Springer Tracts in Nature-Inspired Computing

Simon James Fong
Richard C. Millham *Editors*

Bio-inspired Algorithms for Data Streaming and Visualization, Big Data Management, and Fog Computing

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Preface

The purpose of this book is to provide some insights into recently developed bio-inspired algorithms within recent emerging trends of fog computing, sentiment analysis, and data streaming as well as to provide a more comprehensive approach to the big data management from pre-processing to analytics to visualisation phases. Although the application domains of these new algorithms may be mentioned, these algorithms are not confined to any particular application domain. Instead, these algorithms provide an update into emerging research areas such as data streaming, fog computing, and phases of big data management.

This book begins with the description of bio-inspired algorithms with a description on how they are developed, along with an applied focus on how they can be applied to missing value extrapolation (an area of big data pre-processing). The book proceeds to chapters including identifying features through deep learning, overview of data mining, recognising association rules, data streaming, data visualisation, business intelligence and current big data tools.

One of the reasons for writing this book is that the bio-inspired approach does not receive much attention although it continues to show considerable promise and diversity in terms of approach of many issues in big data and streaming. This book outlines the use of these algorithms to all phases of data management, not just a specific phase such as data mining or business intelligence. Most chapters demonstrate the effectiveness of a selected bio-inspired algorithm by experimental evaluation of it against comparative algorithms. One chapter provides an overview and evaluation of traditional algorithms, both sequential and parallel, for use in data mining. This chapter is complemented by another chapter that uses a bio-inspired algorithm for data mining in order to enable the reader to choose the most appropriate choice of algorithms for data mining within a particular context. In all chapters, references for further reading are provided, and in selected chapters, we will also include ideas for future research.

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