Further down the driverless road at CES 2014

Consumer Electronics Show 2014 Las Vegas By Zac Bolan

The 2014 International CES attracted over 3200 global exhibitors to the sprawling Las Vegas Convention Centre this January to showcase the latest in high tech gadgetry for more than 150,000 attendees. This year nine major automakers demonstrated technologies including autonomous driving systems, electric cars and vehicle-to-vehicle safety systems at CES.

BMW i3 electric car recharging at a ChargePoint charging station. A network of EV charging stations is being rolled out.

The Driverless Car Experience TechZone featured live demonstrations of both driverless and driver assisted technologies by Bosch, Valeo and Ford on a closed track.

Bosch demonstrated Automated Park Assist, enabling a driver to parallel-park or back into a space without being inside the vehicle. Ultrasonic sensors determine the size and suitability of a parking space, then alerts the driver through a smartphone app. At this point the driver shifts into neutral, exits the car and initiates parking by placing a thumb on the smartphone screen–acting as a virtual dead man switch. If the thumb moves from the screen, or someone steps into the parking space the car's sensors stop the parking process.

Valeo, a global supplier of automotive integrated systems, showed their Automated Valet Parking (AVP) technology at the TechZone. The driver of an AVP enabled car simply exits their vehicle at the car park entrance, and then activates the Valet with a smartphone app.

The AVP module communicates with the car park to determine the best path to reach an available space then self-parks the car using a combination of sensors, cameras and scanners to detect obstacles. The driver retrieves the vehicle by waiting at the car park exit using the app to activate the Valet.

Safety is another key focus in the Driverless Car Experience. Bosch hopes to help drivers avoid collisions and save lives with their pedestrian detection and automatic braking technology. Using a stereo camera mounted between the rear-view mirror and the windscreen, sensors can detect a pedestrian or object suddenly appearing in front of the car and autonomously apply braking.

In a live demonstration, a Bosch driver accelerated to 30 kph on a closed track. As the demonstration vehicle approached an obstruction, a mechanical child mannequin 'ran' out from behind a parked car. Without any operator intervention, the vehicle braked to a complete stop within a car length.

Ford demonstrated a different strategy for collision avoidance using Vehicle-To-Vehicle communication (V2V). Utilizing automotive-grade GPS and 5.9 GHz wireless technologies, Ford collaborated with eight major automakers and the U.S. Department of Transportation to develop a communications protocol enabling equipped vehicles to message each other ten times per second at a range of up to 500 m. Equipped cars exchange data including position, acceleration, steering angle and braking.

The Ford demonstrated the V2V concept with three connected cars enacting various scenarios illustrating the benefits of receiving data from cars you can't see. In each case the driver of the demonstration car was alerted to an unseen connected vehicle's presence with a sound, flashing beacon and vibrating seat prompting corrective action.

The CES 2014 GoElectricDrive TechZone featured a variety of the latest electric car technologies by major automakers. Toyota unveiled the new FCV hydrogen-fueled electric concept car, due to launch in 2015. Toyota engineering prototypes have been roaming the highways of North America for more than a year consistently achieving driving ranges of 450 km per tank.

The Bosch Pedestrian Detection and Automatic Braking system in action; stereo cameras detect "Timmy" and apply brakes, autonomously bringing the car to a full stop.

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