Balance a Two Wheeled Robot

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1 Lejos Ev3 Gyro Boy

The building instructions that I chose to do was Gyro Boy. I thought that because it had the stand that it would be easier to test on. The Balanc3r looked a little too top heavy and I thought that would make it way harder to balance whereas the Gyro Boy looks like most of it's weight is centrally distributed. I chose to use Java as the language that I would use to complete this assignment. I heard that there were a lot more resources available for working with Ev3 in java. What I decided to do was to attach the Hitechnic Gyroscopic Sensor where the touch sensor would be on the Gyro Boy and then use those values. Those two sensors are very noisy together and it makes balancing the robot very difficult so I decided to use the speed of the motor and motor position to calculate how fast the robot is moving in order to get a better estimate. There are both types of sensor fusion in my project however the angle from the main Ev3 Gyroscope has the most weight in determining the speed and direction of determining the wheel. I use a software estimator for determining the angular velocity from the angle, and when fusing those sensors that sensor has the most weight. I would say it more unstable than stable and it did take a couple of tries to film the video because it is really unpredictable but it meets the requirements of balancing for 8 seconds.

2 Sources

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