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BIONICS: BIONIC PROSTHETICS

A.K. Mostovaya
biology011902a@gmail.com

Bionics or biologically inspired engineering is the application of biological methods and systems found in nature to the study and design of engineering systems and modern technology. Biomechatronic is an applied interdisciplinary science that aims to integrate biology, mechanics, and electronics. It also encompasses the fields of robotics and neuroscience. Biomechatronic devices encompass a wide range of applications from the development of prosthetic limbs to engineering solutions concerning respiration, vision, and the cardiovascular system.

In this article we study the stages of development of bionic prostheses, their implementation and future prospects.

Prosthetics originates from the ancient Near East circa 3000 BC. Previously, the earliest discovered prosthetic was an artificial leg from Capua. During the Middle Ages and the Renaissance prosthetics became more basic in form and started using iron, steel, non-ferrous metals and simple lever mechanisms. Nowadays bionic prosthesis is an artificial limb which can detect the electrical signals of central, peripheral nervous and muscular system. A modern prosthesis is a lightweight limb, developed with the use of composite materials, polymers and light metals.

Modern prosthetics still has a lot of problems, such as high cost of materials and production, durability, esthetical and medical aspects. In the future bionic prostheses should become simpler, cheaper, more realistic, and developed not only for individual order.

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