



Stanford Racing Team Unveils 2005 DARPA Grand Challenge Entry *Historic Stanford Artificial Intelligence Lab Plays Key Role*

STANFORD, CA, May 18, 2005 – The Stanford Racing Team, consisting of Stanford Engineering faculty and students supported by industry leaders, today publicly revealed Stanley. Stanley is an intelligent and rugged autonomous vehicle that could bring the future of driving closer by making history in artificial intelligence and robotics.

Stanley seeks to win the Defense Advanced Project Research Agency (DARPA) 2005 Grand Challenge, a rough, 175-mile race through the desert Southwest in October. The cars will have 10 hours to complete a surprise, obstacle-filled course without any human help.

“This is the first endurance race in history where the machine will have to make all the decisions,” says computer science Associate Professor Sebastian Thrun, who leads the Stanford Racing Team, and is supported by MDV-Mohr Davidow Ventures, Volkswagen of America Electronics Research Laboratory (ERL), Android and others. “It will not be enough for a car to have a strong body. It will also need a strong mind.”

Meet Stanley

The body is a 2004 Volkswagen Touareg, a rugged, high-mileage sport utility vehicle expertly modified in collaboration with a team of engineers, led by Sven Strohband at the Volkswagen of America Electronics Research Laboratory in Palo Alto. Meanwhile programmers and other engineers in the renowned Stanford Artificial Intelligence Lab (SAIL), which Thrun directs, have been building the brain – a combination of carefully chosen sensors, a rack-mounted cluster of six Pentium M motherboards in the trunk, and meticulously tested software that is outright groundbreaking.

The software has to be that good. No car survived more than eight miles of last year’s challenge (Stanford didn’t participate), but the poor outcome did not inspire DARPA to make this year’s course easier. In fact, this year’s course will be harder, DARPA will litter the course with difficult obstacles.

As Stanley drives it always knows where it is and where it is going thanks to its high-resolution global positioning system receiver. To drive safely at race-winning speeds, Stanley will constantly gather information about what’s ahead from radar, stereo and monocular vision, and an array of four lasers. As it scans the terrain before it, Stanley can shrewdly determine an optimal route that avoids all obstacles and unsafe terrain, while still advancing toward the finish line.



Drivers not required.
Grand Challenge 2005



ANDROID





History and the future

Stanford has a long and well-respected tradition of innovation in robotics and artificial intelligence. SAIL began in 1963 under the direction of Professor Emeritus John McCarthy, who coined the term artificial intelligence 50 years ago. Since then, Stanford engineers have been making major contributions to both fields.

With that heritage as their inspiration, the Stanford Racing Team is working to make its own contributions to the future. A vehicle smart enough to drive itself could have important benefits for every driver. About 43,000 people in the U.S. die each year in car crashes, often because of human error. Research into driver assistance systems has already yielded innovations such as antilock brakes.

Benefits in the near future could include ideas such as a warning when a car is starting to swerve out of a lane. Much farther in the future, self-driving cars could free commuters to be more productive or could guarantee that every New Years Eve reveler has a designated driver.

While Thrun and his team are putting all their energies into winning the challenge, the chance to advance the state of research and applications has its own reward, he says: “Regardless of the outcome in October, we win with the valuable knowledge we’re deriving on our way to this historic competition.”

On the Web

www.stanfordracing.org

www.darpa.mil/grandchallenge

www.mdv.com

www.vwerl.com

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