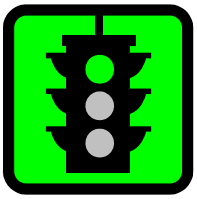
S-PAVe
EECS149
Spring 2009

**Self-Parking Autonomous Vehicles (S-PAVe)**
**Milestone Report**
April 01, 2009

**Hardware / Mechanics**:



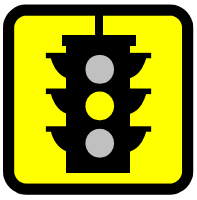
We are on-track with the hardware portion of the project. We have received all the materials that we believe we need for creating a vehicle with enough sensors to interact with the environment. If more (non-NXT/Mindstorms) sensors are needed, we have researched to know what is needed to interface with the NXT using I2C.

Two separate car chassis have been developed independently under these design constraints below. We believe we have addressed most of them in both designs, but in our current iteration phase, we are improving the gear transfer for stronger steering at greater precision

**Table 1: Design Considerations for Car Chassis**

| | |
|---|---|
| Four wheels, scale dimensions | ✓ |
| Weight distribution (front needs some weight so wheels don't slip while turning) | ✓ |
| Front wheels turn AND Pivot point as direct over wheel as possible (rather than have the front axel pivot about its midpoint) | ✓ |
| Gear ratios for precision and robustness | ✓ |

**Software**:



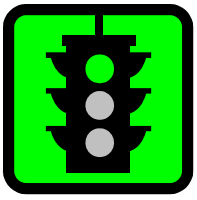
We are behind where we planned to be with the software portion of this project, but this is not along the critical path of the project, so no deadlines need to be changed. Development of the high-level system/software development has begun in parallel with the hardware (car chassis) is under development.

We are evaluating possible software development environments considering the aspects described below.

**Table 2: Considerations for Software Development Environment**

| | |
|---|---|
| Cost/availability | ✓ |
| Ease of programming | ✓ |
| Data structures and algorithms | ✓ |
| Overall complexity/robustness | ✓ |

**Environment**:



The sensors we are currently using cannot be calibrated, so no calibration is necessary (as described in our Work Breakdown Structure). These sensors do have a finite precision, however. We have begun testing the sensors in order to determine any limitations we have in modeling the parking environment.