Robocars make ready for urban challenge

Stanford University is one of 36 teams aiming to qualify for the DARPA Urban Challenge, a simulated military supply mission conducted by driverless vehicles through an artificial cityscape. The robot cars must complete a 100km course in six hours, obeying traffic laws and avoiding other vehicles and obstacles

JUNIOR: Modified 2006 VW Passat Wagon

Roof-mounted laser Range-finding system spins 15 times per second to give 360° view of surroundings

GPS receivers

Camera
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Drive-by-wire: Servers in rear pass control signals to car based on data from sensors, GPS and inertial navigation system



Engine: Four-cylinder turbo diesel. High-current alternator powers all equipment

Rear-view lasers

Cover area behind car

Low-speed lasers: Two side- and one forward-facing look for nearby objects and determine road markings from brightness differences on ground

Front scanners
In place of fog lights,
detect distant objects
ahead of car

SENSOR RANGE All around Up to 65m Front Up to 200m Short-range Position of car estimated to within 5cm



Artificial intelligence: Software identifies cars, signs and people and tells car how to proceed