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BIONIC ARM

(Review Report)

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***Abstract*: This paper gives about an idea about the issues concerning the integration of artificial limbs. This paper includes on overview of research finding on the development of BIONIC ARMS that are used as prosthetic arms. Controlling by the sensory feedback system. The system are used on vibration and electrical system and combination of the two methods.**

***Keywords:* BIONIC ARMS, Electrical System, Prosthetic Arms, Combination.**

1. INTRODUCTION

Bionic Arm is a best revolution idea for the amputees across the world. This is as close as we can get to our natural limb. The main objective is to make the arm move with our brain unlike previous prosthetic upper limbs. In case of bionic arm we take the never signals from the brain and amplify it so that we can register the signal and convert that electrical signals to mechanical energy so as to move the mechanical device ie. The arm prosthetics is being used and constantly being perfected to suit human needs. Various types of prosthetics have been made to suit many actions but not all. But the bionic arm will be able to perform all kinds of movement of the human upper limbs.

2. REVIEW REPORT STUDIED

I. Modelling of Bionic Arms

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JIS College of Engineering, India.

Methods: The study report is made on the bionic arm modelling which works on the electrical signals which are converted in the mechanical energy used to move the prosthetic arm.

The signals from the brain are converted by the use of microcontrollers and sensors. The model component used are sensors. The uniform signals from random signals goes to the brain that is the NARMA L2 controller which goes to the bionic arm system that consist to biopotentia amplifier and transducers.

Result: Since the brain reviews various signals to perform a wide range of functions pertaining to different system of human body any unknown system would require the training of brain. We have to program the controller so that it can identity which signals are extensively for the movement of the upper limb.

Conclusion: The aim of paper was to give a theoretical analysis of a concept which can be important lamented in practice. This would also help to concentrate about the limitations of artificial limbs which can only perform a very few actions making user all the more conscious of their development deficiencies.

II. Designed Of A Human Hand Prosthetics

Submitted By: Paul Ventimiglia (LA & E)

Method: The study report is made on the prosthetic human hand which works on the electrical signals & mechanical components which make a prosthetic hand.

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The signals are received by the biological sensors. Which are amplified by the controllers and give signals to the mechanical setup or mechanical parts assembled to make a hand. The movement of a fingers arm are controlled by the pressure sensors and gear motors and a sensory feedback system.

Result: - The arm model uses the pressure sensors and a sensory feedback system hence the prosthetic arm works more like the natural arm but the signals vary from person to person and the sensor and system have to be designed as per he individual.

III. Robotic Arms

Submitted by: Patent insight Pro

Methods: The report review gives the overview on the various prosthetic models that are generated by the various scientists and manufactures.

The report is done on various robot types: -

Anthropomorphic Robots

Articulated Robots

Industrial Robots

SCARA Robots

Applications:

Agriculture

Defence

Material Handling

Medical

Other Industrial Applications

Parts of Robotic Arms:

Actuators

Controllers

End effectors

Sensors

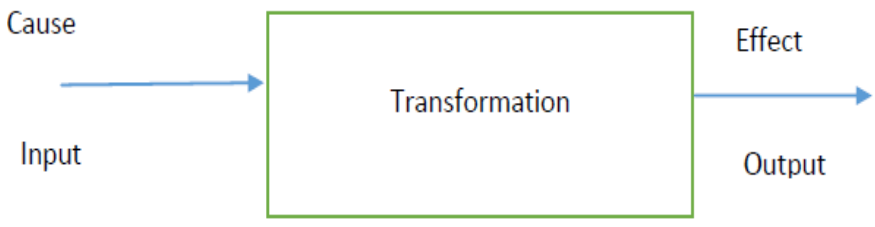
IV. Bionics and Systems theory approach to the investigation of human gait

Submitted By: Janusz M. Moraswski

Institute of Aviation, Wordaw, Poland

Method: The study report gives the idea about the cybernetic and bionic approach to the prosthetic field. The research techniques in the report were the system theoretic approach provides a row of specific effectiveness procedure and tools.

Cause effect approach:



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Gait techniques:

It is the mathematics approach to study the model perfectly.

Conclusion: the paper consist of some predominant features of bionic, cybernetic and system theoretic approach have been pointed and compared with sheet statistical and direct ex-permanent procedures. The advantage and disadvantages of the methods were pointed out.

V. Neuroprosthetic Interfaces The reality behind Bionics and Cyborgs

By: - Gerald E. Loeb.

Content: The report consisted about the history of the prosthetic and the recent prosthetics.

The report gave the idea about the working of various models based on biophysical principles

The current clinical devices:

Sensory replacements.

Hearing – Upper Limbs (Arms)

Vision – Lower Limbs (Legs)

Conclusions: The Conclusion was made that basically all the physical and physiological function are controlled by nervous system and virtually all neurons are similar component and principles to transmit information from sensor to effector organs.

3. CONCLUSION OF THE REVIEW REPORT

Various research papers and reports were studied to make this review report on bionic arm as prosthetic arm. Various models are available in the market around the global working on various mechanisms but their moto is the same i.e. to make a prefect prosthetic arm.

Result: The outcome of the review report was basically that the bionic arm can be used as the prosthetic arm as it is more like the natural arm and various manufacturers and researchers have made efforts to make this possible by developing more perfect and accurate prosthetics to match the need of the user which will help him to do his daily works with the use of artificial limbs.

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