Using the Wheel Encoders, the Accelerometer and the Gyro on the Romi

Access to the wheel encoders, the accelerometer and the gyro is via the Drivetrain object. Each of the Commands or Command Groups we’ve written so far all receive a reference to the Drivetrain as a parameter. Thus, all of the following calls will dereference that object. Note that none of these calls take any arguments.

IMPORTANT NOTE: In the WPI documentation and code, the front of the robot is the end of the robot at which the Raspberry Pi’s USB ports appear. However, in order to mount the camera compactly, the camera is actually aimed out what WPI considers the **back** of the robot. In the following, Left and Right refer to sides in the WPI frame of reference. Similarly +/- X directions are also WPI-centric.

ALSO TO NOTE: The IMU X, Y and Z axes are NOT the same as the camera’s axes. X points along the length of the robot. Y points across the robot. Z points vertically upwards.

The following specs may also be useful:

* Wheel diameter: 70mm
* Trackwidth: 141mm
* Encoder counts per wheel revolution: 1440. Encoders count up when the Romi moves forward (as defined by WPI). You do not need to negate 1 wheels counter.

|  |  |  |
| --- | --- | --- |
| **Member Function** | **Action** | **Returns** |
| void resetEncoders() | Resets wheel encoder values to zero. | n/a |
| int getLeftEncoderCount() | Encoder value for left wheel. | Number of encoder counts (pos or neg). |
| int getEncoderCount() | Encoder value for right wheel. | Number of encoder counts (pos or neg). |
| double getLeftDistanceInch() | Distance traveled by left wheel | Distance in inches (pos or neg). |
| double getRightDistanceInch() | Distance traveled by right wheel | Distance in inches (pos or neg). |
| double getAverageDistanceInch() | Average of left and right wheels | Distance in inches (pos or neg). |
| double getAccelX() | Acceleration of the Romi along the X-axis | Value in Gs |
| double getAccelY() | Acceleration of the Romi along the Y-axis | Value in Gs |
| double getAccelZ() | Acceleration of the Romi along the Z-axis | Value in Gs |
| Void resetGyro() | Resets all 3 gyro angles to zero. | n/a |
| double getGyroAngleX() | Current gyro angle around the X axis | Value in degrees |
| double getGyroAngleY() | Current gyro angle around the Y axis | Value in degrees |
| double getGyroAngleZ() | Current gyro angle around the Z axis | Value in degrees |