Students and instructors surround the GM/Carnegie Mellon Cadillac SRX experimental vehicle.

GM, Carnegie Mellon Working to Further Innovative Tech

General Motors renewed its five-year agreement with research partner Carnegie Mellon University in Pittsburgh to work on driverless vehicles.

The two will continue developing technologies that could allow future production vehicles to drive autonomously.

The collaborative work builds on GM and Carnegie Mellon's development of Boss, an autonomous Chevrolet Tahoe named for GM R&D founder Charles F. "Boss" Kettering.

In 2007, the Boss navigated 60 miles of mixed traffic, intersections and stop signs in less than six hours to win the Defense Advanced Research Projects Agency, or DARPA, Urban Challenge competition.

Following that success, the partners established the GM-CMU Autonomous Driving Collaborative Research Lab in 2008 to focus on key automated vehicle technologies, including sensor fusion and system controls.

The lab's multiple projects are aligned with GM's next-generation advanced crash-avoidance technologies.

"We have a rewarding, tight-knit relationship with the researchers at GM," said Raj Rajkumar, George Westinghouse Professor of Electrical and Computer Engineering and Robotics at CMU and co-director of the collaborative research lab.

"Together, we are taking automated driving capabilities beyond those of Boss, with practical considerations that only an automotive OEM like GM truly understands and can provide."

For the past two years, Rajkumar and his team have been designing, developing and testing a variety of advanced crash-avoidance technologies on a Cadillac SRX luxury crossover test vehicle.

GM researchers conduct technology reviews and provide directional guidance and regular feedback to the CMU team, which operates in a repurposed railroad service station known as Robot City Roundhouse.

"The work we're doing with Carnegie Mellon is speeding the development of technologies designed to enhance the driving experience," said John Capp, director, GM R&D's Electric and Control Systems Research Lab.

"This collaboration is just one example of how GM is leveraging strong partnerships to bring innovative technology to market that will benefit our customers around the globe."

GM challenged its CMU research partners to integrate automated technologies that would meet customer expectations for exterior styling and interior packaging, said GM spokesman Dan Flores.

Seamless integration of advanced sensors will be a key differentiator between current test vehicles and production-viable automated vehicles.

Unlike Boss, which was easily identifiable as a test vehicle by the array of bulky sensor equipment attached to its exterior, the SRX test vehicle looks similar to a production model, because sensors are integrated into the vehicle body.

Automated driving requires the fusion of input from advanced sensors to provide 360 degrees of crash risk awareness, Flores said. Advanced sensor technologies work together to detect objects, pedestrians and bicyclists in the roadway, determine the best following distance behind other vehicles, handle stop-and-go with the flow of traffic, heed traffic signals and navigate a pre-determined route.

Some of the building block technologies for automated vehicles, such as full-speed range adaptive cruise control and automatic braking, are available on Cadillac's latest models, the 2014 Cadillac CTS, XTS and ATS luxury sedans, as part of the available Driver Assist Package.

"Automated vehicle technologies have the potential to improve driver performance, enjoyment and safety by easing workload when traffic and road conditions allow," Capp said.

Prolim, LTU Team To Establish New PLM Digital Lab

Prolim Corporation, a PLM specialty company, has entered into a strategic corporate partnership with Lawrence Technological University (LTU) in the implementation and support of a new PLM Digital Manufacturing Innovation Lab.

LTU will implement the lab in 2014 with its recent $40 million in-kind grant from Siemens PLM.

Prolim, in conjunction with LTU, will provide trainees and students access to the same PLM technologies that corporations around the world rely on each day to develop innovative merchandise and products.

The corporations include automotive, aerospace, machinery, construction and many other industries that value and utilize digital manufacturing in their product development process. This allows graduates with such focused training to gain the technical expertise needed in a highly competitive job market.

Prolim, a Farmington Hills company, is implementing the new lab by providing the following:

- Establish, maintain and support a PLM Innovation Lab on campus that will one day be a role model for the nation;
- Establish PLM best practices that can solve real-world business problems;
- Publish case studies on the successes of the LTU PLM program;
- Assist in defining, developing, and delivering PLM certificate courses.