

Biomimetics: biologically inspired technology

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Abstract

Over 3.8 billion years of evolution nature introduced highly effective and power efficient biological mechanisms offering incredible models for innovation inspiration. Humans have always made efforts to imitate nature and we are increasingly reaching levels of advancement that it becomes significantly easier to imitate, copy, and adapt biological methods, processes and systems. Advances in science and technology are leading to knowledge and capabilities that are multiplying every year. This brought us to the ability to create technology that is far beyond the simple mimicking of nature. Having better tools to understand and to implement nature's principles we are now equipped like never before to be inspired by nature and to employ our tools in far superior ways. Effectively, by bio-inspiration we can have a better view and value of nature capability while studying its models to learn what can be extracted, copied or adapted. Using electroactive polymers (EAP) as artificial muscles is adding an important element in the development of biologically inspired technologies. This paper reviews the various aspects of the field of biomimetics and the role that EAP play and the outlook for its evolution.

I. KEYWORDS

- Biomimetics
- Biologically Inspired
- Electroactive Polymers (EAP)
- Mimicking
- Robotics
- Design

II. CONCEPTS

- Learn from Nature
- Efficient Design
- Smart Structural Design
- New Materials & Mediums

III. THOUGHTS & SUMMARY

- This paper nicely introduces reasons for looking at biology as a model in all areas

of robotics, with emphasis on developing modern biologically inspired materials.

- The Author mentions the need to sort 'biological capabilities along technological categories.' High level categories could be: AI, Structures & Tools, Materials and processes, Artificial Muscles, Bio-Sensors
- Paper emphasizes the current state of the art, shortcomings and what lies ahead in developing new biologically inspired materials for use in robotics

REFERENCES

- [Yoseph Bar-Cohen, 2005] Bar-Cohen, Yoseph (2005). Biomimetics: biologically inspired technology II ECCOMAS THEMATIC CONFERENCE ON SMART STRUCTURES AND MATERIALS C.A. Mota Soares et al. (Eds.) Lisbon, Portugal, July 18-21, 2005