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Bionics: An Overview

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Editorial

Biologically inspired engineering is the study and creation of engineering systems and current technologies using biological processes and systems found in nature. Rather of mimicking biological architecture, bionics frequently focuses on fulfilling a function seen in nature. In computer science, for example, cybernetics attempts to model the feedback and control mechanisms that are inherent in intelligent behaviour, whereas artificial intelligence attempts to simulate the intelligent function regardless of how it may be done [1].

Rather of mimicking biological architecture, bionics frequently focuses on fulfilling a function seen in nature. In computer science, for example, cybernetics attempts to model the feedback and control mechanisms that are inherent in intelligent behaviour, whereas artificial intelligence attempts to simulate the intelligent function regardless of how it may be accomplished. The deliberate copying of instances and procedures from natural creatures and ecologies is a type of applied case-based reasoning that treats nature as a database of already-working solutions. The selective pressure put on all natural living forms, according to proponents, diminishes and eliminates failures [2]. The term "bionics" refers to the movement of ideas from biology to engineering and back. As a result, there are two somewhat differing interpretations of the word's meaning.

In medicine, bionics refers to the mechanical replacement or improvement of organs or other bodily components. Bionic implants vary from simple prostheses in that they closely replicate or even surpass the original function. Bionik, the German equivalent of Bionics, always sticks to the wide definition, attempting to build technical solutions based on biological models. The fact that biological solutions are frequently optimised by evolutionary processes motivates this approach. While the technology that enable bionic implants are still evolving, there are a few successful bionic devices on the market, one of which is the multi-channel cochlear implant (bionic ear), which was created in Australia. Many bionic devices have evolved since the bionic ear, and development on bionics remedies for other sensory diseases is ongoing (e.g. vision and balance). Bionic research has lately given remedies for medical disorders like as Parkinson's disease and epilepsy, as well as neurological and mental illnesses [3,4].

Bionic finishes are a unique technique of achieving larger effects with less chemicals. Bionic implies employing natural examples as a springboard for a new technical design. It is the transformation and application of effective biological constructs, processes, and advancements in a systematic manner. This technical mimicking of biological principles is referred to as biomimetics. The shark skin effect is a nice illustration of this impulse. Predatory fishes' scales contain narrow longitudinal grooves that reduce cross-flow in displaced water. This technique has been applied to aircraft surfaces, resulting in a 1% reduction in fuel consumption. Competitive swimmers can benefit from decreased resistance to movement through the water thanks to shark skin swimsuit surfaces. The common thread running across all of these examples, and all bionic finishes in general, is the effective and nearly intelligent fabrication of complicated structures, such as the unique surfaces or poly-layers seen in spider hair, insect wings, butterfly scales, or porous bone material. This concept states that material, which is typically self-organized, is employed in small amounts in specified places for maximum efficiency and is not used elsewhere [5].

Conflict of Interest

None.

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