Self-driving cars are predicted to dramatically reduce traffic accidents and fatalities by removing human error from the driving equation.

Other benefits: eased road congestion, decreased harmful emissions…

But accidents can and will still happen, and when they do, their outcomes may be determined months or years in advance by programmers or policy makers. And they’ll have some difficult decisions to make. It’s tempting to offer up general decision-making principles, like minimize harm, but even that quickly leads to morally murky decisions. For example: let’s say we have the same initial set up but now there is a motorcyclist wearing a helmet to your left and another one without helmet to your right. Which one should your robot car crash into? If you say the biker with the helmet because she is more likely to survive, then aren’t you penalizing the responsible motorist? If instead you save the biker without the helmet because he is acting irresponsibly, then you have gone way beyond the initial design principle about minimizing harm, and the robot car is now meting out street justice. The ethical considerations get more complicated here. In both of our scenarios, underlying design is functioning as a targeting algorithm of sorts. In other words, it’s systematically favoring or discriminating against a certain type of object to crash into. And the owners of the target vehicles will suffer the negative consequences of this algorithm through no fault of their own. Our new technologies are opening up many other novel ethical dilemmas.

For instance, if you had to choose between a car that would always save as many lives as possible in an accident, or one that would save you at any cost, which would you buy?

What happens if the cars start analyzing and factoring in the passengers of the cars and the particulars of their lives?

Could it be the case that a random decision is still better than a predetermined one designed to minimize harm?

And who should be making all of these decisions anyhow? Programmers? companies? Governments?

Reality may not play out exactly like our thought experiments, but that is not the point. They are designed to isolate, and stress test our intuitions on ethics, just like science experiments do for the physical world. Spotting these moral hairpin turns now will help us maneuver the unfamiliar road of technology ethics and allow us to cruise confidently and conscientiously into our brave new future.