Smart high-beam headlights won't blind oncoming drivers

Researchers at Carnegie Mellon created an experimental headlight that tracks other vehicles and blanks out the bits of light that would normally blind them in traffic.

by Amanda Kooser / September 9, 2014 12:12 PM PDT

The smart-headlight prototype got a road test on this truck.

Carnegie Mellon

High-beams are the bane of nighttime driving. You’re just tooling along, minding your own business, when you round a corner and get an eyeful of bright light. This can turn a normal driving situation into a dangerous one in a split second, even if the other driver is thoughtful enough to turn the lights down. Researchers at Carnegie Mellon are developing a smart headlight system that takes slow human reaction times out of the equation.

The Carnegie Mellon team cannibalized and repurposed a DLP projector for the project. This allows for minute control over the light coming out. The researchers were able to divide the light into a million minuscule beams, and then dim or brighten the tiny sections as needed.

The result is a programmable headlight system that uses a camera to track other
drivers on the road and then blacks out the specific parts of the headlight beam that would normally shine into their eyes. A driver with this sort of headlight doesn't have to keep one hand on the high-beam switch to turn it off for traffic; the headlight system handles all the hard work.

The system is also designed to work during snow or rain. It uses the same tracking principle and blocks out the light that would normally reflect off snowflakes or raindrops right in front of the headlights. This makes for less glare for the driver during bad weather conditions. The researchers are still working on improving the accuracy of this part of the system at high speeds, though it works well at low speeds.

front of a truck and tested on the streets of Pittsburgh. The driver of the car with the smart headlights will notice almost no change in the illumination in front of the vehicle. There is only a 3 to 5 percent reduction in light when the headlights adjust.

"Even after 130 years of headlight development, more than half of vehicle crashes and deaths occur at night, despite the fact there is much less traffic then. With our programmable system, however, we can actually make headlights that are even brighter than today's without causing distractions for other drivers on the road," says Srinivasa Narasimhan, associate professor of robotics.

The next step is for the researchers to modify the system to fit into the headlight compartment on a truck, so it can be tested in the same place regular headlights go. Someday, cursing at drivers with slow high-beam reactions could become a thing of the past, making for safer roads for everyone.

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CAR TECH

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ABOUT THE AUTHOR

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DISCUSS SMART HIGH-BEAM HEADLIGHTS WON'T BLIND ONCOMING DRIVERS

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HamLoring
This probably an urban legend but it smacks of truthiness--

Back in the mid-fifties, Cadillac offered an optional automatic headlight dimmer. A module shaped like half a very small football, it sat on a short stalk on the dash, with the big end facing out through the windshield.

Simple in operation, when the Caddy's high beams were on, this thing would sense oncoming headlights and automatically dim the Caddy's headlights. As soon as the oncoming car swept past, the gadget would switch on the Caddy's high beams.

Story goes that running along old US 30 in the Nebraska panhandle, a nameless Caddy driver pulled up on the rear of an 18-wheeler. There being precious few places to pass, our intrepid high-technology guy motored along behind the truck, his smart car obediently dimming then brightening the headlights with each oncoming vehicle.

After several tens of miles of this, the truck slowed to a crawl then abruptly turned left and stopped, blocking the road. The trucker leapt out of his cab and swinging a large ball-pie en hammer, proceeded to destroy the Caddy's headlights, all four of them. The trucker climbed back in his rig and drove away, leaving the Caddy driver to contemplate the wonderfulness of cutting edge automotive technology in pitch darkness.

Mike033199
I already have a version of this feature on my 2014 ford fusion. Not sure how well it works as I turned it off as soon as it was available, but do know that the auto-high beam is already a reality.

theunclesam
@Mike033199 Why would you disable something you paid for without testing to see how well it works?

Also, this isn't the same thing. This will selectively block light around the oncoming object. Not just switch high/low beams.
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