How an autonomous Ford hybrid manages to drive in the snow

March 11 2016, by Bob Yirka

Ford motor company, along with all the other major car manufacturers,

has been working on self-driving cars, but unlike others, such as Google, Ford has begun demonstrating an autonomous vehicle that is capable of driving in the snow, where lane lines and other identifiable markers become hidden by the blanket of flakes. In a recent [press release](#), Ford outlines how it works and offers a video of its test vehicle successfully finding its way around a snow covered private roadway.

The most important tool in the modified Fusion hybrid is a Light Detection And Ranging (LiDAR) sensor, it is used to create virtual maps of terrain—during non-snow conditions it captures the roadways of course, but also signs, trees, buildings and other landmarks, collecting data amounting to 600 gigabytes per hour. Then, when the car is moving in snow conditions, it is joined by a host of other sensors (radar, cameras, etc.) collecting data regarding current location and conditions.

That information is then compared with the data previously collected from the LiDAR during optimal conditions to keep the navigational system informed about the placement of the vehicle on the road to within 1cm of where the car actually is, as compared to the current 9 meter specificity of GPS—offering 360 degree situational awareness. Ford calls the combined system "sensor fusion." The system even has an algorithm for filtering out laser "hits" on snowflakes or raindrops to prevent them from being identified as obstacles.

The result is a car that is, according to Ford, the first to demonstrate with an actual [test vehicle](#), an ability to drive in the snow (on a course at Mcity, a 32-acre, real-world driving environment situated on the campus of the University of Michigan). Of course, the test scenario was focused mostly on the car keeping track of its own whereabouts—what is still to be worked out is how to make the car understand how slippery conditions are so that it will slow its speed an appropriate amount and of course adjust stopping distances—based on such factors as car weight, tire tread, number of people in the [car](#), etc. Autonomous vehicles of the

future will of course have to modify the way they drive under all weather conditions, all while responding to the other cars that are moving in those same conditions—not an easy task by any measure.
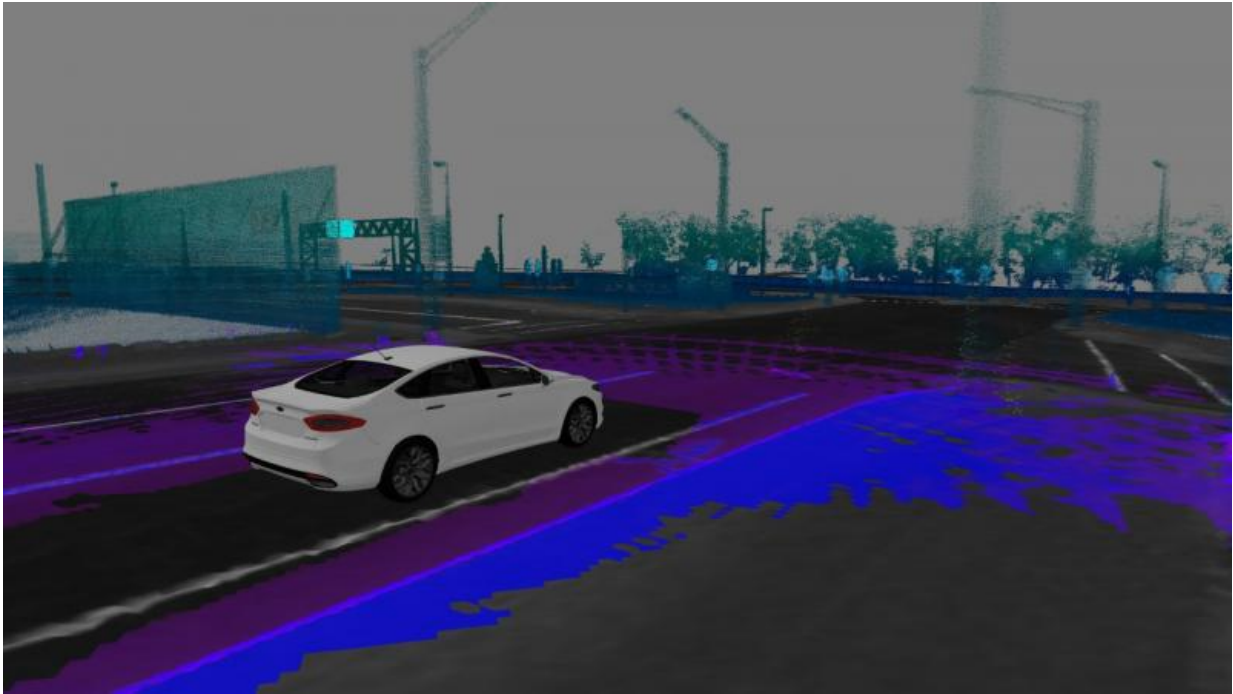
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Citation: How an autonomous Ford hybrid manages to drive in the snow (2016, March 11)
retrieved 19 April 2024 from
https://techxplore.com/news/2016-03-autonomous-ford-hybrid.html