On Track Development Methodology

Test Setup: Our tests were conducted on three different tracks, a straight track (ST), the official curve track (OT) and the official curve track with starting positions (OTSP). The tests were conducted inside a UCLA dormitory in the sunset village structure. The lighting was kept at a consistent level throughout the testing by keeping all doors closed and the blinds closed (thereby removing natural light), with just the florescent overhead light on. We used five sets of six AA 1.5 Volt batteries in the project car in the course of this experiment (the battery set information is included in the report) making sure to change all batteries in a set at the same time and to not reuse batteries from old sets. The ambient temperature throughout the tests was kept at approximately room temperature (293 Kelvin).

How the tests were conducted: Our first five tests were conducted on the straight track in order to test the cars capability to navigate straight with no/minimal steering adjustments. Following that, the track navigation development was done on the OT track with the final 80 runs being conducted on the OTSP track when it was made available to us. Consequently, the majority of runs have a starting position of “0” in the data indicating that they began at the center of the track (not one of the four official starting positions). The first thirty runs included an algorithm in the loop designed to find the track from far away on white paper if it got lost, these runs have a value for Delay (Lost) as that was a parameter in that algorithm. After discussing the project goals further with our TA we decided to remove the “lost” algorithm and focus on getting our car to complete the track as quickly as possible, hence all subsequent runs have an X in that column indicating that they were run without that algorithm in their main loop.