

## A Positive Outlook

# METAL REBEL



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**APPLIED  
ANALYSIS**

Imagine robots wheeling down the halls of Las Vegas's largest hotels, delivering room service and turning down beds. Imagine a real-life Tomorrowland that showcases the cutting-edge technology of robotics and unmanned aerial vehicles. Imagine a university where the world's best and brightest engineering students and professors create robots for the front lines of disaster response.

Welcome to the world of Dr. Paul Oh, who has not only imagined these scenarios, but is making them a reality as the Lincy Professor of Unmanned Aerial Systems at the University of Nevada, Las Vegas. Oh came to UNLV a year ago from Drexel University in Philadelphia, where his work at the Autonomous Systems Laboratory made him one of the world's foremost experts in robotics. He has also worked with Boeing and NASA's Jet Propulsion Laboratory.

For UNLV, convincing Oh to move across the country wasn't just luck of the draw. Oh was attracted by the commitment of the university, the governor's office and private industry to develop the emerging technology and use it to diversify the economy. In 2011 Nevada was the first state to allow autonomous vehicles on public roads, making it an early testing ground for Google's self-driving cars, and last year the state became one of just six sites approved by the Federal Aviation Administration for research and testing of unmanned aerial vehicles. Additionally, Creech Air Force Base, about an hour outside Las Vegas, has for years served as the military's hub for unmanned drone flights around the globe. These and other developments positioned Nevada at the forefront of the autonomous vehicle industry, which helped convince Oh to move to Las Vegas, bringing his expertise and millions of dollars in federal grant funding with him.

In less than a year, Oh has already made his mark. In June his team of students entered the prestigious U.S. Defense Advanced Research Projects Agency (DARPA) Challenge finals, an elite competition between the world's best minds in robotics engineering. The goal of the challenge is to create robots that can respond to disaster areas, so the machines must be able to drive, open doors, climb stairs and other tasks. UNLV's DRC-Hubo robot, named Metal Rebel, completed six of the eight tasks, placing it eighth in the field of 23 that included entries from the Massachusetts Institute of Technology and Carnegie Mellon University. Oh also recently helped UNLV secure a research and development partnership with Local Motors, a Phoenix-based company that manufactures vehicles with a 3D printer. As one of just three universities in the partnership program, UNLV received 3D-printed vehicles to use in research of autonomous technology as well as advanced materials for additive manufacturing of vehicles.

Oh aims to do far more than win robotics competitions or drive around in high-tech cars. Using the disasters of the 9/11 terrorist attacks and Hurricane Katrina as motivation, he wants to change the world for the better by creating robots that improve disaster response efforts and help save lives. His robots will have other applications, as well. He sees a growing market for autonomous robots in many other areas of the economy, including the hotel industry, agriculture and warehousing distribution. These ongoing developments and partnerships between UNLV, government and private industry will generate new opportunities to create jobs, attract in-demand knowledge workers, diversify the economy, and even make the world a more attractive place. In September, Metal Rebel will be at the Life is Beautiful music festival, drawing art on one of the walls.

In just one short year, Dr. Oh has transformed southern Nevada's potential for robotics and autonomous vehicle research and economic development. Imagine what he'll do in the years to come.

