Intro : Gaetan

(truc code de la route rigolo)
In this situation, where does the danger come from :
a : The pedestrian
b : The road
c : The car driver
d : The driver's car

If you answered A, huh…
If you answered D, you're not totally wrong, because here, the main danger comes from the driver.
And if you answered B, we can argue that the road can sometimes lead the driver into danger, but in this situation, the road does not pose a threat to any one.

In today's society, motorized means of transport are a necessity for most of us. From kids taking the bus to go to school, to adults going to work using their car or bike, everyone needs those means of transport.

But even if it's a necessity, it's also one of the deadliest weapons ever created to this day. Being a driver is grueling, in addition to risking your own life, you're responsible for the life of, your passengers, innocent pedestrians you could run over, and the all the persons involved in a road accident you could create.

Road accidents are way too frequent to be neglected, and that's why to be allowed to drive, one must have a driving licence. Is it enough ?
No. Else we wouldn't be here to talk about it right now. Road accidents happen for many reasons, and most of them are due to the driver.

Of course, we're not here to tell you "be more careful on the road", everybody knows that, and everybody has heard of it. When a human takes the wheel, an accident is bound to happen at some point, because we humans make mistakes.
Of course I'm not saying it's okay to run over people, but what I'm saying is that in most cases, it's not the driver's fault, it's the fact we're letting pretty much anyone drive a deadly weapon.

We make mistakes and we're not some kind of emotionless super computing system, but what if we were some kind of emotionless super computing system that does not make any mistake ?

Start : Gaetan

Introducing : **Self-Driving Car**

You've probably read something about autonomous vehicles in the news, but what are they, how do they work, and are they worth it? We're going to tell you all about them, and tell you why we should support this technology.

Different levels of automation : Aghilas

First of all, there are different levels of automation, as described by the society of automotive engineers.

Those levels range from 0 to 5, with 0 being manual driving and 5 being fully automated.

Recent cars are often located between 1 and 2 because of their driving assist features like acceleration and steering but the driver must take control of the vehicle at all times.

For the moment teslas are in level 4 because the driver still has to control the vehicle sometimes.

But the ones we're going to talk about are level 5, they don't need any driver assistance and they are capable of controlling all the vehicles.

Now, my friend will present you some data on road accidents

Data : Gaetan

To understand why we're talking about self-driving cars today, we're going to quickly show you some data about road accidents in general.

First, 95% of all road accidents are of human origin, the other 5 come from vehicle or road failure.

And then, each year, there are 1.3 million deaths due to road accidents, which is 2% of all deaths worldwide. Also one third of them are innocent pedestrians.

All those deaths mean every 25 seconds, someone dies on the road.

It's enormous.

Human mistakes : Aghilas

Now, why are those numbers so high? Well, as we just saw, it's mostly our fault as drivers, humans make a lot of mistakes because is so easily distracted by multiple factors in its environment and is prone to making multiple mistakes while driving like :

- Speeding
- Being tired
- Being drunk or drugged
- Talk with a friend in the car.
- Talke or Looking at its phone

All of those lead to the driver's low vigilance and are the cause of the majority of accidents everyday in the world .

Are self-driving cars safer ? : Quentin

So, you may be wondering, how is this technology going to reduce the number of accidents. Fully automated self-driving cars rely on technology to navigate the roads without the need of a driver.
They use a multitude of sensors, cameras and a radar to see everything around the car in a 360° radius. It allows them to create a 3D rendering of their environment as they drive, and at all times their software calculates all the possible scenarios that may occur and their probability, so that it can react instantly.

By implementing traffic laws into the car's software, and adding a GPS, we get a car that is 100% autonomous and functioning.

But is it really safer than a manual car?
Well, studies have shown that 74% of people think they are above average drivers. Maybe some of you think the same way. But if it was true, we wouldn't have so many accidents each year.
And we have a solution to that, self-driving cars are already way better than any human can be, because they collect data when driving and learn with every new scenario, which will be used to improve the software.
For example, Waymo models already accumulated data of more than 20 million miles of driving on public roads. If you were an average driver, you would need to drive about 1000 years for the same result.

Ethical questions : Quentin

But driverless cars also bring their own share of questions, mainly about ethical matters.
In case of some very unlikely scenarios where the car has to make a decision about who will get hurt in an accident, how is the algorithm supposed to react?
Let's take an example :

Imagine that the car is driving normally on the road, when suddenly two motorcyclists appear from the opposite direction. The first one is coming from the other lane and is wearing a helmet, and the second one is coming on your lane and is not wearing any protection.
It is already too late to avoid both of them, so which one should the car hit?

We could hit the one with no protection, because he didn't respect traffic laws, and put himself into danger. Or we could hit the one on the other lane because he has a higher chance to survive.
In the first option, if we hit the person without the helmet, that would mean we chose to hit the person with the lowest chance of survival, which isn't the purpose of driverless cars.

In the second option, if we hit the person in the other lane, that would mean we chose to hit an innocent person because he had a higher survival chance. But in that case, it would become safer for motorcyclists to drive without a helmet, so that they are not targeted in this type of accident.
This kind of scenario raises ethical questions that are very difficult to answer.

Those types of decisions are calculated by what is called "death algorithms".

Why it doesn't really matter Gaetan

These types of ethical questions sound really concerning, but in reality they represent a really small part of accidents on the road.
When a human has to make a quick decision like this, it just becomes a reaction and it's very difficult to explain why they chose an option over the other. But when a self-driving car is in the same situation, it has to make a clear decision and it's way more difficult.

However, the real question is why are they not yet on the road? We have enough data and studies to prove that self-driving cars would save millions of lives :
If we replaced all cars with self-driving ones, we would avoid 94% of accidents because they are caused by human errors.
This would represent about 1.2million of lives saved each year.

Of course, accidents are bound to happen, whether they are human caused or not, but even if self-driving cars will be responsible for road accidents in the future, the lives saved by the technology will outmatch the one taken by it.

Headlines will say “a man has been killed by an automatic car” where in reality, it will be “automatic cars save thousands of lives”.

Other benefits Aghilas

On a smaller note, there are other benefits to self-driving cars, such as having more free time, to be exact 6% more time in our life which could be used for pursuing more productive or entertaining activities, like responding to email or watching a movie. working, sleeping .or eat for exemple

Also, self-driving cars can help avoid the costs of crashes, including medical bills, lost work time and vehicle repair. And we wouldn't have to get a driving licence which would also save time and money.

Another thing, we all had a traffic problem or traffic on the road. I think self-driving cars could deal with traffic congestion, and move fast on the road.

Why are they not on the road yet ? Quentin

With all those arguments, we could ask ourselves, why are they not on the road yet?
There are several reasons to that, but mainly those two :
Firstly, it's a newer technology and despite being very advanced, it still has some development to do, and some models are still in the testing phase, or are not fully automated yet.

Also, because of the ethical problems and the complications caused by having those vehicles on the road, we need to make new laws and regulations that could take several years.

The vision for the future Aghilas

Today, technology has taken on a whole new meaning, we have amazingly "smart" smartphones, new ways of creating energy and now self-driving cars.

Autonomous cars are a breathtaking innovation that could change the way we live and travel. And people don't fully trust artificial intelligence. But google and others have created a truly flawless product. I believe that in a few decades our roads and highways will be filled with self-driving cars.