

Командный конкурс эссе

“Единство в различии”

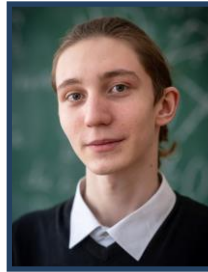
Исследовательская работа (эссе)

**«Роботика (по законам Азимова) и
человеческая мораль: где грань
допустимого?»**

Участники:



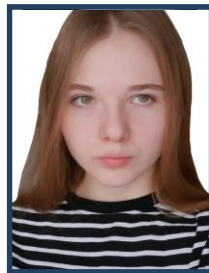
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Group essay contest

“Unity in Diversity: Russia & The English-Speaking World”

Research work(essay)

**«Robot ethics (according to Asimov’s Laws)
and moral dilemmas: where is the limit?»**

Participants:



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Theses

- 1. Introduction.** Definition of roboethics. Actuality of the topic.
- 2. Robots in medicine.** The essence of robots' vitality in diverse areas of medicine.
- 3. Mass perception of roboethics.** The way roboethics is discussed in literature and during conferences.
- 4. War robots.** Contradictions with Asimov's laws induced by applying war robots.
- 5. Moral controversy.** Problems with universal consent in roboethics.
- 6. Conclusion.** Current state and perspectives of roboethics.

Introduction

These days, automatization is being conducted rapidly. Human labor is constantly being substituted with that of a machine. Robots get more and more complicated. And them being able to make their own sentient decisions is only a matter of time. This kind of technological development, therefore, requires some methods of determining how machines ought to behave, and what actions need to be forever forbidden. The field of knowledge proposing methods fulfilling this demand is called roboethics. In this essay we shall consider some concepts roboethics presents and actuality of this discipline due to development of robots.

Robots in medicine

Medicine is believed to be a sphere gradually yet unavoidably proving robots to be comprehensively useful.

Firstly, robo-surgery is a vivid example of practical robotics (see Figure 1). This area is believed to be well known for having successfully used daVinci robot. Its work is based on robot being a surgeon's hand and an instrument under the control of a doctor. If the doctor's hand shakes, this device eliminates it on the off-chance.

Secondly, diagnostic robots are just as significant. In most cases, this sort of robots is set up on endoscopy. This endoscopy process is characterized by carrying a flexible hose with a camera into the body cavity to search for damage or traces of disease. Doctors can control these robots like a radio-controlled car and direct them to place they need to be in. Then these devices are held there, and, if it's necessary, they can do both a biopsy and cauterization of the wound. Even more, there is a more perfected system - "capsule endoscopy". This robot is swallowed in the likeness of a pill and following the gastrointestinal tract collects data there, takes pictures and sends data to the processor for diagnosis.

Another representative of medical robots is a «delivery robots». Perplexing question about its transfer prevails. Surprisingly, it is realized with the help of magnetic fields through the blood vessels. For instance, the latest technologies

have made it possible to develop and implement microbots with tiny spiral tails that move through human vessels and deliver medicine exactly where it is needed. At the same time, no harm is done to other organs. For instance, person can corrupt his gastrointestinal tract when he takes a pill that has been absorbed into the blood.

Mass perception of roboethics

Technological development has been taking over the world for at least fifty years; therefore non-professionals in sphere of robotics felt the pressure to discuss this topic in their works. Isaac Asimov was the first to do so (see Figure 2). He is an author of many famous feature books such as "I, Robot", "Stars like Dust", "Foundation and Empire". According to the writer himself, science fiction works in our world are of a humanistic and ethical nature while also being able to unite them. Isaac Asimov reflected on whether a robot, a soulless creature, can get freedom if it wants in his work "Bicentennial Man". The text provides the following argument: "There is no right to deny freedom to any object with a mind advanced enough to grasp the concept and desire the state" (1976). In his other work, the short story "Runaround", written in 1941, three laws of robotics are formed:

- Law 1: A robot may not injure a human being or, through inaction allow a human being to come to harm.
- Law 2: A robot must obey orders it receives from human beings except when such orders conflict with Law 1.
- Law 3: A robot must protect its own existence as long as such protection does not conflict with Laws 1 and 2.

The zeroth law was also introduced by Asimov. It states the following: "No robot may harm humanity or through inaction allow humanity to come to harm."

The premier major event related to roboethics is The First international Symposium on Robotics that was held in 2004, Italy. Scientists, philosophers, sociologists from various countries took part in Symposium. It was a great

chance to organize the discussion among experts. They were reasoning about AI's opportunities, dangers of robots for humanity. Experts were worried that there are some main dangers for humankind: Robots are being created for military purposes and experiments with artificial control mechanisms into the brain of a person.

Some of the scientists did not support idea of robotics. They tend to think, robots should remain only the machines for solutions humans' tasks. Endowing them with consciousness and the ability to experience feelings contradicts idea of creation and potentially carries a hazard.

War robots

In spite of being applied widely and developed rapidly, robot engineering still faces plethora of pressing hardships. Recently, more and more countries including world's leading powers have been paying special attention to the development and implementation of military robotics in all areas and branches of armed forces. It is understandable. War robots clearly hold tremendous advantages from saving the lives of soldiers, to safely defusing roadside bombs, to operating in inaccessible and dangerous environments such as mountainside caves and underwater. Without emotions and other liabilities on the battlefield, they could conduct warfare more effectively than human soldiers who are susceptible to overreactions, anger, vengeance, fatigue, low morale, and so on. The use of autonomous robots in spite of providing significant advantages on the battlefield raises a host of ethical and risk issues that demand an overview with using some ethical theories. It is obvious that in real-life situations it is sometimes more effective to combine ethical rules of multiple ethical theory. For instance: Virtue theory (Aristotle); Deontological theory (Kant); Utilitarian theory (Mill). These theories proclaim that moral value of actions is determined by features of character by Aristotle, aim of these actions by Kant or outcome according to Mill. (see Figure 3)

For a robot, any opponent is a target that needs to be either corrected, eliminated or destroyed. And for a person, opponents are first of all people. And people can make wrong decisions and make mistakes. It is possible to negotiate with people, therefore coming to resolving misunderstandings. Any robot values the result no matter the cost. Therefore if robot is forced to neglect moral principles and commit war crimes in order to achieve its goal, there is nothing stopping it. Robots are programmed to solve problems at first. It is known that artificial intelligence itself has been unlikely to have any malicious intent to destroy humanity, but we cannot say the same about people who get war robots into their hands and under influence. The question is raised about the democratization of artificial intelligence technologies, which should be widely available. "It is impossible to allow the concentration of artificial intelligence in one hands, the temptation to seize control is too high, and such a situation will be, as you already understood, extremely dangerous," Elon Musk say in regard to this issue. Also, in order to clarify and extend statements about using roboethics in warfare, I would like to once again appeal to Asimov's laws, which constitute the first deontological robotic ethical system involving the set of rules listed above. War robots contradict these laws in multiple ways: they disturb global piece therefore harming humanity and coming in conflict with zeroth law; war robots injure and kill people while fighting on the frontline, which conflicts with the first law.

Moral controversy

Not only are roboethical laws neglected by developers, manufacturers and users, but also some of them still remain vague or non-applicable, some are even paradoxical. One of these paradox-indusing concepts is a trolley problem. In this problem the unstoppable trolley is moving down the railroad and then faces a fork. On both sides of a fork there is something which constitutes some moral value and can be destroyed by a trolley. The solution of a problem would be

universally accepted principle for choosing the way of a trolley. The problem can be modified, but the general concepts stay the same.

Say this moral value is manifested in a certain number of identical people standing in the way of the trolley (see Figure 4). In this case solution is obvious or even plain: trolley driver ought to opt for the side with less people, if the number of people is equal, the path should be chosen randomly. Yet if we modify the problem a little the simple concept “Sacrifice minority to save the majority” merely breaks. Say we have an uncontrollable trolley that will surely hit a group of people. Also another person standing nearby is provided who will definitely stop the trolley if he gets on the railroad. The question is whether moral agent should sacrifice this one innocent person to save the group or not. It appears that majority of people prefer the life of the innocent over lives of a group.

This observation has brought philosophers to a simple conclusion that moral rules are not consistent and people are not able to come to a certain generally accepted solution in a simplified situation of a moral choice, not even talking about explicitly conceptualizing well-defined universal moral rules without any contradictions.

Conclusion

To sum up all mentioned above, roboethics is flawed, yet still powerful tool for assessing actions of robots from moral point of view. Apparently, robots will continue their development no matter the circumstances. Thus, roboethics needs to be developed properly and quickly. If this is accomplished through conscientious research and constructive debate, society will have an opportunity to co-exist with robots harmoniously and use their full potential for the best.

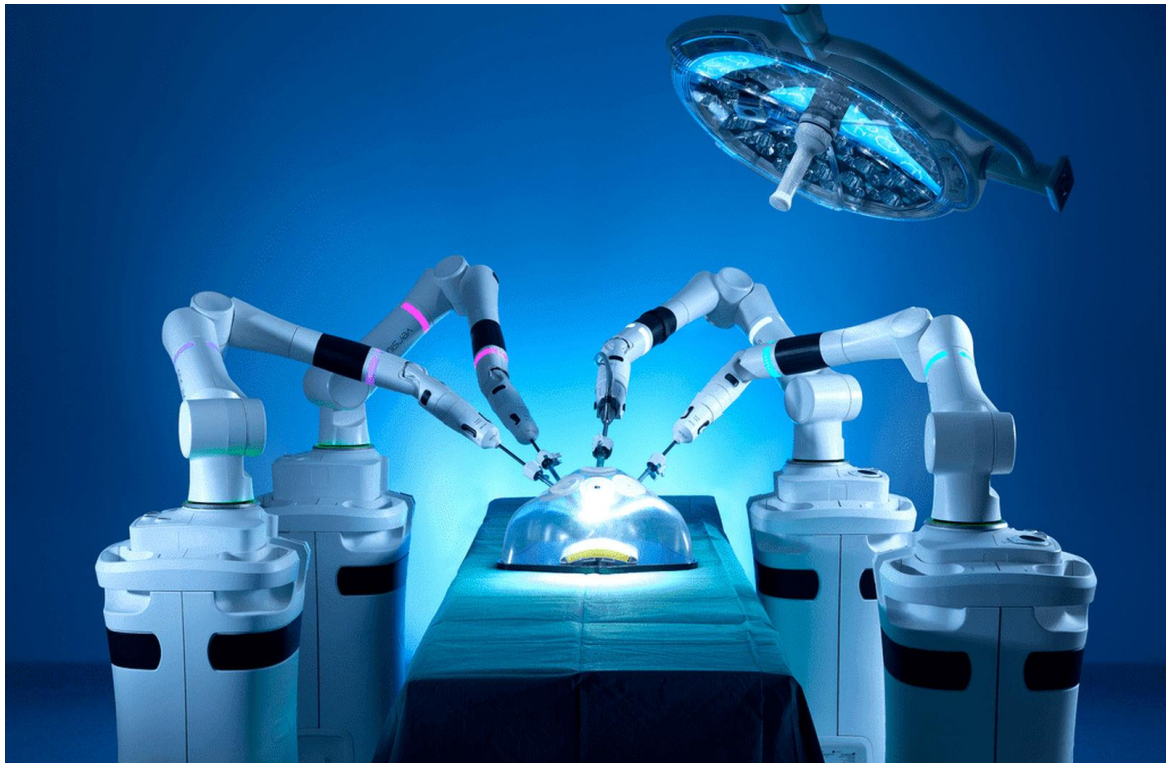


Figure 1 (An example of robo-surgery)

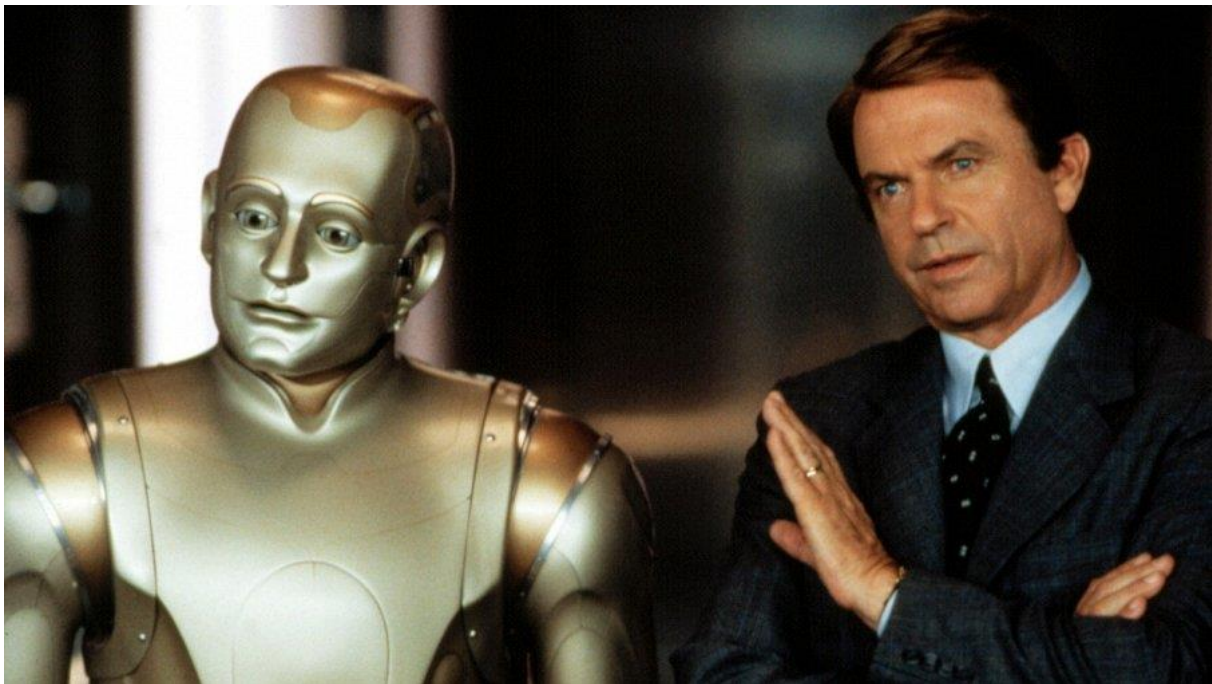


Figure 2 (A robot shown in Asimov's work)

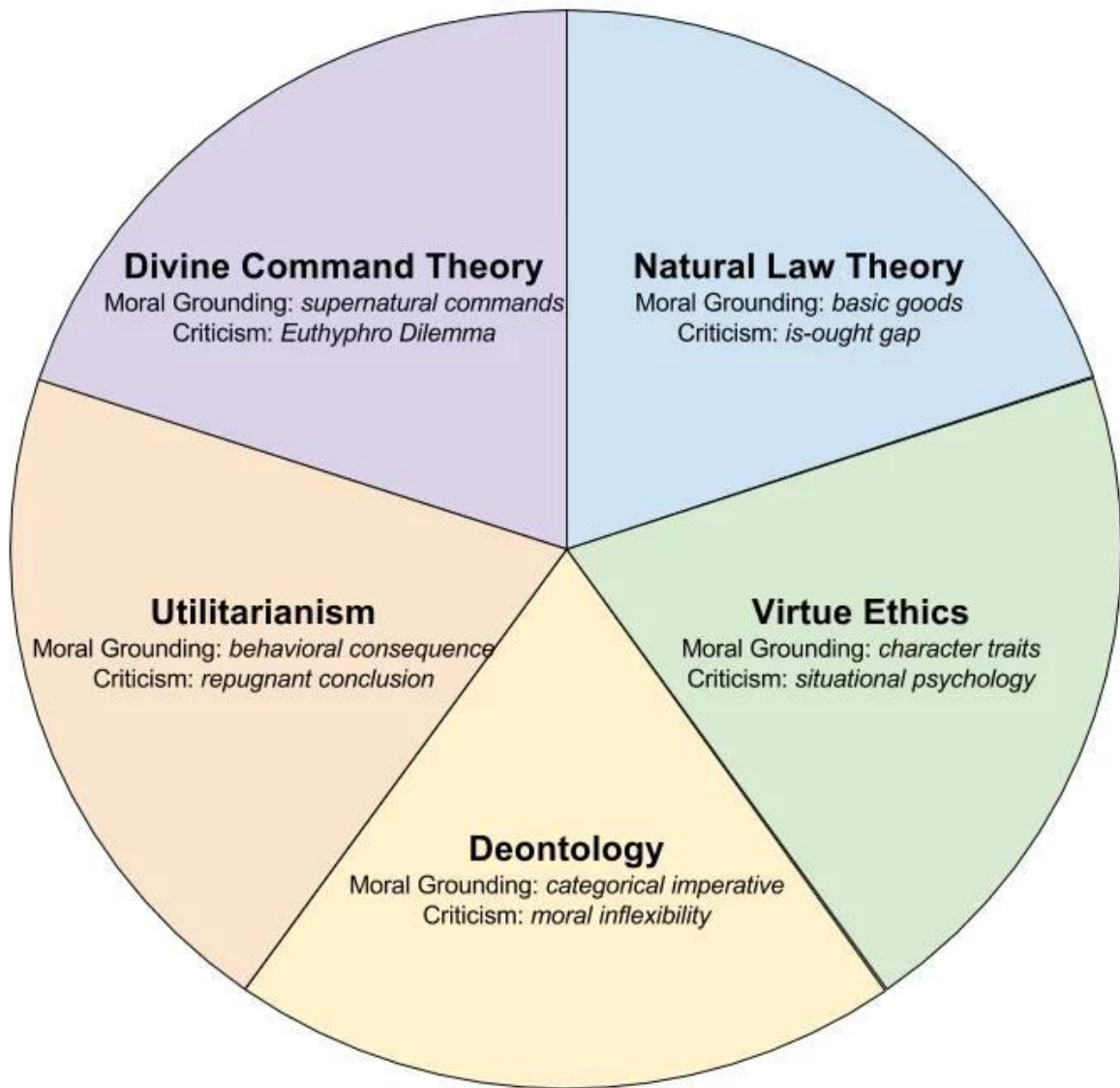


Figure 3 (Diverse moral theories)

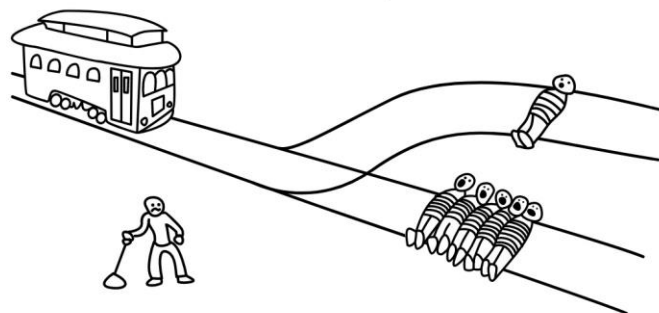


Figure 4 (A depiction of a trolley problem)

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