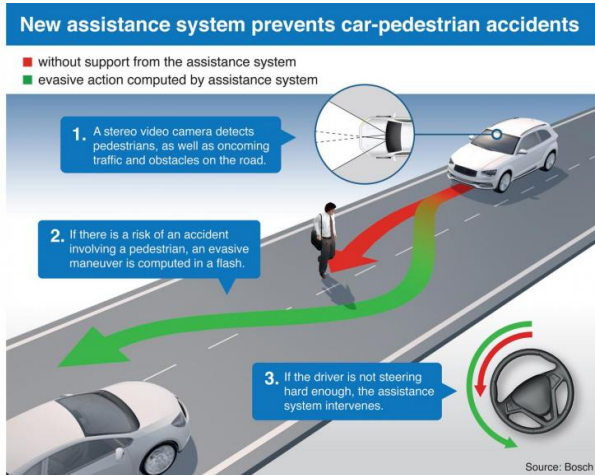


# Bosch system to steer attention to vulnerable pedestrian

2 November 2015, by Nancy Owano



New assistance system prevents car-pedestrian accidents. If there is a risk of an accident involving a pedestrian, an evasive maneuver is computed in a flash. If the driver is not steering hard enough, the assistance system intervenes.

When talking about driver safety, it is all too easy to think about systems preventing any harm to those in cars, either riding as passengers or driving behind the wheel.

Walk into any hospital and rehab center where patients struggle to walk and talk again and one is reminded of the missing human factor in that thought—pedestrians, who either by carelessness in movement or walking against signals or through careless drivers, are hit by vehicles.

Bosch is a company thinking about the missing part of that story, highlighting the fact that the driver and passengers are not the only ones who need protection. (A Bosch news release said in 2014, 523 pedestrians died on German roads alone, accounting for 15.5 percent of all road deaths in Germany.)

Bosch is developing technologies for a pedestrian avoidance system. According to reports, the company plans to start production of the system in 2018. The idea is to help [pedestrian safety](#) through something called "evasive steering" support.

Wait, isn't it just a simple matter of the driver stepping on the brakes, so as to avoid hitting someone walking? What is so difficult? The problem is that in pedestrian incidents realtime, braking alone does not guarantee safety.

If a pedestrian suddenly walks out in front of the car, the Bosch assistant instantaneously computes an evasive maneuver, said the news release. "As soon as drivers start taking evasive action, the system kicks in to support the steering maneuver."

Basically, the system will automatically intervene if it senses that the driver's own evasive action will not be enough to prevent a collision, said *The Engineer*.

Think of it as being able to look into a life-saving second into the future.



Dr. Lutz Bürkle develops increasingly comprehensive driver assistance systems that protect pedestrians more

effectively and help make the goal of injury- and accident-free driving a reality.

"According to our studies," said project manager Dr. Lutz Bürkle, "provided the driver reacts at least half a second before a potential collision, the assistance system can help avoid it in 60 percent of cases."

The system can recognize trouble in a flash. *The Engineer*: "It uses one of the company's existing stereo video cameras to monitor pedestrians and oncoming traffic. An onboard computer – mounted in the boot in the case of the research vehicle – plots the likely trajectory of pedestrians within the camera's field of view."

CNET Associate Auto News Editor Andrew Krok discussed how this works: "A stereo camera, mounted high on the windshield, creates a three-dimensional survey of the road ahead. A computer in the trunk analyzes the image. When a pedestrian enters the street, the system computes the likelihood of a collision. At the same time, it plots a path of least [resistance](#) around the pedestrian while also predicting where they will move next."

Bosch used a research vehicle that Bürkle and his team built for system testing. The central component is a Bosch stereo video camera, mounted behind the windshield near the rear-view mirror

The camera can deliver a 3D image of the area to the front of the vehicle; it can detect pedestrians, oncoming traffic and any road obstacles ahead.

A computer in the trunk analyzes the information.

If a pedestrian shows up in the camera's field of vision, the system computes the (1) likelihood of a collision and (2) the route that must be taken to avoid it.

"All this happens at lightning speed – more than ten times a second," said the Bosch release.

As CNET pointed out, Bosch's system will only

spring into action if the driver's efforts to avoid a collision are not enough to prevent an accident. In addition to braking, the system will also help the driver steer around a pedestrian.

Bürkle said that to plan the new trajectory with precision, they needed to predict where the pedestrian is likely to be in a second's time. They focused on developing the algorithms required.

Thomas Gussner, who is with the company's corporate research and advanced engineering department, was quoted in *The Engineer*: "Pedestrians can change their state of [motion](#) very quickly."

He said a pedestrian may suddenly stop, walk back, or start running. How can the system correctly guess what the person will do next?

Gussner said they developed "a pedestrian model jointly with Bosch accident research, which is based on the evaluation of a large database containing real pedestrian accidents that were recorded by dash cameras." The model allowed the team to predict a [pedestrian's](#) likely future position depending on the current situation and to plot the evasion trajectory accordingly.

**More information:**

[www.bosch-presse.de/presseforu ...  
txtID=7362&tk\\_id=166](http://www.bosch-presse.de/presseforu...txtID=7362&tk_id=166)

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