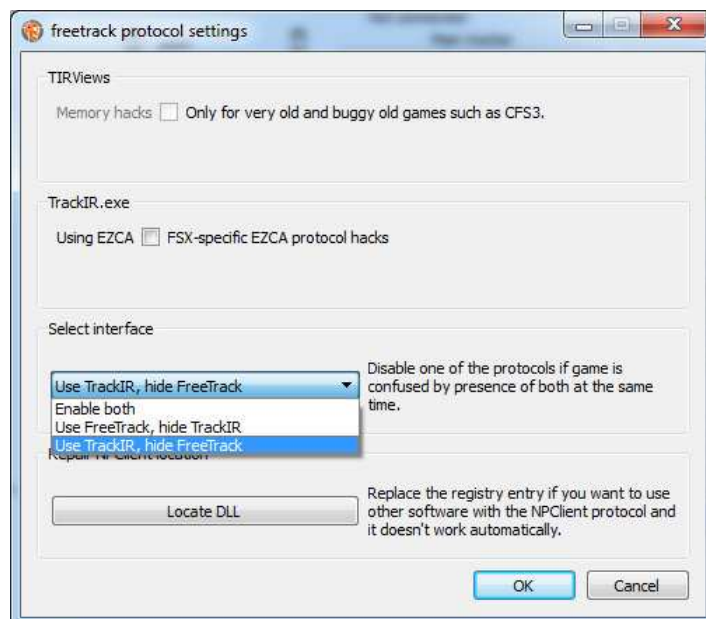
d. Click the "Mapping" button, as highlighted in the figure to set up the sensitivity you like. This step would be based on individual games and your own preference.
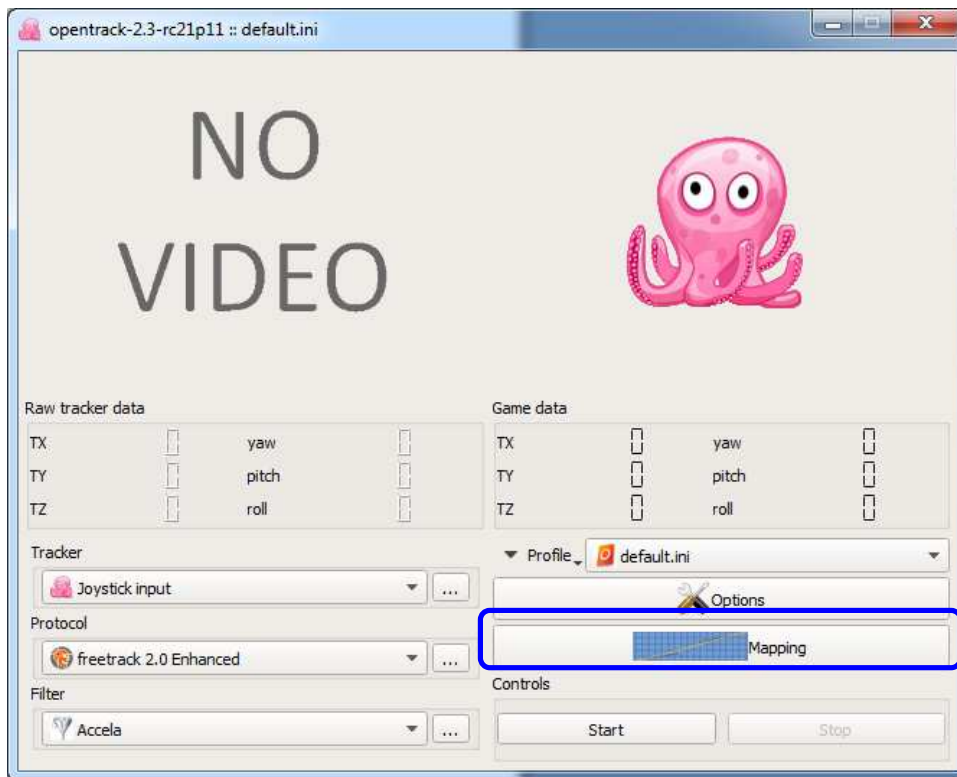
You may do some experiment with your game to see what sensitivity works best for you, and you can always tweak them as you like. Repeat the setting for "Yaw", "Pitch" and "Roll". No need for X, Y, Z, TrackIMU has not provided distance tracking yet.
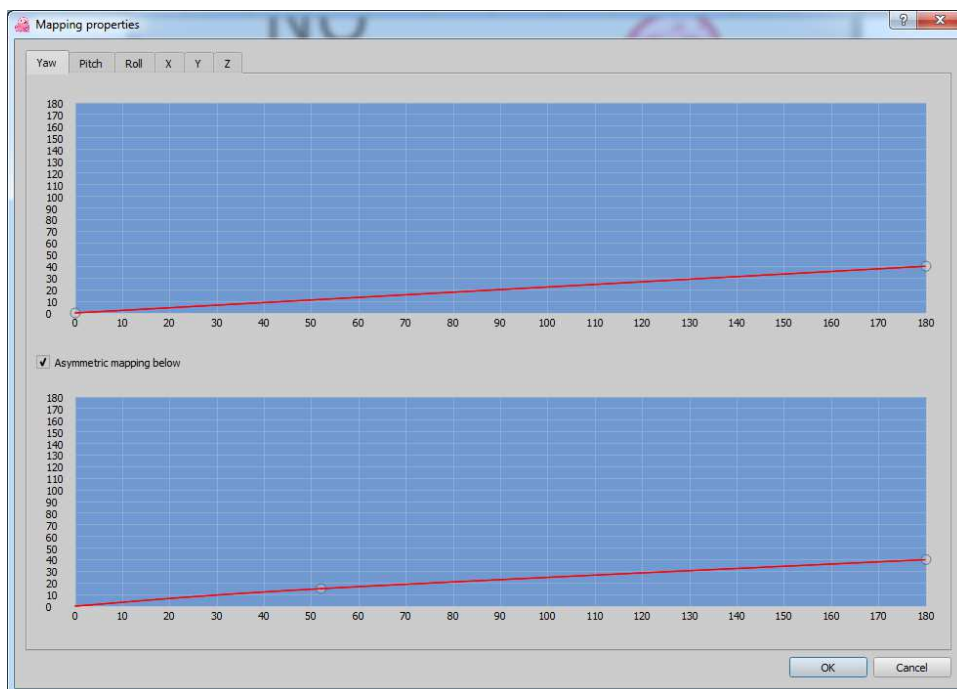
e. Keep "OpenTrack" running, and start your game. TrackIMU integrates compass for drift correction. So you can play your game as long as you want and no need to recenter it. It is powered by your computer, so no battery needed. Thus, you can play your game without any inconvenient interrupt. Enjoy TrackIMU and your game.