

The Knack

FRC 2010

Presentation

- ▶ We tried to stick to the KISS principle. (“keep it simple and straightforward” also know as “keep it simple, stupid!”)
 - ▶ Apart from the default schematic we made a sensor to measure the distance. (We could also measure the speed with it, but not very accurately.)
- 

- ▶ The sensor was made from a phototransistor and an infrared led. The light emitted by the led was reflected by the wheel. The phototransistor transformed the reflected light into current. We painted half of the wheel white so we would notice a current fluctuation when the wheel was spinning.

- ▶ Because the car didn't have a constant speed in the learning lap (motorVoltage is constant, but the car is slowed down in the curves), the centrifugal acceleration has different values in the same type of curve based on the speed of the car.
 - ▶ We made 8 categories of curves based on the maximum centrifugal acceleration the car would reach.
- 

- ▶ We tried to maintain a stable but high centrifugal acceleration through the curves, in race mode.
 - ▶ In the learning lap, we mapped the categories of curves and the distances where they began and ended.
 - ▶ In race mode, we used the distance to change the motorVoltage according to the element type we were in.
- 

- ▶ We used the crossovers to synchronize with the track.
 - ▶ In race mode, if the car entered a curve too fast it could detect fake crossovers.
 - ▶ To deal with this, we memorized the distances where the 2 crossovers were located and we would synchronize only if the distance was approximately the same.
- 

- ▶ In straight lines, in race mode, the car would accelerate in the first part (motorVoltage = 6000) and then it would brake. The braking distance was proportional to the straight line distance. The “strength” of the braking depended on what type of curve was next.