

## AUTONOMOUS VEHICLES

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In today's world, drones have an extremely wide range of applications. They can perform various tasks such as surveillance, monitoring, cargo delivery, and even combat operations. Essentially, the operation of drones is based on several components that interact with each other to ensure that the drone can perform various tasks safely and efficiently [1].

*Sensors:* drones are equipped with various sensors such as GPS, accelerometers, gyroscopes, and cameras. The sensors collect information about the position and environment, which allows the drone to assess the situation and make decisions. *Communication systems:* drones can be controlled via radio or satellite. This allows the operator to remotely monitor the drone's flight and tasks, as well as feedback and data from on-board systems. *Navigation:* one crucial component of drone technology is navigation systems. Drones utilize GPS and other navigation tools to accurately determine their position in the sky and navigate through various terrains. These systems ensure that drones can reach their destinations safely and efficiently, even in challenging conditions. *Autopilot:* drones are equipped with specialized autopilots that control flight and perform tasks without human intervention. The autopilot receives data from sensors and processes it to determine the direction and speed of the flight. To process information and make decisions, drones use special algorithms and software that allow them to automatically perform tasks and react to changes in the environment.

Drones are propelled by the engines installed on them, which create the thrust needed to lift the drone into the air and propel it in the desired direction. Usually electric, internal combustion or jet engines are used, depending on the type of drone and its purpose. In the case of multicopters, for example, electric motors are used to control the rotation of the propellers or blades, creating lift.

As far as the application of drones is concerned, firstly they can be used in war zones or areas with high levels of pollution. Secondly, drones can work much faster and longer than humans, as they don't get tired and don't need breaks. Also, the use of drones can reduce the number of employees thus decreasing personnel costs and improve the quality of tasks [2].

However, drones also have their disadvantages. One of the major concerns is the issue of security and privacy. There is a risk of hacking and hijacking of drones, which can lead to negative consequences ensuring secure use by terrorist acts. In addition, there are a number of ethical and legal issues regarding the use of drones. For example, how to resolve controversial situations where a drone makes life and death decisions, how to ensure accountability for the actions of autonomous systems, etc.

Here's a list of the biggest drone manufacturers. *DJI Innovations*: a Chinese company that is one of the leaders in the production of unmanned aerial vehicles (drones). DJI manufactures a wide range of drones for a variety of purposes including professional photography, agro-culture, search and rescue, and even entertainment. *Boeing*: an American aviation company that manufactures unmanned devices including unmanned trucks, aircraft for military use, and other autonomous technologies. *Northrop Grumman*: Another major American drone manufacturer that specializes in military drones such as the Global Hawk and X-47B.

Overall, drones and autonomous systems represent a huge potential and offer incredible opportunities for various industries and sciences. However, in order to use them profitably, strict safety measures, ethical rules and laws must be in place, and there must be a sufficient level of human control and oversight. It is important to remember that technology should serve people, not replace them.

## References

1. The Ultimate Guide to Autonomous Drones: Benefits, Applications, and Top Models. [Electronic resource] – Mode of access: <https://www.jouav.com/blog/autonomous-drones.html>. – Date of access: 11.03.2024.
2. How to Stop a Drone From Flying. [Electronic resource] – Mode of access: <https://robots.net/tech/how-to-stop-a-drone-from-flying>. – Date of access: 01.03.2024.