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Subject Hartford Synopsis

Well, Hartford was a lot like Pittsburgh. We didn't do terribly well (51 of 62), but had the opportunity to work the bugs out and gain some valuable practice. We'll do a lot better at Drexel next week as a result.

By-the-by, Hartford is a very tough competition. Many of the teams are old and well-established. Many of the competing High Schools are specialist Technology/Science High Schools. This is not Pittsburgh. By the way, we placed relatively lower in Pittsburgh last year than Hartford.

What worked:

- The lift/catapult appears to work well - both mechanically and in terms of control. Push-buttons to select between the (8) operating modes work well and are easy to use (although it would be better if we held the trackball more securely).
- The ultrasonic sonar trackball sensor works well in practice - the two front mini-bumpers do not interfere with this.
- Polycarbonate tabs added to the top lift bar prevent the trackball from falling out backwards when we go the "armed" mode (thanks, Siri) and should make it possible to remove trackballs from the overpass in "hurdle" mode at lower speeds than before. Extending the 1-1/2" cylinders in "armed" also improves the trackball security in this mode.
- Our rear bumper acts effectively as a wheelie-bar.
- Our weight (after replacing the rear "C" channel kitbot bumper with a 1" angle) was 119.7 lb. We've got an unused pair of light-weighted mid-frame spacers which will allow an additional 0.45 lb reduction if we need this @ Drexel.
- Dewbot is one sturdy robot. We proved this by driving him repeatedly into walls at high speed.

Ouch! See driver training and hybrid mode remarks below. Also a couple falls. Dewbot took this abuse very well.

- We avoided penalties. This is a positive point on I want to make regarding driver training.

What didn't:

- The drive-train. We lost drive-train function completely in (4) matches. Can't score if you can't move (well, actually we did, but that's another story). Problem appears to be (mostly) due to frame slippage which allows the drive-chain to loosen. My bad. Sorry. We'll secure this for Drexel so that it cannot slip.
- Balance - we're back-heavy when the lift is at "hurdle" position or higher ("Armed", "Hurdle", "PTP" & "Place"). Balance is fine when the lift is in lower positions ("Capture", "Catch", "Possess" & "Park"). Plan to relocate the battery to low, front, center to distribute the weight better.
- Driver Training - we need practice, that's all. We're getting better.
- Hybrid Mode - Hard to tell, but as far as I can tell, we just never received an IR command from the ROBOCOACH. Always ended up crashing hard into a wall. We often (but not always) crossed one line (4 points). Once crossed two (8 points). Scoring is probabilistic. Trajectory ballistic. At least we didn't crash into any alliance partners.

What we are doing about it:

- Securing the frame so that the drive-train cannot shift it and loosen the drive-chain - thereby avoiding observed drive-train problems.
- Relocating the battery to forward-low-center to improve CG w/ elevated lift.
- Looking at using gyro and encoder to resurrect autonomous mode (in lieu of IR-controlled hybrid)

What broke:

- The winch encoder. Seized. Maybe associated with a crash. We changed this out without missing a match.
- An 8" stroke air cylinder on the fork. Definitely associated with a crash. Also changed out. We need to order a replacement (spare).

By the way, we need to start in reverse in hybrid/autonomous mode. This is because our control panel faces aft and needs to be visible at the start of the match.

There were a large number of plane-crossing penalties. We avoided contributing to these.

We used the remote ROBOCOACH station.

We talked about changing to front-wheel drive. The problem with this is that if we hang up on the overpass (which we and many other bots did at Hartford), we would lose our ability to back ourselves off if we had front-wheel drive. We therefore concurred that we cannot give up driven rear wheels.

We also discussed moving the motors and gearboxes to the front to redistribute weight (J. Stumpo suggestion). This is a good idea and we will explore, but weight and space restrictions might make this impractical. This change would also take a long time to accomplish (thereby reducing driving practice opportunity - which we desperately need). So we will see.

A special slice of humble pie was served to me: My old High School (Southold High School from the east-end of Long Island) was at Hartford. Team 870. Southold is a really small High School. My graduating class (class of '74) had about 110 students. The current classes are smaller: 80 - 90 students. The school building was built in 1923. Local economy is based on farming, fishing and tourism. A significant retiree population guarantees that no increase in school budget will ever pass. There are no local technology companies of any significance (anyone obtaining a technical degree is basically obliged to move out of the area to find work). Southold is not a Science/Technology High School. Team 870 finished in fourth place at Hartford. They definitely have their act together. I feel like an amateur.

We stuck around and helped break down the playing field. We'll get a section of the competition carpet for future practice in return.

Pictures attached with more to follow.

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