

Self-Parking

Carmakers keep trying to simplify the experience

By Lucas Laursen

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The first time I tried parallel parking in a manual-shift car, I got halfway into a spot, nose first, on a sloping cobblestone street in a Pyrenean village before I realized I did not know how to put the car in reverse. I emerged in shame to ask a local for help. My impromptu valet found the ring I had to lift on the shift to put it in reverse gear. He also noted that it would be easier to back into the spot.

Lesson learned. But it is now moot: Last year, a car appeared on the market with a button on the dashboard that could be my next valet. Parking assistance has been street legal since 2003, when Toyota rolled out a Prius model in Japan with the ability to take over steering into a parallel-parking spot

The Self-Driving Car (/static/the-self-driving-car)

How Self-Driving Cars Will Sneak Onto Our Roads (/transportation/self-driving/how-selfdriving-cars-will-sneak-onto-our-roads)

Adaptive Cruise Control and Traffic-Jam Assistants (/transportation/self-driving/adaptive-cruise-control-and-trafficjam-assistants)

Self-Parking (/transportation/self-driving/selfparking)

Lane Keeping (/transportation/self-driving/lane-keeping)

Autonomous Emergency Braking (/transportation/self-driving/autonomous-emergency-braking)

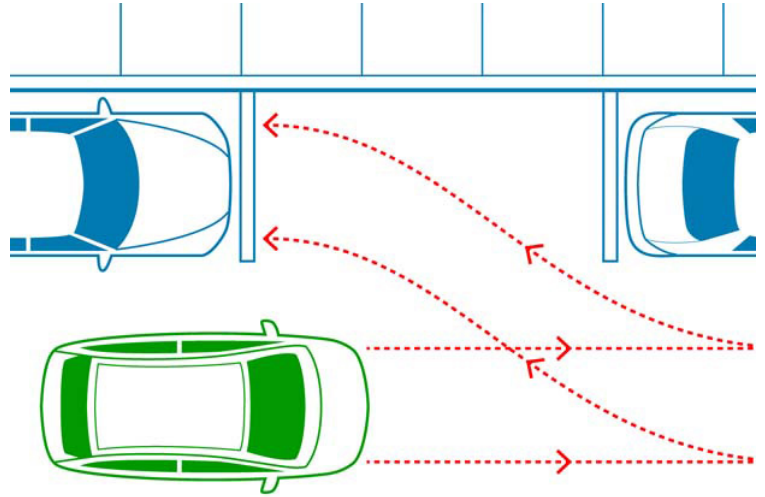


Illustration: mckibillo

(<http://edition.cnn.com/2003/TECH/ptech/09/01/toyota.prius.reut/index.html>). Drivers had to select the parking spot on a dashboard video screen and then operate the gears, accelerator, and brake while the car did the steering. Since then, almost a dozen competitors have introduced parking assistance systems with growing sophistication.

Most rely on wide-angle optical cameras that identify a parking space and ultrasonic sensors for close-in obstacle detection. They can now park parallel or perpendicular, as in a parking garage. Some move faster and some move slower. BMW announced at the September Frankfurt Motor Show that its brand-new i3 would be the first car on the commercial market to give the driver a fully automatic parking option (<http://www.bmwblog.com/2014/01/12/video-bmws-self-parking-i3/>). The i3 system relies on ultrasound sensors to detect parking spots. A display screen offers the potential spot to the driver, who can then approve the choice and take his or her hands off the wheel and feet off the pedals while the car parks. The driver must hold down a button to show that he or she is paying attention, or the car will stop.

Other carmakers have been showing off driverless parking prototypes too. Some differ from the BMW system in that they rely on communications via a wireless network with infrastructure in a parking garage to navigate to a parking spot. (See this 2009 peek at a Volkswagen demonstration (<http://spectrum.ieee.org/automaton/robotics/industrial-robots/volkswagen-demonstrates-autonomous-valet-parking-system>) in *IEEE Spectrum's* Automaton blog or this Audi demo from the January 2013 Consumer Electronics Show (<http://blog.caranddriver.com/audi-demonstrates-driverless-self-parking-a7-in-vegas-parking-garage/>.) These “vehicle-to-infrastructure,” or V2I, systems may offer more sophistication. But as reviewers at Edmunds found in a head-to-head comparison of Toyota’s and Ford’s 2010 hands-off, feet-on parking assistants (<http://www.edmunds.com/car-reviews/features/self-parking-systems-comparison-test.html>), simpler interfaces may win over sophisticated ones. For now, BMW’s i3 one-button Park Assistant (<http://www.bmw.com/com/en/newvehicles/i/i3/2013/showroom/safety.html#driverassistance>) is the simplest interface of them all.

Virtual Valets

Maker

Extent of production self-parking

[Audi \(<http://blog.caranddriver.com/audi-demonstrates-driverless-self-parking-a7-in-vegas->](http://blog.caranddriver.com/audi-demonstrates-driverless-self-parking-a7-in-vegas-)

Hands-off, feet-on; experimental vehicle-to-infrastructure (V2I)

parking-garage/voikswagen (http://www.volkswagen.co.uk/technology/parking-and-manoeuvring/park-assist)	communication
BMW (http://www.bmwblog.com/2014/01/12/video-bmws-self-parking-i3/)	Hands-off, feet-on
Chevrolet (https://www.youtube.com/watch?v=SUcfPFnJLJM)	Hands-off, feet-on
Ford (http://blog.caranddriver.com/ford-debuts-fully-self-parking-car-collision-avoidance-tech-with-automated-steering/)	Hands-off, feet-on (http://corporate.ford.com/news-center/press-releases-detail/with-self-parking-technology)
Honda (http://www.autoblog.com/2013/10/26/honda-autonomous-valet-parking-system-video/)	V2I
Mercedes-Benz (http://techcenter.mercedes-benz.com/en/active_parking/detail.html)	Hands-off, feet-on
Nissan (http://www.nissan-global.com/EN/TECHNOLOGY/OVERVIEW/around_view_monitor_with_park_assist.html)	Hands-off, feet-on
Toyota (http://www.toyota-global.com/innovation/safety_technology/safety_technology/parking/) Lexus (http://www.consumerreports.org/cro/lexus/lx.htm)	Hands-off, feet-on
Volvo (http://accessories.volvocars.com/AccessoriesWeb/Accessories.mvc/en-GB/RU/V40%2813-%29/2013/D4/Automatic/L.H.D/ShowDocument/VCC-463313)	Hands-off, feet-on; experimental V2I