DRIVERLESS CARS: A DISTANT DREAM?

by

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ABSTRACT

We live in the age where research on time travel is being carried out. The world has seen the famous mathematician Mrs. Shakunthala Devi who is popularly known as the human computer. Currently the world is witnessing a machine being conferred with citizenship. Artificial intelligence is fast developing. Automated/self driving cars are one such emerging area. An attempt has been made to explore automated/ self driving cars, its suitability to India, Indian laws revolving around it and the issues which need to be addressed.

Key words; Automated, Self Driving

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I. INTRODUCTION

Automated vehicles are no longer mere products of science fiction. Japan's bullet train runs without any driver assistance. Automated cars and self driving cars are next in the row. The feasibility of such cars is however a question to be deliberated upon since unlike trains, such cars should meet out with road traffic which is a challenging task.

II. AUTOMATED CARS: A TECHNOLOGICAL WONDER?

An autonomous vehicle has been defined as "a car that can drive itself without input from a human driver."[3] It is also termed as driverless cars /robotic cars. The degree to which the car can function independently is divided into various sub levels by the U.S. National Highway Traffic Safety Administration (NHTSA). They are as follows[4]-

Level 0 No Automation	Humans control major part of the car.
Level 1 Driver Assistance	a. Advanced Driver Assistance System -Certain systems can be controlled by the car. b. Simultaneous working is not possible. *Example-* Automatic brakes, steering etc.
Level 2	a. The car provides at least two functions at a time.

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[3] https://www.techopedia.com/definition/30056/autonomous-vehicle
[4] https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety

Partial Automation	*Example-* Acceleration and steering
Level 3 Conditional Automation Self driving cars	a. Automated Driving System -The car can take care of safety in specified circumstances. b. Human intervention is however required.
Level 4 High Automation	Mostly the car functions independently.
Level 5 Full Automation Autonomous cars	The car functions completely on its own.

Self driving cars fall under level 3 and level 4 which operates independently under some conditions beyond which human intervention is required. Whereas automated cars falls under level 5. The Regulation (EU) 2019/2144 of the European Parliament and of the Council deals with self driving (automated) and automated vehicles. Under Art 3(21) "automated vehicle means a motor vehicle designed and constructed to move autonomously for certain periods of time without continuous driver supervision but in respect of which driver intervention is still expected or required". Under Article 3(22) "fully automated vehicle means a motor vehicle that has been designed and constructed to move autonomously without any driver supervision".

Autonomous cars work using sensors, processors, softwares involving complex algorithm. The top autonomous car companies include Tesla, Kia- Hyundai, General Motors, Apple, Ford, Audi etc. Tesla has registered itself in Bangalore, India. However the cars so produced are not

completely functional on roads. Research is being carried out on the same. According to experts we are decades away from such technology.[5]

III. AUTONOMOUS CARS :GREEN FLAG v RED FLAG

As a coin has two sides automated vehicles also have their own pros and cons. They are listed as follows-[6]

GREEN FLAG	RED FLAG
Usage in service sector for delivery.	It is costly.
Accidents caused due to human faults can be avoided.	Complete automation isn't a reality yet and might not be a reality in near future.
Vehicle to vehicle communication system aids in reducing traffic. Such automated cars take that route which has less traffic.	Traffic instructions given by the traffic police will not be comprehensible by the automated vehicle.
Such cars would be operated electrically. This reduces pollution.	Service centers for such cars are to be set up. Whether India's economic appetite is large enough to accommodate this is a question to be deliberated upon.
Differently abled people can use autonomous vehicles.	Drivers will loose their employment opportunity.
Concerns as to petrol price will not be there since it will run electrically.	Driverless cars are not 100% accident free. 1. 2014- Google's automated car collided with a bus. 2. 2018- Uber's automated car hit a pedestrian. 3. 2018- Tesla's automated car crashed with a truck resulting in the death of the driver. 4. 2019- Tesla's automated car collided with another car resulting in death of

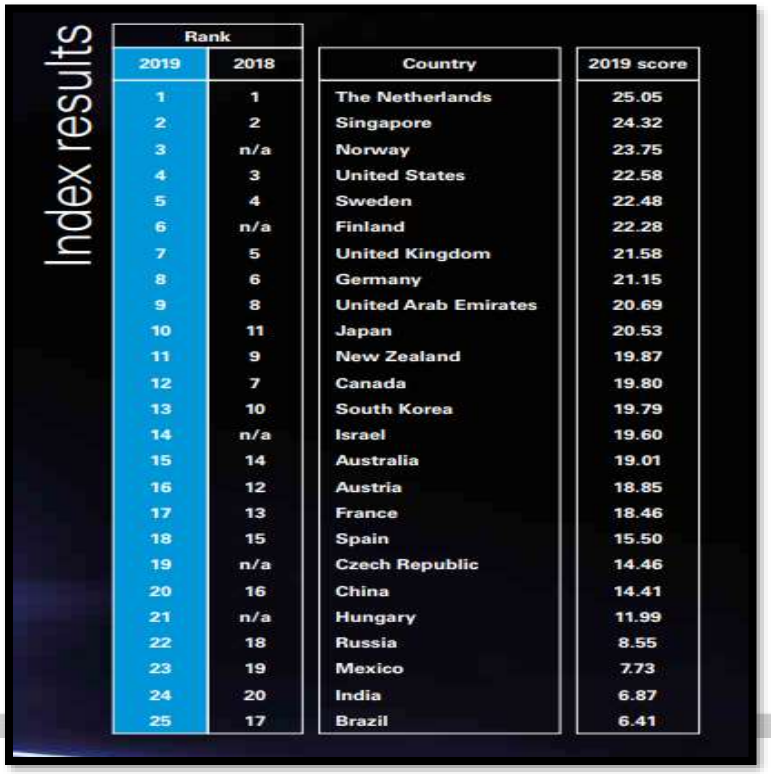
[5] https://www.businessinsider.in/transportation/cars/experts-say-were-decades-away-from-fully-autonomous-cars-heres-why-/articleshow/70901504.cms
[6] https://www.groupdiscussionideas.com/should-driverless-cars-be-allowed-in-india/

	two people.
Night travel and long distance travel wouldn't be tiring.	Take diversion boards will not be recognizable to automated cars.
	Extreme weather conditions will affect the functioning of the car.

IV. SUITABILITY TO INDIA

Automated cars are not suitable to India owing to the following reasons-

1. The table below ranks countries according to their readiness to automated vehicles.[7]



Rank 2019	Rank 2018	Country	2019 score
1	1	The Netherlands	25.05
2	2	Singapore	24.32
3	n/a	Norway	23.75
4	3	United States	22.58
5	4	Sweden	22.48
6	n/a	Finland	22.28
7	5	United Kingdom	21.58
8	6	Germany	21.15
9	8	United Arab Emirates	20.69
10	11	Japan	20.53
11	9	New Zealand	19.87
12	7	Canada	19.80
13	10	South Korea	19.79
14	n/a	Israel	19.60
15	14	Australia	19.01
16	12	Austria	18.85
17	13	France	18.46
18	15	Spain	15.50
19	n/a	Czech Republic	14.46
20	16	China	14.41
21	n/a	Hungary	11.99
22	18	Russia	8.55
23	19	Mexico	7.73
24	20	India	6.87
25	17	Brazil	6.41

Fig 1- Autonomous Vehicles Readiness Index (AVRI)

25 countries were ranked based on 25 factors revolving around their preparedness to automated vehicles. India is ranked 24th out of the 25 countries.

[7] https://assets.kpmg/content/dam/kpmg/xx/pdf/2019/02/2019-autonomous-vehicles-readiness-index.pdf

2. India is overloaded with pollution and population. Autonomous cars would not be able to make their way in such populated areas. Further in cities like Delhi the level of smog during winter time is very high. Public emergency was declared in Delhi due to poor air quality index. 24 vehicles were damaged and the drivers met with injury.[8] This being the case automated cars is not suitable to India.
3. Over 1, 38, 02,973 traffic violations were reported as of 2020.[9]Automated vehicles are not suitable to India since such vehicles wouldn't be able to take control on road where traffic violations are unfortunately recklessly disregarded.
4. In a country like India, animals like cow, horse etc is found walking on roads. It is highly possible that such automated cars might collide with the animals.
5. Indian roads aren't suitable for such high end cars. We unfortunately have a lot of potholes, open drainage etc which will hamper the functioning of the car.
6. Consumer education in India about such high end technologies is low.

V. INDIAN LEGAL FRAMEWORK

Statutes dealing with motor vehicles include the Motor Vehicles Act, 1939 and the Consumer Protection Act, 2019. The former Act deals with the obligation to take license, legal age for obtaining license, LLR, grounds where driving license can be cancelled, registration of motor vehicles, regulation of state transport undertaking, traffic rules to be followed such as limits on speed, wearing helmet, procedures in case of accidents, no fault liability etc. The Consumer Protection Act, 2019 speaks about product liability on the manufacturer and seller if they sell defective goods or provide deficient service. This applies to automobiles industry as well.

But both the Acts do not deal with automated and self driving cars.

[8] https://www.ndtv.com/delhi-news/delhis-toxic-smog-leads-to-24-car-accident-on-yamuna-expressway-1772758
[9] https://www.livemint.com/news/india/over-1-38-cr-traffic-violations-reported-last-year-compared-to-1-05-cr-in-2019-data-11613752112852.html

VI. LEGAL ISSUES

The following questions have to be deliberated upon before introducing automated cars/ self driving cars-

1. Question of liability- If any accident arises out of such cars who will take up the responsibility is to be ascertained.

a. Whether the manufacturers of the car can be held liable?
b. Whether the seller of the car can be held liable?

Under section 2(34) of the Consumer Protection Act, 2019 product liability is defined as *"the responsibility of a product manufacturer or product seller, of any product or service, to compensate for any harm caused to a consumer by such defective product manufactured or sold or by deficiency in services relating thereto".*

Thus if accidents occur on road due to defect in system, does that mean that the manufacturer/ seller of the car can be held liable?

c. Liability should be decided for each level of AI based car.
d. Whether the consumer of the car can be held liable even though he wasn't even driving the car?
e. Whether drunk and drive provision will extend to self driven/ automated cars even though the person isn't driving as such?

This is a question of crucial importance. Leaving it unsolved will put pedestrian's, other vehicle operators', cattle's life at stake.

2. In case of self driven cars the level of human attention required is to be specifically addressed.
3. A regulatory body for such cars is required. The safety standards the car should meet up with for its licensing should be set.
4. The level of cyber security required to protect the car's software is to be established. Information technology laws and privacy laws should be suitably amended.

The Information Technology Act, 2000 under section 43 and 66 should deal with its cyber security.

5. Management of data stored in such software has to be protected for ensuring privacy. Standards for the same have to be set up. The Personal Data Protection Bill should incorporate itself with provisions for dealing with data management in automated cars.
6. Insurance issues would pop up. Third party insurance cover is a question to be deliberated upon. Vehicle owners should insure with "no fault insurance".[10]
7. Whether hit and run charges can be imposed in case of accidents? What decides criminal liability in case of accidents?[11]
8. Traffic rules have to be reconsidered.
9. Different parts of the automated car will hold different intellectual property rights. AI based IP provisions should be suitably incorporated.

VII. CONCLUSION

Automated cars though are beneficial on one hand owing to the above mentioned reasons such cars are not safe. No matter what entrusting human life completely to a machine would be a risky in nature. On the other hand self driven cars are a better alternative. The above mentioned issues should be deliberated upon as early as possible. Lessons from other countries should be taken.

[10] https://www.mills-reeve.com/insights/blogs/technology/december-2014/driverless-cars-the-top-10-legal-issues
[11] https://www.americanbar.org/groups/litigation/committees/business-torts-unfair-competition/practice/2018/top-8-legal-implications-of-self-driving-car-technology-litigation/