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GReEN Team
Customer Meeting
Tuesday October 8, 2013

Continental Customer Q&A and Notes

Many of our questions ended up being out of the scope of our project. There was another team asking questions at the same time, so we did end up with a good feedback and a better understanding of the project. After meeting with the customer, we learned that the system is meant to be implemented with a fully-automated vehicle (driver has no controls).

Customer Q&A

Is the fail safe manually selected or is it supposed to be triggered by a set of conditions?
Brakes not working should be factored into the algorithm. If the brakes are not working, we should automatically trigger the fail safe.

Does the sensor have a range to how far ahead it can detect pedestrians?
Based only on scenario.

What happens in a scenario with more than one pedestrian?
Do not consider.

How will erratic pedestrian movement, such as changes in direction and speed affect the system?
Do not consider.

Should the system be able to notify the driver when a possible accident with a pedestrian is about to occur? How?
Do not consider. Fully automated car. No alerts except for failing brakes in failsafe mode.

What should the system do if the driver over-steers or under-steers in order to avoid collision?
Do not consider. Car is fully automated, but if not, the driver would override the system.

Could you please explain how the pedestrian sensors work in terms of when a signal is sent to start braking to avoid collision (in meters)?
As long as the pedestrian is not hit, the system was successful.

How does the system take the non-ideal driving conditions (nighttime, icy roads, etc.) into account?
Not in scope of project, only need situation conditions.

What other automated systems will be competing for braking control?
Stability control, traction control, but we don't need to worry about that.

Notes

- The vehicle is fully responsible for driving. It is meant to be as good as or better than a human driver.
- The system has 2 goals. Don't hit pedestrians. Optimize productivity.
- The system has 2 states. Normal (steady velocity) and failsafe.
- *Does the sensor have certain range?* There is a field of view - system interfaces based on numbers listed in the project description.
- If car stops because pedestrian doesn't move, don't count "loss of time". Eliminate those scenarios.
- If there was mud on the lens, the system would warn the driver.
- If the system works well on dry roads, we can save a lot of lives. 6,000 pedestrians are killed each year.
- *How does the system recognize pedestrians (not pop cans or boxes)?* A stereo camera can create a disparity map to find the distance of an identified object. It then runs various filters and checks to see if it is a pedestrian (shape, color, texture, face detection, etc.) and determines a pedestrian confidence percentage. Our system will just treat is as either PEDESTRIAN or NO PEDESTRIAN. Yes or no, on or off.
- Failsafe requirement - functioning but reduced response time.
    - Should adjust algorithm knowing we have to stop sooner.
    - Have system recognize we need to change parameters when something on brake system isn't working.
    - Car will be driving slower, but a light will be shown saying "service needed".
- Driver - system interaction. Fully automated car. No notification to driver of potential accident since the car is in full control. The only notification would be "we are activating fallback mode, travel will take longer. Service soon."
- When pedestrian walks out of it's path, the car will resume speed. It re-accelerates to reduce loss of productivity. There is a re-acceleration limit (.25) which is still pretty quick!