

Advanced driver-assistance systems found to be susceptible to split-second flash phantoms

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A team of researchers at Ben Gurion University of the Negev has found that at least two advanced driver-assistance systems (ADAS) are susceptible to responding to split-second flash phantoms. The group has written a paper describing their research and posted it on their blog. They are also scheduled to give a presentation at this year's virtual ACM

Conference on Computer and Communications Security.

Last year, the same team reported that they had found that it was possible to confuse Tesla vehicles equipped with ADAS into responding to "phantom" images projected onto the roadway or nearby objects such as trees. They found that projecting an image of a person onto the road in front of an oncoming Tesla vehicle, for example, would cause the system to apply the brakes—a move that could prove hazardous if another vehicle was behind the Tesla. In this new effort, the researchers have found ADAS's are also susceptible to responding to split-second flash phantoms.

The work by the researchers involved flashing split-second images onto advertisements and [electronic billboards](#) to see how ADAS systems from Tesla (HW 2.5 and HW 3) and Intel's Mobileye 630 would respond. The point of flashing the images for less than a second rather than simply displaying them was that it comprised a kind of hack against a vehicle without detection. They note that roadside electronic billboards have been hacked repeatedly over the past several years. Flashing images at a rate too fast for the human eye to see would also make any reactions to it by an ADAS seem mysterious; the driver would have no idea why their car suddenly stopped in the middle of a highway.

The researchers found that the systems from Tesla and Intel were both vulnerable to being fooled by flashing imagery. Stop signs flashed on a billboard, for example, were spotted by both systems, leading to braking to stop the vehicle. Both were also susceptible to images that looked like speed limit signs.

The researchers note that all of the ADAS systems they tested were driver-assist features, not autonomous control systems; thus, drivers had the option of either ignoring messages from the ADAS systems or overriding them—though in some cases, overriding such systems might

come too late to prevent an accident.

More information: www.nassiben.com/phantoms

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