

Analysis and Application of Robotics

Jashandeep Singh¹, Gaganjot Kaur²

¹Student, Department of Mechatronics Engineering Chandigarh University, Gharuan

²Assistant Professor, Department of Mechatronics Engineering Chandigarh University, Gharuan

¹Jashandeep6667@gmail.com, ²gaganbaidwan93@gmail.com

Abstract

In this advanced period the enterprises are finding the approaches to do their work, that ways which can lessen their botheration about the human work, exactness and accuracy. So the enterprises being it restorative, car or any assembling businesses are being reliant upon the robots. They are searching for a future where there will be decreased human mediation. In this paper these things are talked about, that where and how mechanical technology is actualized or which contemplate is to be done to complete it.

Keywords: Robotics, Commercial, Domestic, Industrial, Medical.

Introduction

Robotics is that kind of interdisciplinary branch of science and engineering which deals mechanical engineering, computer science, electronics engineering. This field deals with design, sensors, actuators, computer programming, information processing. These technologies came into the existence to replace the humans by the robots which decreases the chances of the human life danger, increases the efficiency of the work. With introducing robotics into physical existence. This gave a great boost in many industries. These were made to replace humans and for the purpose they were introduced they are performing their function well and at present time they are the replicas of humans. Concept which is behind creating these robots are autonomously which is dependent on artificial intelligence. Today's time is the great boost in robotics line as due to advancement in technology. As new robots are created and they are properly managing to work practically. They are introduced in many fields' weather it is domestic, military, industrial, commercial, medical. Many robots which are used in domestic purposes like home automation in which robots work as workers like sweeper robots, robot which work as vacuum cleaner .Many robots are working on the scale where the life of human has hazard like diffusing bomb, many of the robots are working as the spy robots they goes to such area where it is difficult for person to reach. As we talk about the robots in industrial revolution so they have a great hand in industrialization. Basically these are the arms which are performing some kind of work like welding, painting, handling of material. For commercial use the robots like humanoids can be used such that they work in restaurants, markets etc. Talking about medical line in this field nanotechnology can be used to do operations in which these small robots went into person's body and controlled with computers called as robotic surgery. The main the robotic arm in which they can be used in both commercial and industrial purposes. The main idea which came behind it is degree of freedom and the other fundamental abilities have to be considered on which the robotic arms works in a proper and effective manner.

Literature Review

T. Karuppiah (2014) in his book chapter[1] he state the analysis and application of the robots. In this he talk about the robots which are existing in the world and its applications that where and how are the used. He state the robots which are in existence are such that they are sufficiently and working there tasks properly. While talking about the application of robotics he determined some of the fields where the robots are used at a particular time. Firstly they talk about the robots in home applications where he is talking about robots which are used in home. Secondly they are talking about the robots which are in commercial use then they further specify the robots in security purposes like cctv cameras. Then came the use of robots in the biomedical which are based on nanotechnology and the bots name as nano bots which are used in surgeries. Industrial application is the important part which gave the boost in industrialization in which the production rate increases with the demand and helps in upliftment of nation. Then he talks about the robotic arms in which they explain the working of the arms and the axis of their movement how the move on their axis and how the data are transferred from one form and how they are manipulated for the working of the specific function. Then they talk about the use of robotics in bio medical in which he talks about the bio mimetic robot hand win which they defined that how the robotic hand works parallel to the human hand. In which they used a little a bit of kinematics in which concept of linear actuators are used. Then the use of the robots in surgery are defined by them in which they talk about the fundamental motion like degree of freedom is given for the comfort of the public in which they talked about the commercializing this thing. They used to control the robots with console. Then came the experimental and knowledgeable robots which are made experimentally for the learning purposes. These robots are robotic arm, line following robots and many more.

Akin Aliosmanoglu and Ilkie Basaran (2012)-In this article[2] he tells us about the nanotechnology used in cancer treatment. In this he explained that the nanotech is more useful technology as The detection of the cancer is easy ihe tells us about this as xray emits mutagenic particles and many harmful particles which can cause cancer. To get protected from these issues nanoparticles are used which have special dyes which reacts and easy to detect. It can also be used in drug delivery as Nano polymers are anticancer medicines which are in ph level. It builds in such a way that the coating on it is break down when certain ph reacts with it and medicines get injected at that part. Nanotechnology is used as treatment for cancer. Some of the light particles reacts with phosensitizer and creates a oxygen that cures nearby cells. These upper things are injected in the body with the help of nano bots which is the great usage of robotics.

Minoru Asada et. al. - The report[3] publish by them in which they tell us about the use of robotics which are used in domestic purposes like use of robotics in home usage, office usage etc. in this research they have talked about the research done in these field. They talked about robocup which is for promoting AI. These competitions are introduced to promote as while making a certain project their comes the problem related to the physical and the technical problems. While playing a robo football so multi problems occur so these are organized to promote. And more over they talked about robot which worked as human assistance which are going to work in office and the main reason is communication lack to operate them. In this they talked about home automation in which comes the vacuum cleaner in which they are sufficient to do their work with the accuracy. And then comes the other robots which are for domestic purposes.

They talked about some of the other tools which are introduced to promote robotics in domestic work such as LEGO kits and SONY kits. These LEGO kits contain some of the

tools which combine and make the robot with which the robot is ready to do its certain domestic work. And these kind of things also enhances the attraction of the person toward the enhancement of the robotics. They have also talked about the various kits which are present now.

V.M.Chadeev and N. I. Aristova (2017)-In their article[4] it states that the the industries are going in the automation in which robotics have the great hand behind it. They state that the amount of productivity is increased with the rise of the robotics they have named this automation as the self-producing. They determined the robotics as the main component of the automation. They also said that the price of the robots are worth they fulfill their cost with the time of production. This decreases the work of the human with which the life of the human can be secured. And the robots are able to perform their work accurately and with less human efforts. Most of the industries are using robotic arms.

V.Patidar and R. Tiwari (2016)-This report[5] consist of a robotic arm and its development. They gave the technical information about research. They introduce us with the commercial use of the robotic arm and which are having a great accuracy. In this report they have studied about robotic arms which are introduced from 20 years. They also talked about the parameters which gave them the upliftments. They have also talked about the fields where the robotic arms being used in domestic purposes, commercial purposes and industrial purposes. They have also talked about all the dimensions of the arms. At which axis which of the arm is going to move in particular direction. They have also told us about the degree of the freedom which is the most important part and tried to compare it with human arms. Talk related to kinematics was also introduced by them. The main factor payload was done by them that how much load a particular arm can handle. Then comes about the motors which came under the factor of speed and acceleration in which they have talked about the revolution of the arms and the velocity. And accuracy was also discussed.

Conclusion

In this I have studied about the basic application of the robotics. That where they are used and what kind of work they are performing in a particular field. They can be said as 2nd humans due to their intelligence given to them by us. I have also studied about the analysis of the basic use automated products. In which one of them is Robotic Arm. There are a lot of fundamental terms which we need to take care of while making these products like speed, acceleration, movement, load that has to be carried, motors which to be used and more. Robotics have a great scope in medical line in which they are able to do ,any of the surgeries and the surgeries are successful. The chances of mistakes are very less. Cancer treatment are also done with the help of robotics by nanobots which are a great achievement. Heart blockage is also started by them. These are the upcoming technologies that will rise the technology sector a great as they have been started using in home technologies, industrial technology, commercial uses and many other fields. They are used in playing sector as well as many of the tournaments are organized to promote robotics.

References

[1] T. Karuppiah , K. Subramanian , N. Nandakumar, K. Shanmugasundaram,” International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering”, Vol. 3, Issue 2, February 2014.

- [2] Nanotechnology in Cancer Treatment by Akin Aliosmanoglu and Ilker Basaran, *Nanomedicine & Biotherapeutic Discovery*, **2012**..
- [3] Robotics in Home, Office and Playing Field by M.Asada, Henrik I. Christensen.
- [4] V. Patidar and R. Tiwari, "Survey of robotic arm and parameters," *2016 International Conference on Computer Communication and Informatics (ICCCI)*, Coimbatore, **2016**, pp. 1-6.
- [5] V. M. Chadeev and N. I. Aristova, "Control of industrial automation," *2017 Tenth International Conference Management of Large-Scale System Development (MLSD)*, Moscow, **2017**, pp. 1-5.