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Impact of Biologically Inspired Robotics on Business Performance

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Abstract

In the current times modern robotic technologies have the capability to enable robots to work and operate in not so developed and unstructured and dynamically changing work environments. Various sectors and in the business organisations employees and managers are now transforming their workplace from a more traditionally structured ambience to a more technologically advanced environment. This way, robots have become an integral part in making such progress in the business world. One important approach to build these types of intelligent and automated robotic technologies is to take inspiration from biological systems. It can be very convenient as biological mechanisms, structures, and other underlying principles have the ability to provide new ideas to assist the improvement of existing robotic control, design and operation systems. This paper analyses the importance of biologically inspired robotic technologies in the business world. In this research article both secondary qualitative and quantitative data has been collected and analysed to develop the study. The research study reveals that for improving the efficiency and productivity in the business performance the influences of these Bio-inspired robots is huge.

Keywords

Bio-inspired robots, business performance, global business, technological revolution, technology.

INTRODUCTION

The paper represents the art of future work and survey of the biological inspired robots. From the past decades, people have tried to illustrate the usefulness, appearance, portability and intellect operation of the fauna. This biological robot's area have the name of biosensor that are advanced for their duplicate appearance of human beings and other creatures of biological that are made as a statue to increase the amount of robots work with the help of practical concept. However, the term biological inspired and the term biological inspired robots started with the past few years in the early twentieth century. The technological developments of building robotic machines that are frustrating the fauna features that are being seen in the past and thereby it is changing day by day. Any machines that are able to walk, fly or swim can be termed as inspired by legged creatures, birds or fishes, each of the moving robots that belongs from all these creatures can be said as they are biological inspired. Since, creatures are intricate with both practically and structurally that evidential with entire escalation of any of the creature in programs or hardware is impractical. The technologies in robotics have been progressed a lot for the development of the business framework. Many engineers and researchers are trying to advance the technology with the help of the features of animal performance. This study aims to determine the impact of robotics developed through implication of biology for enhancing the business performance. In order to fulfil this objective of this research proper methods have been adopted by the researcher.

DEVELOPMENT OF ROBOTICS AND FUTURE CHALLENGES

With the requirements of expansion in the society, there has been a rapid advancement in the robotic technology in the recent times along with the technology of electromechanical engineering and Information technology. Robots are considered as the integral part in our society and play a vital role in different types of fields. The first robot for industries that is based on fluid drive was discovered in 1950 (Lenau and Lakhtakia, 2021). With the development of information technology and electromechanical engineering, the industrial robots were applied widely and extensively based on the electromechanical engineering. Different types of robots involving the medical robots, bio- inspired robots, humanoid robots and service robots have attracted the attention of many scientists in numerous amounts. However, there are some critical problems that are limited to the application and development of the robots needed to be solved. Most of the current robots are prepared with help of electromechanical systems. Also, various transformation of energy occurs from the energy that are available to the electricity needed for the system of electromechanical, thus reducing the efficiency of the energy. Additionally, most of the traditional robots are made from the electromechanical systems that consist of wires, metals and some of the hard materials (Watson *et al.* 2020). These artificial structure and materials states that there is a lack of intrinsic safety, adaptability and flexibility for the robots that needs an interaction with the human- robot application.

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ADVANTAGES BIOLOGICALLY INSPIRED ROBOTICS

There are many advantages of using the biologically inspired robots such as there is a wide range of accuracy in handling of programs and the operations can run according to the plan. Companies are using the biologically inspired robotics that provides the safety to the employees in dangerous work, the heavy machinery that can run at hot temperature and sharp objects can injure an employee by delegating the dangerous task the robotic systems minimize the risk for an employee (Liu, 2019). Biologically inspired robots provide many opportunities to the company. It provides the highest speed for manufacturing products than the employees and this type of robot does all its operations with perfection that helps a company to increase productivity and rapid servicing.

METHODS AND TECHNIQUES

Data collection and data analysis are an integral part to develop a research article. Data collection and data analysis are the methods of collecting data from numerous sources and analysing the data. In the secondary data collection method, researchers gather data from published research articles, journals and online websites. Furthermore, quantitative data is when numeric data is collected from authentic sources and qualitative data is when logical descriptive data is collected. In this research article both ***secondary qualitative and quantitative data*** have been volleyed from reliable sources to gather information about the impact of Bio-Inspired robots in the business performance. This method has been chosen because it allows researchers to present both descriptive and fact-based information for drawing conclusions to develop the research article.

RESULT AND DISCUSSION

Biologically inspired robotic technologies generally take inspiration from animal and plant-based models which have the ability to think, crawl, walk, swim and fly. In the modern times Bio-inspired are becoming increasingly important in the face of complex applications (Wang *et al* 2020). In order to enhance the business performance, most of the multinational companies planned to adopt bio-inspired robots as it supports the minimization of time-counting tasks in a proper manner. As per the words of (Mintchev*et al.* 2017), throughout the current multinational companies, the adoption of bio inspired A.I. technologies are rare as the current pierce of these systems is very high. On the other hand, there are many different kinds of benefits that can be achieved by the adoption of bio-inspired robots such as economic downturns measurements, market reputations, brand image enhancement palms and many others.

The biological entities provide many advantages for the business development that are sometime difficult in achieving by using the artificial methods (Bujard*et al.* 2021). Moreover, biological methods also process the functional compatibility of environment as well the capabilities of self- assembly and self- repair. However, the biological materials are developed in a smart excellent sensing, actuation system and intelligence system but still these are very different for the replication by using the artificial methods with the technologies that are available currently. This paper reviews the existing study of biological inspired robots that summarize the development of the business. The capabilities of biological inspired robots are promoted with the help of usage of several materials such as control strategies and fabrication method. Moreover, identification of various living material of biological inspired robots that are combined with the corresponding characteristics is necessary to develop the business performance (Bujard*et al.* 2021). These materials of the biological provide various other properties such as size, controllability, and cellular force. Also, it helps to analyse the non- living things that are recently used in biological inspired robots. The properties of fabrication methods help to determine the contractility, survivability, and differentiation along with the properties of force, manipulation and velocity (Watson *et al.* 2020). At the final stage, it identifies the various challenges that are faced in the further business development of biological inspired robots. The properties of fabrication methods help to determine the contractility, survivability, and differentiation along with the properties of force, manipulation and velocity. At the final stage, it identifies the various challenges that are faced in the further business development of biological inspired robots.

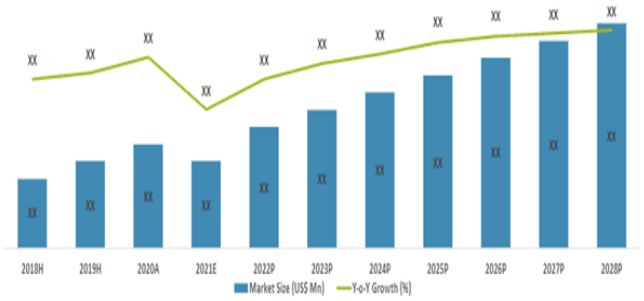

Figure 1: The market size of bio inspired robotics
(Source: Inspired from Amjadi*et al*, 2019)

On the other hand, the adoption of modern robotics can provide various ways for the companies to achieve huge success in the global market through a logical manner. As per the suggestions of (Amjadi*et al*, 2019), bio inspired robotic systems allow various benefits in company's inventory such as unstructured environments, traditional structure of the current inventory, innovative products and attract more customers. However, there are many different kinds of issues that can be included if a company will pay huge attention to these types of boots' maintenance such as system failure, data crash and many others. In this case, there are many different types of robots are presented sub as legged, mobile robots, biped robots and many other. In order

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to select proper and suitable systems, the adoption of multi-legged robots is the most suitable option for the companies as it helps to enhance the productivity rate through a logical manner.

Bio inspired robotics are developed more quickly by the engineers for this efficiency and accuracy in work. It consumes minimum time to manufacture a product and services rapidly. Companies are more comfortable using these kinds of robotics systems nowadays to create a successful business. The technologies that are used to build biologically inspired robotics are significantly advanced and the employees can easily complete their jobs with the help of biologically inspired robots (Chen, 2019). Companies can service their product more quickly to the customer and also can satisfy their customer by increasing their productivity with the help of biologically inspired robots. The companies are also able to gather the positive feedback from their customers and increase their brand loyalty with their effective service and product quality. This process also reduces the extra costs from the business and helps to create a positive relationship with the employees as they minimize their work.

Biologically inspired robotics helps today's robots to operate in a different unstructured and dynamically converting environment and also in the traditional structured environment, for this reason companies are focusing to implement these types of robotics in their business for their business growth. However, there are also some challenges in implementing this robotics companies are trying to make proper strategies to overcome such problems and implement biologically inspired robots. The biologically inspired robots provide rapid solutions and operate multiple actions in various dynamic situations (Su*et al.*2018). These robotic systems are more developed and effective than the previous robotics systems, for this reason companies are using these types of robots to build a successful business in this competitive market.

CONCLUSION

Biologically inspired robotics is the system of improving robotic systems, many companies are using this system to enhance their business. This system provides many opportunities to businesses. This helps the companies to make robotic technologies that help to reduce the cost of a company and increase the productivity and efficiency of employees. Biologically inspired robotics also helps to emerge new robotic designs. In current days many companies are using technologies to increase the efficiency of their employees and enhance their business. Biologically inspired robotics helps the companies for their business growth.

There are several disadvantages that are faced by the company to implement the biologically inspired robotics such as this robotics system needs much cost to implement. Companies cannot afford the huge cost of biologically inspired robots in their business for its huge price. Employees can take maximum time to undertake the techniques of using these robotics systems and creates problems for the companies to implement such biological inspired robotics. Moreover, this robotics system also helps the new robots to operate in an unstructured and dynamically transforming environment in addition to the traditional structured environment, for this reason companies are showing their interest to implement this type of robotics to enhance their business performance.

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