MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION OF REPUBLIC OF UZBEKISTAN

ANDIJAN MACHINE-BUILDING INSTITUTE

MACHINE-BUILDING FACULTY

ESSAY

Theme: *Robots and computers*

Prepared by: Nozimbek Almatayev

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Checked by: Nargiza Mirzayeva

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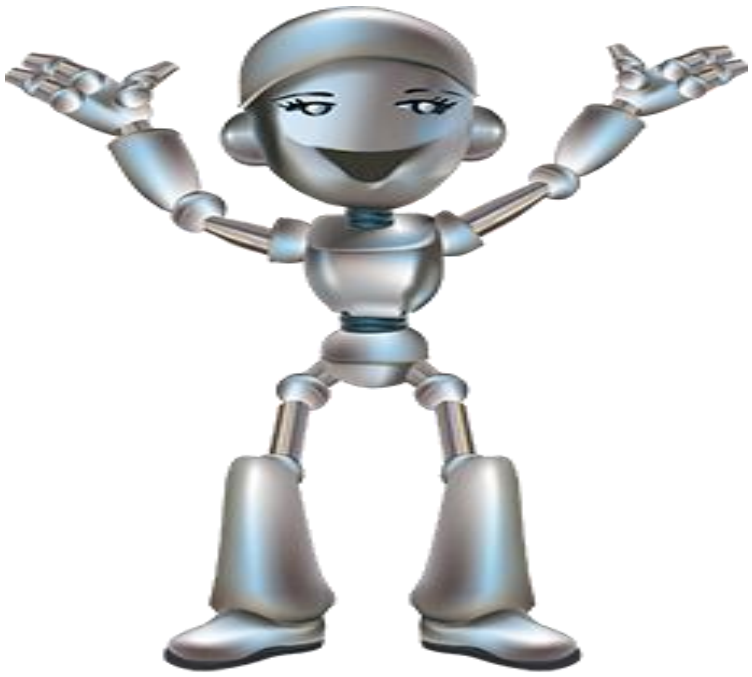
Plan:

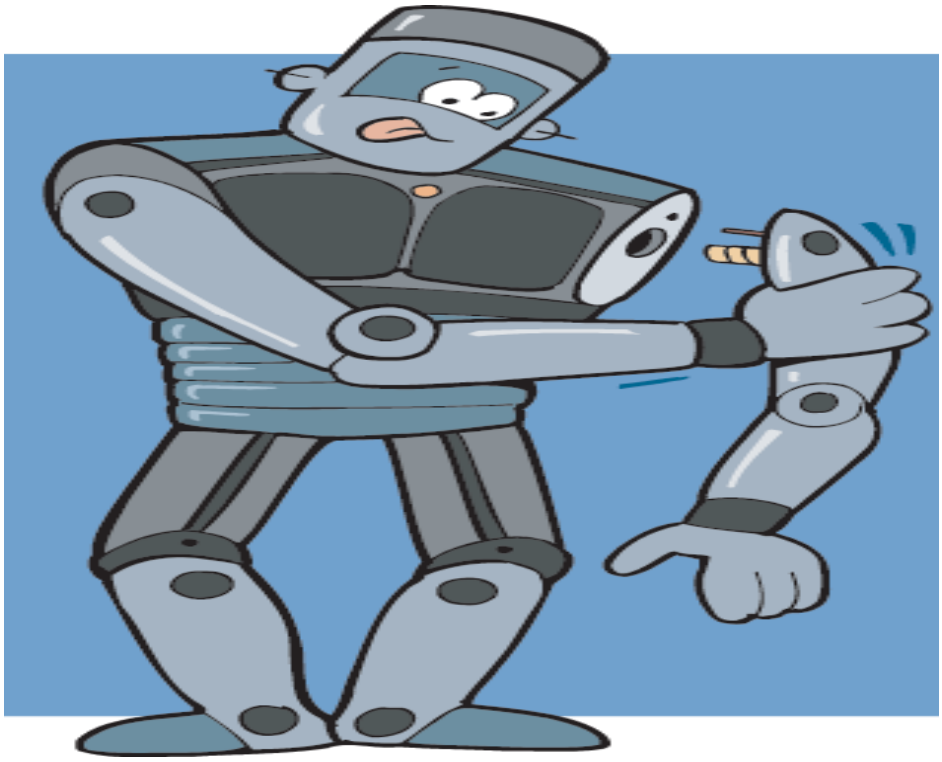
1. *What is a robot?*
2. *History of robots.*
3. *Early uses.*
4. *What do robots do?*
5. *What types of robots are there?.*
6. *Humanoid robot*
7. *Parts of a robot*
8. *What is computer?*
9. *When was the first computer invented?*
10. *What types of computers are there?*
11. *Hardware and software*
12. *Computers then and now*
13. *Bibliography*
14. *Conclusion*



For many people it is a machine that imitates a human—like the androids in Star Wars, Terminator and Star Trek: The Next Generation. However much these robots capture our imagination, such robots still only inhabit Science Fiction. People still haven't been able to give a robot enough 'common sense' to reliably interact with a dynamic world. However, Rodney Brooks and his team at MIT Artificial Intelligence Lab are working on creating such humanoid robots.

Robot *term- comes from the Czech word "robota" which means "forced work or labor." We use the word "Robot" today to*

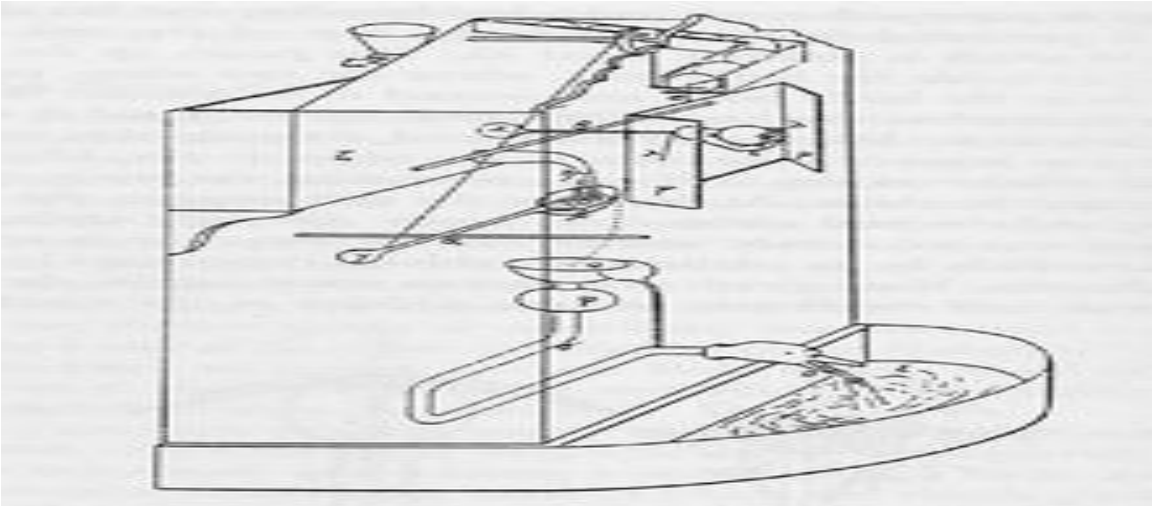
mean any man-made machine that can perform work or other actions normally performed by humans, either automatically or by remote control. Robotics is the science and study of robots. It is a system that contains sensors, control systems, manipulators, power supplies and software all working together to perform a task. Designing, building, programming and testing a robots is a combination of physics, mechanical engineering, electrical engineering, structural engineering, mathematics and computing. In some cases biology, medicine, chemistry might also be involved. A study of robotics means that students are actively engaged with all of these disciplines in a deeply problem-posing problem-solving environment.



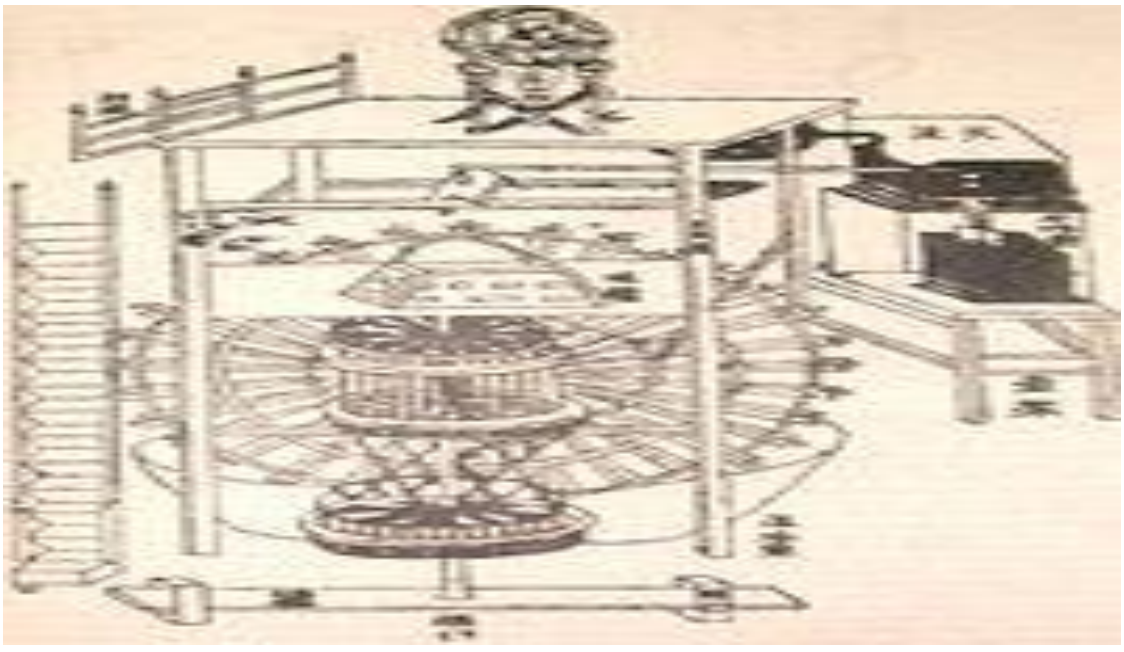
Robots seem like a modern day invention, but in reality evidence suggests that automation were created for everything from toys to parts for religious ceremonies in ancient Greece and Rome Leonardo da Vinci sketched plans for a humanoid

robot in the late 1400s. Jacques da Vaucansonwas famous in the 18th century for his automatedhuman figure that played the flute and for a duck that could flap its wings. Many automated inventions that could behave in similar fashion to a human have been documented throughout history.

Most were created largely for entertainment purposes. Fiction writers found great success in writing about robots in all sorts of situations which meant that the robot was part of daily conversation and imagination. In 1956 George Devol and Joseph Engelberger formed the world's first robot company. By the 1960s robots were introduced into the General motors automobile plant in New Jersey for moving car parts around. Robots continued to develop and can now be found in homes as toys, vacuums, and as programmable pets. Today robots are a part of many aspects of industry, medicine, science, space exploration, construction, food packaging and are even used to perform surgery. Watson, a robot with artificial intelligence from IBM, defeated the human players in an episode of Jeopardy



Many ancient mythologies, and most modern religions include artificial people, such as the mechanical servants built by the Greek god Hephaestus (Vulcan to the Romans), the clay golems of Jewish legend and clay giants of Norse legend, and Galatea , the mythical statue of Pygmalion that came to life. Since circa 400 BC, myths of Crete include Talos , a man of bronze who guarded the Cretan island of Europa from pirates. Washstand automaton reconstruction, as described by Philo of Byzantium (Greece, 3rd century BC). In ancient Greece, the Greek engineer Ctesibius (c. 270 BC) "applied a knowledge of pneumatics and hydraulics to produce the first organ and water clocks with moving figures. In the 4th century BC, the Greek mathematician Archytas of Tarentum postulated a mechanical steam-operated bird he called "The Pigeon“ Hero of Alexandria (10–70 AD), a Greek mathematician and inventor, created numerous user-configurable automated devices, and described machines powered by air pressure, steam and water.



In ancient China, the 3rd century text of the Lie Zi describes an account of humanoid automata, involving a much earlier encounter between Chinese emperor King Mu of Zhou and a mechanical engineer known as Yan Shi, an 'artificer'. Yan Shi proudly presented the king with a life-size, human-shaped figure of his mechanical 'handiwork' made of leather, wood, and artificial organs. There are also accounts of flying automata in the Han Fei Zi and other texts, which attributes the 5th century BC Mohist philosopher Mozi and his contemporary Lu Ban with the invention of artificial wooden birds (ma yuan) that could successfully fly. In 1066, the Chinese inventor Su Song built a water clock in the form of a tower which featured mechanical figurines which chimed the hours

Imagine if your job was to tighten one screw on a toaster. And you did this over and over again on toaster after toaster, day after day, for weeks, months, or years. This kind of job is better done by robots than by humans. Most robots today are used to do repetitive actions or jobs considered too dangerous for humans. A robot is ideal for going into a building that has a possible bomb. Robots are also used in factories to build things like cars, candy bars, and electronics. Robots are now used in medicine, for military tactics, for finding objects underwater and to explore other planets. Robotic technology has helped people who have lost arms or legs. Robots are a great tool to help mankind. Furtemore they must obey these three laws:

- *a robot must not hurt a human*
- *they must obey orders by human*

- *they must protect itself unless this conflicts*

  with the first or second law

Mobile robot

Mobile robots have the capability to move around in their environment and are not fixed to one physical location. An example of a mobile robot that is in common use today is the automated guided vehicle or automatic guided vehicle (AGV). An AGV is a mobile robot that follows markers or wires in the floor, or uses vision or lasers. AGVs are discussed later in this article.

Mobile robots are also found in industry, military and security environments. They also appear as consumer products, for entertainment or to perform certain tasks like vacuum cleaning. Mobile robots are the focus of a great deal of current research and almost every major university has one or more labs that focus on mobile robot research.

Mobile robots are usually used in tightly controlled environments such as on assembly lines because they have difficulty responding to unexpected interference. Because of this most humans rarely encounter robots. However domestic robots for cleaning and maintenance are increasingly common in and around homes in developed countries. Robots can also be found in military applications

Industrial robots (manipulating)

Industrial robots usually consist of a jointed arm (multi-linked manipulator) and an end effector that is attached to a fixed

surface. One of the most common type of end effector is a gripper assembly.

The International Organization for Standardization gives a definition of a manipulating industrial robot in ISO 8373: "an automatically controlled, reprogrammable, multipurpose, manipulator programmable in three or more axes, which may be either fixed in place or mobile for use in industrial automation applications."

This definition is used by the International Federation of Robotics, the European Robotics Research Network (EURON) and many national standards committees

Service robot

Most commonly industrial robots are fixed robotic arms and manipulators used primarily for production and distribution of goods. The term "service robot" is less well-defined. The International Federation of Robotics has proposed a tentative definition, "A service robot is a robot which operates semi- or fully autonomously to perform services useful to the well-being

of humans and equipment, excluding manufacturing operations.“

Military robot

Some experts and academics have questioned the use of robots for military combat, especially when such robots are given some degree of autonomous functions. There are also concerns about technology which might allow some armed robots to be controlled mainly by other robots. The US Navy has funded a report which indicates that, as military robots become more complex, there should be greater attention to implications of their ability to make autonomous decisions. One researcher states that autonomous robots might be more humane, as they could make decisions more effectively. However, other experts question this.

One robot in particular, the EATR, has generated public concerns over its fuel source, as it can continually refuel itself using organic substances. Although the engine for the EATR is designed to run on biomass and vegetation specifically selected by its sensors, which it can find on battlefields or other local

environments, the project has stated that chicken fat can also be used.

Manuel De Landa has noted that "smart missiles" and autonomous bombs equipped with artificial perception can be considered robots, as they make some of their decisions autonomously. He believes this represents an important and dangerous trend in which humans are handing over important decisions to machines

Humanid robot

The term 'robot' was first used to denote fictional automata in a 1921 play R.U.R. by the Czech writer, Karel Čapek. The word 'robot' is of Czech origin.

In 1928, one of the first humanoid robots was exhibited at the annual exhibition of the Model Engineers Society in London. Invented by W. H. Richards, the robot Eric's frame consisted of an aluminium body of armour with eleven electromagnets and one motor powered by a twelve-volt power source. The robot could move its hands and head and could be controlled through remote control or voice control.

Westinghouse Electric Corporation built Televox in 1926; it was a cardboard cutout connected to various devices which users could turn on and off. In 1939, the humanoid robot

known as Elektro was debuted at the 1939 New York World's Fair. Seven feet tall (2.1 m) and weighing 265 pounds (120.2 kg), it could walk by voice command, speak about 700 words (using a 78-rpm record player), smoke cigarettes, blow up balloons, and move its head and arms. The body consisted of a steel gear, cam and motor skeleton covered by an aluminum skin. In 1928, Japan's first robot, Gakutensoku, was designed and constructed by biologist Makoto Nishimura

Conclusion

There are concerns about the increasing use of robots and their role in society. Robots are blamed for rising unemployment as they replace workers in increasing numbers of functions. The use of robots in military combat raises ethical concerns. The possibilities of robot autonomy and potential repercussions have been addressed in fiction and may be a realistic concern in the future. If robotics experts and forecasters are correct, people will soon see robots leaving the factory and taking their place among the rest of society, performing tasks once imagined only in science fictionIt is difficult for a college student to imagine life without a computer. However, computers have only been around since the mid 1900's. The computer industry went from making computers that took up an entire classroom to currently being able to fit into a student's backpack. Also, computers used to be much more expensive and required a

numerous amount of energy than computers of today. Finally, in the 1980s, people began placing these foreign objects into their home. During this time, people had to really study and be patient with this handy device. People have seen the drastic changes that have been made to computers in a span of only forty years. Computers are much smaller, lighter, require less energy, and cheaper. However, in today's generation, computers are second nature to most people, and one could not imagine life without computers!