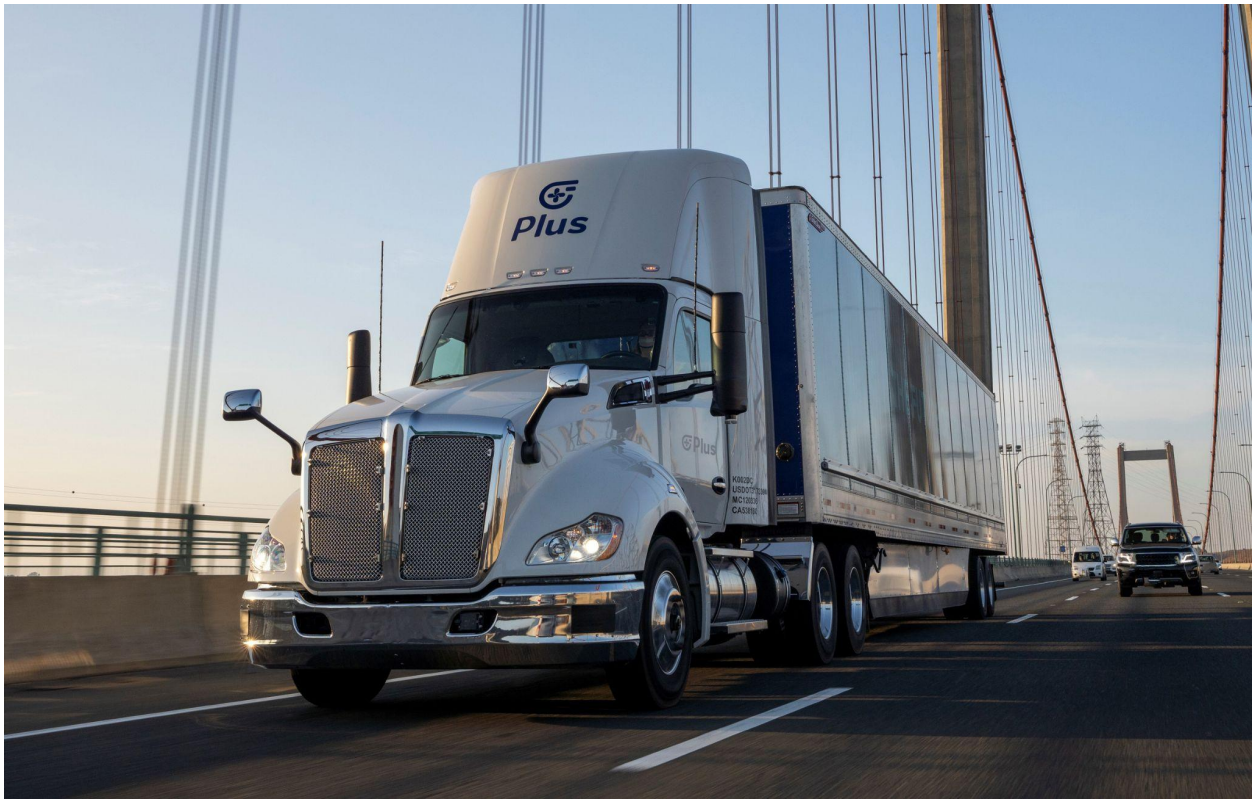
Autonomous trucking company Plus will use AI and billions of miles of data to train self-driving semis



The safest drivers are those with the most experience. Studies show it can take years of practice for automobile drivers to become careful and competent road users. Similarly, the more experience a truck driver has the less likely it is that they will cause a serious crash.

What holds true for human drivers holds true for autonomous driving systems — up to a point. The safest self-driving vehicle platforms are those that have accumulated the most experience.

Since driving experience is so important, how can technologists make sure computerized driving systems get the training they need to operate safely on the nation's roads and highways?

Solving this challenge is the key to unlocking a fully autonomous future.

How computers learn to drive a semi-truck

Thanks to advances in sensor technology and artificial intelligence (AI), an automated truck is capable of analyzing many objects on the road and making a decision about how to respond.

This is accomplished in large part by training so-called “deep learning” algorithms. Repeatedly expose a self-driving system to all kinds of obstacles, from a cut-in vehicle to a construction site, and the system will start to understand how to react when an obstruction appears on the highway.

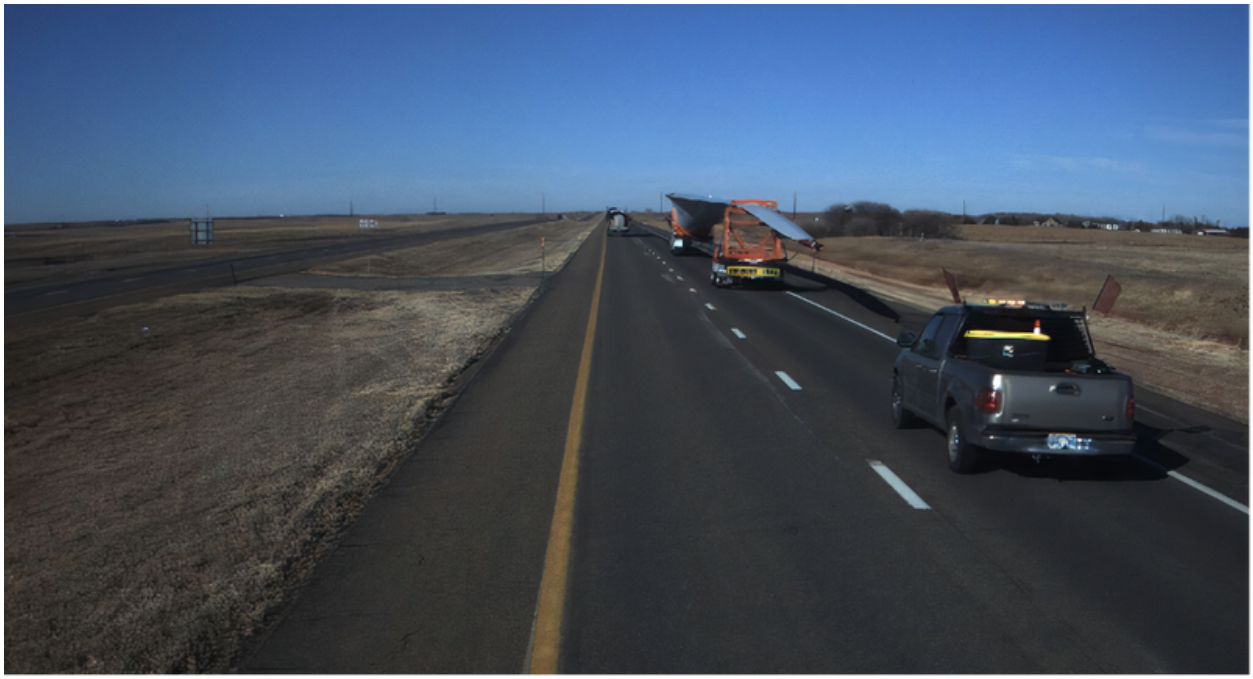
Here it is important to note that unlike people, machines lack common sense and don’t do well handling novel situations. Human drivers know to slow down in the face of an unexpected obstacle — a bear, say — because we can make decisions based on similar situations we have already encountered or extrapolate from other incidents.

Unlike humans, however, deep neural networks can only learn from data they have been trained on, whether from public roads, closed courses, or computer simulations.

So back to the original question: How do you train the machines so they are exposed to the full range of the driving experience?

Data, data, and more data

Plus’s goal is to help truck drivers on long-haul routes, where they encounter a variety of road and weather conditions. In addition to closed-road testing and computer simulations, the company’s PlusDrive system is learning on the open road, where the trucks can be exposed to real-world obstacles and situations. Junk flying from a pickup bed. Ice slicks. A wind turbine blade. A zigzagging motorcycle.



Though these so-called “long tail” phenomena comprise less than 1% of the time behind the wheel, knowing how to safely navigate them is critical for machines. Society expects that a computer-operated machine must be at least an order of magnitude safer than a human driver.

Billions of miles of on-road testing

Starting this summer, Plus will put its supervised automated driving system into factory production. It is also retrofitting existing trucks with the system. By this time next year, hundreds of automated trucks powered by PlusDrive will be on the road, hauling commercial cargo.

Human drivers will be behind the wheel. Like an experienced professional training a new recruit, Plus drivers will monitor the autonomous trucks while teaching them how to handle unexpected obstacles.

Plus estimates that its fleet will accumulate billions of collective miles before the company deploys fully driverless vehicles. Taking an evolutionary approach to full autonomy enables the company to rack up miles more quickly, with the assistance of on-board professional drivers who are training and validating the system.

To support its global deployment in the U.S., China, Europe, and other markets, Plus recently raised $420 million in new funding.

Truck driver retention and low-carbon solution

The drivers benefit too. The Plus supervised autonomous trucking solution elevates the role of the truck driver, upskilling them in preparation for an autonomous future. At the same time a digital co-pilot will ease driver exhaustion on long-haul routes, and fleets will spend less on the hiring process.

The system yields other gains. Fuel comprises about a third of a trucking company's operating budget, by far the largest cost for heavy trucks. When an automated system understands the road, pulling in GPS and weather data too, they optimize shifting and braking. Plus has run pilot projects showing that PlusDrive saves 10% of the tank compared to the most efficient drivers, a win for the bottom line and the environment.

The autonomous trucking future, now

Commercial space travel, solar-powered cities, autonomous vehicles — the first two visions of the future depend on specific economic inflection points, while the third is wholly dependent on the amount of data a system has accumulated.

Plus is building the necessary feedback loop of information today. Its trucks are accumulating the data. Its drivers, who are among the safest and most efficient Class A drivers, are training the system with their responses. Its engineers are fine-tuning PlusDrive's algorithms and decisions. And eventually PlusDrive will be one of the safest and most experienced drivers on the road.

Plus is applying autonomous trucking technology to trucks today. For more information, please visit www.plus.ai.