NuTonomy – the world's first driverless taxis

Select members of the public can hail a free ride through their smartphones in taxis operated by NuTonomy, an autonomous vehicle software startup.

While multiple companies, including Google and Volvo, have been testing self-driving cars on public roads for several years, NuTonomy says it is the first to offer rides to the public. The initiative, launched in Singapore, has beaten ride-hailing service Uber, which plans to offer rides in autonomous cars in Pittsburgh, by a few weeks.

NuTonomy is starting small – six cars now, growing to a dozen by the end of the year. The ultimate goal, company executives say, is to have a fully self-driving taxi fleet in Singapore within two years, to help cut the number of cars on Singapore's congested roads. Eventually, the model could be adopted in cities around the world, NuTonomy hopes.

For now, the taxis only operate in a 2.5-square-mile business and residential district called "one-north", and pick-ups and drop-offs are limited to particular areas. Riders must have an invitation from NuTonomy to use the service. The company says dozens have signed up for the launch, and it has unveiled a plan to expand that list to thousands of people within a few months.

The cars – modified Renault Zoe and Mitsubishi i-MiEV electrics – have a driver in front who is prepared to take back the wheel should the situation require it, while a researcher in the back continually watches the car's computers. Each car is fitted with six sets of Lidar – a system that uses lasers to operate like radar to detect what is happening in the immediate environment – including one that constantly spins on the roof. There are also two cameras on the dashboard to scan for obstacles and detect changes in traffic lights.

According to NuTonomy chief executive Karl Iagnemma, the testing time-frame is open-ended. Eventually, riders may start paying for the service, and more pick-up and drop-off points will be added. NuTonomy is also working on testing similar taxi services in other Asian cities, the U.S. and Europe, but it is as yet unclear when these services will be operational.

Doug Parker, NuTonomy's chief operating officer, claims autonomous taxis could ultimately reduce the number of cars on Singapore's roads from 900,000 to 300,000.

"When you are able to take that many cars off the road, it creates a lot of possibilities. You can create smaller roads, you can create much smaller car parks," Parker said. "I think it will change how people interact with the city going forward."

NuTonomy, a 50-person company with offices in Massachusetts and Singapore, was formed in 2013 by Iagnemma and Emilio Frazzoli, Massachusetts Institute of Technology researchers who were studying robotics and developing autonomous vehicles for the Defense Department. Earlier this year, the company was the first to win approval from Singapore's government to test self-driving cars in one-north. NuTonomy has recently announced a research partnership with Singapore's Land Transport Authority. Singapore is deemed an ideal research location because it has good weather, great infrastructure and drivers who tend to obey traffic rules, Iagnemma said. As a land-locked island, the city of 5.4 million people is seeking creative ways to grow its economy, so it has therefore been in its own interest to be supportive of autonomous vehicle research.

Iagnemma said the company is confident that its software can make good decisions. An Associated Press reporter taking a ride Wednesday saw the safety driver step on the brakes only once during the entire journey, when a car was obstructing the test car's lane and another vehicle, which had appeared to be parked, suddenly began moving in the oncoming lane. A collision was avoided. The company hopes its head start in autonomous driving will eventually lead to partnerships with automakers, tech companies, logistics companies and others. "What we're finding is the number of interested parties is really overwhelming," Iagnemma said.

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