

MAY THE BEST AUTOPILOT WIN

What a difference 18 months and an extra \$1 million in prize money make. After a colossal failure in 2004, its inaugural year, Darpa's autonomous vehicle competition is back – and even more ambitious than before. For the second Grand Challenge, on October 8, the Feds are offering \$2 million to the AUV that crosses the Mojave Desert first and in less than 10 hours. The returning favorite: Red Team, led by William "Red" Whittaker, a robotics expert at Carnegie Mellon. Last year, their crimson Humvee, Sandstorm, made it the farthest – 7.4 miles of the 142-mile course. Now they've added a second contender, the H1ghlander, a modded 1999 H1 Hummer. Red Team's backed by tech heavyweights like Boeing and Intel, and both entrants are armed with laser scanners, stereo cameras, and long-range radar systems. (Sandstorm managed to drive itself 200 miles without crashing during a trial run.) But the race isn't over till it's over, and Red Team faces some serious competition. – **Greta Lorge**



THE FAVORITES

Red Team's Sandstorm (left) and H1ghlander (below).



Top Challengers



THE N00B

Autonomous Vehicle System's Flying Fox
VEHICLE: 1987 military diesel Humvee
BACKERS: Michigan State, UC San Diego
TRACK RECORD: The team watched from the sidelines last year, gathering data. Started building the Fox a year ago.
EDGE: An adaptive vision system for obstacle avoidance, based on the human brain, the product of more than 20 years of research by John Weng of Michigan State.



THE ROCK STAR

Axion Racing's Spirit
VEHICLE: 1994 Jeep Grand Cherokee
BACKERS: Team leader Bill Kehaly
TRACK RECORD: The GPS failed in '04, and the vehicle did doughnuts in the start area (now it's got a Northrop Grumman inertial navigation system).
EDGE: A "reactive sensory enclosure" lets sensors see through glare, rain, and mud. What's with the buxom blondes? They're, um, team muses.



THE RENEGADE

Terra Engineering's TerraHawk
VEHICLE: A six-wheel diesel-electric vehicle built from scratch in 2003.
BACKERS: Northrop Grumman, SICK, NavCom Technology
TRACK RECORD: An air compressor and motor went up in smoke last year, forcing the team to withdraw.
EDGE: Active suspension on each axle lets it overcome navigation snafus that would land other bots belly-up.



THE UNDERDOG

Palos Verdes High School's Road Warriors' Doom Buggy
VEHICLE: 2003 Acura MDX
BACKERS: Boeing, Northrop Grumman, Goodyear, Acura
TRACK RECORD: Last year, a software glitch caused the vehicle to crash into a cement barrier.
EDGE: The "ground mouse," a dead-reckoning positioning system that gives the MDX's location within 3 centimeters.

Read Between the Lanes

The hot new accessory for your pimped-out lowrider – an \$80 set of digital TireTagz. Originally designed to cram a final bit of advertising onto professional race cars, this "in-wheel messaging system" displays text or images loaded onto it from a PC. As the tires roll, an infrared sensor clocks their rotational speed, then 15 LEDs on the arm flicker in time to spell out personal mantras on your rims. – **Brian Lam**

