Team Members: Eric Johnson, Randy Hamburger
Week 2 Report – January 22, 2007

Accomplishments:
Eric:
1. Met with Professor Henderson to review specific items for DARPA project.
3. Obtained and began familiarization of Image Processing Toolbox for Matlab.
4. Met with Randy to plan further project development.

Randy:
1. Met with Professor Henderson to review specific items for DARPA project.
2. Contacted Brandon Nichols to discuss project and modules. Brandon is currently out of the country but suggested working on detector and lane recognition.
3. Contacted Josh Quit per the suggestion of Prof. Henderson to locate U of U DARPA data. Josh didn’t have the information and suggested contacting Brandon Nichols.
4. Met with Eric to plan further project development.

Both:
Potential Computer Vision Modules Identified for DARPA Project
a. Checkpoint marker recognition.
   i. 15 cm markers may or may not be visible to mark checkpoints.

b. Lane Marker Recognition.
   i. Do not need to interpret, only stay within.
   ii. May not be present in all segments of the competition – e.g. unpaved roads without lane markers.

c. Road Boundary Recognition.
   i. Curbs and ditches for unpaved regions.

d. Parking Spot Recognition.

e. Stop Line Recognition.
   i. Stop Signs will NOT be present at each stop point, but stop lines will.
   ii. Need to be able to stop the front bumper within one meter of the stop line.

   i. Need to maintain specified following distances as a function of speed.
   ii. Need to avoid collisions at all times. Even if a vehicle acts erratically. In parking lots, and in other unstructured areas.
   iii. Need to obey intersection precedence.
   iv. Need to appropriately queue in line of stopped vehicles.
   v. Need to distinguish between a disabled/stationary car and one that is simply stopped in traffic.
vi. Need to recognize moving vehicles and estimate their speeds for purposes of merging and making turns.

vii. Assess when it is safe to pass other vehicles, possibly requiring a lane change into oncoming traffic.

Questions
   a. No specifics are given on the checkpoint marker. The mark may or may not be visible to the vehicle. Then how do we see or sense it?
   b. Will lines be present for parking space designation or will the vehicles have to rely on GPS waypoints alone?
   c. No details are given on the color or the size of the stop lines. Where can this information be found?

Selected Project Modules:
   1. Lane Marker Recognition
   2. Stop Line Recognition
   3. Checkpoint Recognition (If checkpoint markers are present and a reliable source of input)

To Do’s:
   1. Email Professor Henderson with a list of the previously mentioned questions.
   2. Set up a meeting with Brandon Nichols.
   5. Begin researching literature for relevant techniques.