

# Αυτόνομα οχήματα: Πιο δύσκολο από ό,τι αναμενόταν το εγχείρημα



Εκτιμάται ότι για να είναι πλήρως εφαρμόσιμη η τεχνολογία της αυτόνομης οδήγησης, θα χρειαστούν 30 χρόνια (φωτ. Shutterstock).

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- Σήμερα αντί να κυκλοφορούν αυτόνομα αμάξια στον δρόμο, όπως πολλοί περίμεναν, διεξάγονται δίκες καθώς έχουν συμβεί ατυχήματα και θάνατοι με αυτά, ενώ έχουν ήδη δαπανηθεί δισεκατομμύρια δολάρια για μία τεχνολογία η οποία έχει προκαλέσει απογοήτευση – ορισμένοι ερευνητές ισχυρίζονται πως θα χρειαστούν πολλά χρόνια για να εφαρμοστεί στην πράξη. Και όμως, το 2015 ο ιδρυτής της Tesla, Ελον Μασκ, δήλωνε πως τα αυτοκινούμενα οχήματα θα βρίσκονται στους δρόμους σε ορίζοντα τριετίας. Το 2016, ο Τζον Τσίμερ, συνιδρυτής της πλατφόρμας σύνδεσης οδηγών και επιβατών Lyft, προέβλεψε πως το 2025 τα Ι.Χ. θα παύσουν να υφίστανται, αλλά μόλις προ εβδομάδων πούλησε τη δική της μονάδα αυτόνομης οδήγησης σε θυγατρική της Toyota ονόματι Woven Planet αντί 550 εκατ. δολαρίων. Στα τέλη του 2020 είχε προηγηθεί η Uber με ανάλογη κίνηση. Εκτοτε, οι

δυνατότητες των αυτόνομων οχημάτων βελτιώθηκαν, αλλά το να σκεφθεί κανείς πως θα μιμηθούν εκείνες των ανθρώπων απέχει από την πραγματικότητα, όπως αναφέρουν οι The New York Times.

Τώρα πλέον στην κούρσα για την αυτόνομη οδήγηση φαίνεται πως θα απομείνουν όσοι έχουν ρευστό να διαθέσουν, όπως η Waymo, θυγατρική της Alphabet (μητρικής της Google), αλλά και οι κολοσσοί της αυτοκινητοβιομηχανίας, καθώς και λίγες νεοφυείς εταιρείες. Σύμφωνα με την εταιρεία ερευνών Pitchbook, η οποία παρακολουθεί τη χρηματοπιστωτική δραστηριότητα, οι γίγαντες της υψηλής τεχνολογίας και του αυτοκινήτου θα συνεχίσουν για χρόνια τα σχέδιά τους. Αναμένεται να δαπανήσουν 6-10 δισεκατομμύρια δολάρια επιπλέον στην έρευνα, προτού η τεχνολογία είναι εφαρμόσιμη στην πράξη – πιθανόν το 2030. Όπως παρατηρεί ο Κρις Αρμσον, μηχανικός σε αρχικά στάδια στο έργο αυτόνομης οδήγησης της Google, προτού αυτό μετασηματιστεί στην εταιρεία Waymo, «πρόκειται για μια μεταμόρφωση που ενδεχομένως να συντελεστεί σε 30 χρόνια ή και περισσότερο». Σήμερα είναι επικεφαλής της Aurora, η οποία απέκτησε τη σχετική μονάδα της Uber.

Κανείς πάντως δεν μπορεί ποτέ να προβλέψει επακριβώς την εξέλιξη ενός πειράματος. Απλώς το συγκεκριμένο πείραμα της αυτόνομης οδήγησης έτυχε να είναι και ένα από τα διασημότερα του 21ου αιώνα στις ΗΠΑ. Μάλλον, οι προσδοκίες ήταν μη ρεαλιστικές, ειδικά, όπως τις έθεσε ο Ελον Μασκ. Σήμερα η εταιρεία του, Tesla, παρέχει τεχνολογία απλής αυτονομίας στα οχήματά της και μόνο στις εθνικές οδούς. Στο πλαίσιο των πειραματισμών της Tesla άνθρωποι έχασαν τη ζωή τους και η ίδια κατηγορείται για κατάχρηση τεχνολογίας. Εκείνη, όμως, που δέχθηκε περισσότερο τα πλήγματα ήταν η Uber, η οποία αρχικά είχε εξασφαλίσει 40 ειδικούς στα ρομπότ από το Πανεπιστήμιο Κάρνεγκι Μέλον και είχε αγοράσει μονάδα κατασκευής αυτόνομων φορτηγών. Σε δικαστική διαμάχη με τη Waymo για πατέντες επήλθε διακανονισμός, ενώ στη συνέχεια πρώην στέλεχος της Uber παραδέχθηκε ότι είχε κάνει κλοπή πνευματικής ιδιοκτησίας. Πεζός στην Αριζόνα σκοτώθηκε λόγω

σύγκρουσης αυτόνομων αμαξιών και στο τέλος η Uber ουσιαστικά πλήρωσε την Αυτορα να της αγοράσει τη μονάδα τεχνολογίας αυτόνομης οδήγησης.

## ***Self-Driving Uber Car Kills Pedestrian in Arizona, Where Robots Roam***

- 19/3/2018 New York Times



A woman crossing Mill Avenue at its intersection with Curry Road in Tempe, Ariz., on Monday. A pedestrian was struck and killed by a self-driving Uber vehicle at the intersection a night earlier. Credit...Caitlin O'Hara for The New York Times

By **Daisuke Wakabayashi**

- March 19, 2018

[Leer en español](#)

SAN FRANCISCO — Arizona officials saw opportunity when Uber and other companies began testing driverless cars a few years ago. Promising to keep oversight light, they invited the companies to test their robotic vehicles on the state's roads.

Then on Sunday night, an autonomous car operated by Uber — and with an emergency backup driver behind the wheel — struck and killed a woman on a street in Tempe, Ariz. It was believed to be the first pedestrian death associated with self-driving technology. The company quickly suspended testing in Tempe as well as in Pittsburgh, San Francisco and Toronto.



### ***How a Self-Driving Uber Killed a Pedestrian in Arizona***

The death of a woman who was struck by an autonomous car operated by Uber is believed to be the first pedestrian fatality associated with self-driving technology. Newly released video offers clues about what happened.

The accident was a reminder that self-driving technology is still in the experimental stage, and governments are still trying to figure out how to regulate it.

Uber, Waymo and a long list of tech companies and automakers have begun to expand testing of their self-driving vehicles in cities around the country. The companies say the cars will be safer than regular cars simply because they take easily distracted humans

out of the driving equation. But the technology is still only about a decade old, and just now starting to experience the unpredictable situations that drivers can face.

It was not yet clear if the crash in Arizona will lead other companies or state regulators to slow the rollout of self-driving vehicles on public roads.

Much of the testing of autonomous cars has taken place in a piecemeal regulatory environment. Some states, like Arizona, have taken a lenient approach to regulation. Arizona officials wanted to lure companies working on self-driving technology out of neighboring California, where regulators had been less receptive.

[Read more on how Arizona became a [destination for self-driving car tests.](#)]

But regulators in California and elsewhere have become more accommodating lately. In April, California is expected to follow Arizona's lead and allow companies to test cars without a person in the driver's seat.

Federal policymakers have also considered a lighter touch. A Senate bill, if passed, would free autonomous-car makers from some existing safety standards and pre-empt states from creating their own vehicle safety laws. Similar legislation has been passed in the House. The Senate version has passed a committee vote but hasn't reached a full floor vote.

***Editors' Picks***

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Blinded by Brighter Headlights? It's Not Your Imagination.

“This tragic incident makes clear that autonomous vehicle technology has a long way to go before it is truly safe for the passengers, pedestrians, and drivers who share America’s roads,” said Senator Richard Blumenthal, Democrat of Connecticut.

The Uber car, a Volvo XC90 sport utility vehicle outfitted with the company’s sensing system, was in autonomous mode with a human safety driver at the wheel but carrying no passengers when it struck Elaine Herzberg, a 49-year-old woman, on Sunday around 10 p.m.

Sgt. Ronald Elcock, a Tempe police spokesman, said during a news conference that a preliminary investigation showed that the vehicle was moving around 40 miles per hour when it struck Ms. Herzberg, who was walking with her bicycle on the street. He said it did not appear as though the car had slowed down before impact and that the Uber safety driver had shown no signs of impairment. The weather was clear and dry.

Uber said it would work with the police.

“Our hearts go out to the victim’s family,” an Uber spokeswoman, Sarah Abboud, said in a statement. “We are fully cooperating with local authorities in their investigation of this incident.”

Tempe, **with its dry weather and wide roads**, was considered an ideal place to test autonomous vehicles. In 2015, Arizona officials declared the state a regulation-free zone in order to attract testing operations from companies like Uber, Waymo and Lyft.

“We needed our message to Uber, Lyft and other entrepreneurs in Silicon Valley to be that **Arizona was open to new ideas**,” Doug Ducey, Arizona’s governor, said in an interview in June 2017.

Using an executive order, Mr. Ducey opened the state to testing of autonomous vehicles that had safety drivers at the wheel, ready to take over in an emergency. He updated that mandate earlier this month to allow testing of unmanned self-driving cars, noting that a “**business-friendly and low regulatory environment**” had helped the state’s economy.

Even when [an Uber self-driving car and another vehicle collided](#) in Tempe in March 2017, city police and Mr. Ducey said that extra safety regulations weren’t necessary; **the other driver was at fault, not the self-driving vehicle.**

But on Monday, Mark Mitchell, Tempe’s mayor, called Uber’s decision to suspend autonomous vehicle testing a “responsible step” and cautioned people from drawing conclusions prematurely. Daniel Scarpinato, a spokesman for Mr. Ducey, said the updated order from the governor “provides enhanced enforcement measures and **clarity on responsibility** in these accidents.”

In California, where testing without a backup driver was just weeks away from being permitted, Jessica Gonzalez, a spokeswoman for the state Department of Motor Vehicles, said officials were in the process of gathering more information about the Tempe crash. Waymo, Lyft and Cruise, an autonomous vehicle company owned by General Motors, did not respond to requests for comment.

In a news release, the National Transportation Safety Board said it was sending a team of four investigators to examine **“the vehicle’s interaction with the environment, other vehicles and vulnerable road users such as pedestrians and bicyclists.”**



A self-driving Uber car at the scene of a fatal accident in Tempe, Ariz. Credit...ABC-15, via Associated Press

Since late last year, Waymo, the self-driving car unit of Google’s parent company Alphabet, has been [using cars without a human in the driver’s seat](#) to pick up and drop off passengers in Arizona.

Most testing of driverless cars occurs with a safety driver in the front seat who is available to take over if something goes wrong. It can be challenging, however, to take control of a fast-moving vehicle.

California requires companies to report the number of instances when human drivers are forced to take over for the autonomous vehicle, called “disengagements.”

Between December 2016 and November 2017, Waymo's self-driving cars drove about 350,000 miles and human drivers retook the wheel 63 times — an average of about 5,600 miles between every disengagement. Uber has not been testing its self-driving cars long enough in California to be required to release its disengagement numbers.

Researchers working on autonomous technology have **struggled with how to teach the systems to adjust for unpredictable human driving or behavior**. Still, most researchers believe self-driving cars will ultimately be more safe than their human counterparts.

In 2016, 37,461 people died in traffic-related accidents in the United States, according to the National Highway Traffic Safety Administration. That amounts to 1.18 fatalities per 100 million vehicle miles traveled in 2016.

Waymo, which has been testing autonomous vehicles on public roads since 2009 when it was Google's self-driving car project, has said its cars have driven more than 5 million miles while Uber's cars have covered 3 million miles.

In 2016, a man driving his Tesla using Autopilot, the car company's self-driving feature, died on a state highway in Florida when his car crashed into a tractor-trailer that was crossing the road. **Federal regulators [later ruled](#) there were no defects in the system to cause the accident.**

But the crash in Tempe will draw attention among the general public to self-driving cars, said Michael Bennett, an associate research professor at Arizona State University who has been looking into how people respond to driverless cars and artificial intelligence.

"We've imagined an event like this as a huge inflection point for the technology and the companies advocating for it," he said. "They're going to have to do a lot to prove that the technology is safe."