

Wright-Patterson Skywriter

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AFRL and ION sponsor Annual Mini-Urban Challenge

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4/20/2011 - **WRIGHT-PATTERSON AIR FORCE BASE, Ohio** -- Navigating the sprawling metropolis, your vehicle makes a right at the intersection, travels down the road (mindful of the speed limit) and pulls into the second parking spot on the left. You look at your watch and realize you only have 30 minutes to travel to the city's tallest skyscraper on the opposite end of town. You don't worry, because your vehicle is completing this trip without a driver.

This past weekend, 78 high school students comprising 13 teams from around Ohio and one from Minnesota, came together at Wright State University to compete in the Ohio Regional Mini-Urban Challenge - attempting to navigate their robotic cars through a miniature city and claim top honors.

"This competition does an incredible job of introducing high school students across the country to real-life applications of computer science, engineering, and math," said Dr. Mikel Miller, Chief Scientist, AFRL Munitions Directorate. "We must continue to support programs like the Mini-Urban Challenge to ensure high school students pursue scientific and technical degrees. In a few years, these young men and women will play a critical role in research and development in both government and industry."

The competition was inspired by DARPA's Urban Challenge, which asked teams to build an autonomous full-size vehicle capable of driving in real traffic and performing complex, real-time road maneuvers. The Mini-Urban Challenge, now in its third year and hosting Regional Competitions in Washington D.C., Florida, Louisiana, Los Angeles, and Ohio, is spear-headed by The Institute of Navigation and the Air Force Research Laboratory.

The Mini-Urban Challenge requires high school students, working in teams of three to five, to design and operate a robotic unmanned car built from a LEGO® Mindstorms NXT kit - capable of autonomously navigating through a 10'x30' city made entirely of LEGOs®.

Each team is assigned random locations throughout the city and given one hour to plan routes and program their vehicle to identify and park in the designated lots. At the end of the hour, the team moves to the city where they spend the next sixty minutes working to complete the challenge - making fixes on the fly while ensuring their car obeys the traffic laws.

"Seventy percent of the team's overall score is based on the car's ability to navigate the course. The other thirty percent is based on the team's presentation skills," said Capt Caroline New, Deputy, Asian Pacific C4 Analysis Flight, National Air and Space Intelligence Center, and co-chair of the event. "Just like in real life, it's not enough to have a great idea; you must be able to sell it."

What do the students think? "I enjoyed the opportunity to actually design and build something" stated a junior from Wester Reserve Academy, Ohio. "This was the first time I'd ever used calculus outside the classroom -

which was great. I actually started laughing while doing it because I was so happy." A senior from Westfall High School in Ohio, said "I enjoyed the problem-solving as a team in real-time for physical challenge."

The other co-chair for the competition, Capt. Casey Miller, a student attending the Air Force Institute of Technology, School of Engineering and Management, explained "students write the software, program the sensors and engineer their own vehicles. By design the competition is meant to be challenging and fun." Capt Miller emphasized, "It is important for us, as a nation, to ensure our kids stay interested in science, technology, engineering and math. The free kits, provided by the sponsors, allow any interested high school to compete and are easy enough for nearly anyone to pick-up and use right away. However, it takes strong mentorship and careful application to successfully complete the challenge and compete at the national level."

Only the top two teams from each region qualify for the national event, which the Smithsonian in DC, is hosting on the May 21, at the Lemelson Center for the Study of Invention and Innovation at the National Museum of American History. The top three teams at the national will win cash prizes, and each member of the winning team also taking home a Garmin Nuvi.

The winner of this year's Ohio Regional Mini-Urban Challenge was Turbulent Typhoon from Westerville North High School. Second place went to Aurora Robotics from Aurora High School, and third to the Pioneers of Western Reserve Academy, all from Ohio.

The Mini-Urban Challenge and is designed to inspire and ignite interest in the areas of science, technology, engineering, and mathematics, while fostering a sense of teamwork between academic advisors, team mentors from government and industry, and the participating students.

"As the Mini-Urban Challenge continues to grow, we believe it is quickly becoming the United State's premier high-school robotics competition" stated Capt Miller. "We are reaching kids and schools who had never considered competing in a robotics competition - and we provide them the resources they need to succeed today and in the future."