

# Preface

It is said very often that humankind should learn from nature. This means that some sort of technology transfer from biology to engineering has to be established. Nowadays, terms such as bionics, biomimetics, or bio-inspiration have been introduced to describe the concepts by which ideas of technology are derived from nature. One of the most important insights so far is that it is not feasible to try to copy nature. As many examples have shown, it makes sense to start with a careful analysis and abstraction of biological processes and structures. The implementation process itself requires substantial adaptation using common engineering knowledge to guarantee successful solutions. It is not surprising that in the field of biomimetics/bionics, principles of evolution or strategies of evolution have gained much attention. The primary goal often lies in surpassing “Nature” and thus achieving outstanding results. All these aspects are to a considerable extent taken into account and covered by the various topics of the contributions in this book. The main aim of this book is therefore to provide the reader with essential information on how biomimetic/bionic working principles are identified and also brought to technical implementation in various engineering disciplines.

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Examples, Ideas and Case Studies

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