



Review

Natural computing for mechanical systems research: A tutorial overview

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ABSTRACT

A great many computational algorithms developed over the past half-century have been motivated or suggested by biological systems or processes, the most well-known being the artificial neural networks. These algorithms are commonly grouped together under the terms *soft* or *natural* computing. A property shared by most natural computing algorithms is that they allow exploration of, or learning from, data. This property has proved extremely valuable in the solution of many diverse problems in science and engineering. The current paper is intended as a tutorial overview of the basic theory of some of the most common methods of natural computing as they are applied in the context of mechanical systems research. The application of some of the main algorithms is illustrated using case studies. The paper also attempts to give some indication as to which of the algorithms emerging now from the machine learning community are likely to be important for mechanical systems research in the future.

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