So, the national symbol of Ukraine is embroidery. A traditional embroidered shirt that has not practically changed since the times of the Cossacks. It is necessary to respect national treasures.

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SELF-DRIVING CARS

We observe the penetration of IT in every sphere of our lives. The automotive industry is no exception.

We can't imagine our everyday life without cars. You can find at least one car almost everywhere. Talking about autos we mean a wheeled motor vehicle used for

transportation. Most of them have four tires [1, p.124]. Some cars were equipped with steam engines, later steam engines were replaced with a combustion engines, nowadays we can see more and more cars with electric motors. Many cars are equipped with controls used for driving, passenger comfort and safety. They are normally managed by a combination of the use of feet and hands, and even by voice on 2000s-era cars.

The purpose of the paper is to introduce some examples of self-driving cars and to analyze the advantages and disadvantages of them.

Since the first car was invented, it has become easier to control it through automation. For example, initially, all autos had manual controls for the choke valve, clutch, ignition timing and a crank, instead of an electric starter. However, new controls have been added to vehicles, making them more complex. Examples are air conditioning, navigation systems and in-car entertainment systems.

An autonomous car (also known as a driverless car, self-driving car, robotic car, auto) and unmanned ground vehicle are vehicles that are capable of sensing their environment and navigating without human input depending on the level of the "driving mode"[2, p.1507]. Autonomous cars use a variety of techniques to detect their surroundings, such as radar, laser light, GPS, odometry and computer vision. Advanced control systems interpret sensory information to identify appropriate navigation paths as well as obstacles and relevant signage. Autonomous cars must have control systems that are able to analyze sensory data to distinguish between different cars on the road [3, pp.160-165].

Self-driving vehicles are likely to make driving easier for many, but they may not replace mass transit options like buses or subways. In return, self-driving cars should connect transit hubs, provide public transit services to communities that are served inconstantly, and generally be used to improve public transportation. The main cause of most automobile accidents today is driver error. Alcohol, drugs, speeding, aggressive driving, over-compensation, lack of experience, slow reaction, inattentiveness, and ignoring road conditions are all contributing factors. If we look on statistics, we will notice that approximately 40 percent of accidents are the result

of abuse of drugs or alcohol. Based on this fact, self-driving cars would practically eliminate those accidents altogether. One of the leading causes of traffic jams is selfish behavior among drivers. It has been shown when drivers space out and allow each other to move freely between lanes on the highway, traffic goes on to flow smoothly, regardless of the number of cars on the road.

Tsukuba Mechanical Engineering Lab in Japan created the first autonomous, intelligent vehicle in 1977. It tracked white street markers and achieved speeds up to 30 kilometers per hour.

In 2017, Audi stated that its latest A8 would be autonomous at up to speeds of 60 km/h using its "Audi AI". The driver would not need to do safety checks such as frequently gripping the steering wheel. Audi and NVIDIA have collaborated for nearly a decade to engineer and deliver a wide range of automotive breakthroughs.

NVIDIA is pioneering the use of deep learning AI to revolutionize transportation. Audi's adoption of DRIVE computing platform for AI cars will accelerate the introduction of next-generation autonomous vehicles, moving us closer to the future of higher driving safety and new mobility services.

Tesla Motors and NVIDIA have been partners since the early development of the revolutionary Model S. Nowadays, all Tesla vehicles—Model S, Model X, and the upcoming Model 3—will be equipped with an NVIDIA-powered on-board "supercomputer" that can provide full self-driving capability.

The computer delivers more than 40 times the processing power of the previous system, running a Tesla-developed neural net for vision, sonar, and radar processing.

This in-vehicle supercomputer is powered by the NVIDIA DRIVE™ PX AI computing platform. An end-to-end AI computing system uses groundbreaking approaches in deep learning to perceive and understand the car's surroundings.

In addition, NVIDIA powers the awarding-winning infotainment systems and digital instrument clusters in every Model S and Model X.

Nevertheless, what makes Tesla cars fully autonomous? Eight surround cameras provide 360 degrees of visibility around the car at up to 250 meters of

range. Twelve updated ultrasonic sensors complement this vision, allowing for detection of both hard and soft objects at nearly twice the distance of the prior system. A forward-facing radar with enhanced processing provides additional data about the world on a redundant wavelength that is able to see through heavy rain, fog, dust and even the car ahead.

To make sense of all of this data, a new onboard computer with over 40 times the computing power of the previous generation runs the new Tesla-developed neural net for vision, sonar and radar processing software. This system provides a view of the world that a driver alone cannot access, seeing in every direction simultaneously, and on wavelengths that go far beyond the human senses.

To make use of a camera suite, the new hardware introduces an entirely new and powerful set of vision processing tools developed by Tesla. Built on a deep neural network, Tesla Vision deconstructs the car's environment at greater levels of reliability than those achievable with classical vision processing techniques.

Enhanced Autopilot adds these new capabilities to the Tesla Autopilot driving experience. Your Tesla will match speed to traffic conditions, keep within a lane, automatically change lanes without requiring driver input, transition from one freeway to another, exit the freeway when your destination is near, self-park when near a parking spot and be summoned to and from your garage.

Tesla’s Enhanced Autopilot software has begun rolling out and features will continue to be introduced as validation is completed, subject to regulatory approval [4].

Despite all advantages, there are several disadvantages of autonomous cars. Driverless cars are likely to be out of the price range for most ordinary people when generally introduced, costing over $100,000. Truck drivers and taxi drivers would lose their jobs, if autonomous vehicles were widespread.

A computer malfunction, even just a minor glitch, could cause worse crashes than anything that human error might bring about. Whose fault is it, if the car crashes, without a driver? Google or the software designer or the owner of the vehicle?

The cars would rely on the collection of location and user information, creating major privacy concerns. Hackers getting into the vehicle's software and controlling or affecting its operation would cause a major security worry.

There are current problems with autonomous vehicles operating in certain types of weather. Heavy rain interferes with roof-mounted laser sensors, and snow can interfere with its cameras.

In addition, reading human road signs is challenging for the robot [5,p.20].

As drivers are getting used to driving not by themselves, their proficiency and experience will diminish. Should they then need to drive under certain circumstances, there may be problems.

The road system and infrastructure would likely need major upgrades for driverless vehicles to operate on them. Traffic and street lights, for instance, would likely all need altering.

Self-driving cars would be great innovations for terrorists, as they could be loaded with explosives and used as moving bombs.

Ethical problems that could arise, a machine might struggle to deal with. Faced with a choice between plowing into a group of pupils or going off a bridge and killing all its passengers, what does the vehicle do? Should the vehicle always swerve to avoid animals in the road or always prioritize the safety and comfort of passengers?

Human behavior such as hand signals is difficult for a computer to understand. How would the police interact with driverless vehicles, especially in the case of accidents or crimes?

To sum up, autonomous vehicles have its advantages and disadvantages. Technologies are rapidly growing and now we stand only at the beginning of the machine learning and self driving technologies. It is quite interesting to observe how the world will be changed by 2040. Until then, it is fascinating to see the effects this creation will have on the states where it is legalized as well as on the people who have chosen to experiment with it.

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CHROMIUM VI IN LEATHER UPDATED

While there are many arguments about chromium in leather, there are certain issues that can be accepted to operate in the international supply chain:

Chromium III is different from chromium VI (Cr VI)

Chromium III is not toxic but Cr VI is

There needs to be an accepted test method and agreed limit to enable international trade to occur.

At the present time, there is much discussion in different organisations within the European Commission and these are at different stages of development.

Previous results have been reported which involved spiking trials of crust