

## Assignment #3 – Miniproject: Motion Sensing

**Write a short description on why would certain axis of sensors are responsible to certain motion/gestures.**

The accelerometer is the sensor measuring the movements (left/right and up/down) and while the gyroscope measures the angular movement (clockwise/counterclockwise).

For both the accelerometer and the gyroscope, when moving towards the direction specified by the sensor for an axis, the values read will be positive. When moving towards the opposite direction, the values read will be negative.

However, when moving up, down, left or right, we observe two opposite peaks (positive and then negative, or negative and then positive, depending on the direction). This can be explained by how an accelerometer works. As its name suggests, an accelerometer measures the acceleration (change in velocity). The first peak measured describes a positive change in velocity: the acceleration is rising until we reach the maximum speed. The peak in the opposite direction describes a negative change in velocity: the acceleration is decreasing, as we stop moving the sensor, until we reach a null speed. The two peaks correspond to the the maximum acceleration and then the maximum deceleration. On the other side, a gyroscope measures a speed so it won't measure "two peaks", and the peak observed corresponds to the maximum speed.