Meeting with Henrik from Volvo DriveMe

Henrik's personal email: henrik.o.lind@gmail.com

Problems
The sensors have noise that we need to overcome, reflection from the ground and walls and the lack
of reflections from natural material (IR).
        We need more sensors.
Volvo uses a Laser sensor in front for low speed collision detect and a camera and Ultrasonic
sensors for mapping and detection.
  Range need to be estimated using all of these tools together.
        If the car loses the map the user can be prompted to take over, while the
  car keep doing the right thing for a little while or it can stop the car.

CAUTION: GPS might be time consuming.

Things we need
Sensor:
                Ultrasonic: At least 3, one in front, for telling the system where the person is.
        Camera and Ultrasonic sensors are a good combination.
                Magnetic sensor as a compass
        We need to make sure we are not going over tram tracks it will disrupt,
        another noise to overcome.
                Gyro-sensor
        Used for changes in wheel spins.
Other:
        ASP366: Cant find source maybe I miss heard him - Testing and connection Arduino. It can
be used as a hot spot for controlling the Smart Car. Very cheap.
        360 object detection, on road detection, localization and mapping so maybe a rotating laser
sensor might work.

Tips about our approach

We should the Arduino for steering.
        Raspberry pi for the bigger thing, recognition. Quad-Core is important for enviromental
mapping, so RPi3b is the way to go.

Look at the Arduino Radar.

Ways of describing the surroundings:
  -Rotating the Ultrasonic for detection.
  -more complex: Occupancy grid mapping: fills in the information in small squares
    every time the sensors have detected something in the square.
    With a steady output of information. May work in the Arduino.

- Simulation Location And Mapping: SLAM maybe needs a RPi3 or a PC.

Care about the voltage of the sensors: resistors will be needed. R=U/I.

Use case examples:
    Autonomous breaking

1 or 2 work on the vision: we can send the plan to Henrik.

Write an application and download and compare how well we can get our location.
   Log the phone GPS.
    We can use multiple phones to get a better relative position
    Lot of filtering, long term adjustment of the path.
    The relative speed from the GPS is good, while the position is not.
    Angle is also something that we can use.

      We can call Henrik for parts.

Tools and Frameworks

[BLYNK](#)
[MIT creator](#)
ASP366: Cant find source maybe I miss heard him.