

Computational and Statistical Approaches to Genomics

Second Edition

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Computational and Statistical Approaches to Genomics Second Edition aims to help researchers deal with current genomic challenges. During the three years after the publication of the first edition of this book, the computational and statistical research in genomics has become increasingly important and indispensable for understanding cellular behavior under a variety of environmental conditions and for tackling challenging clinical problems. In the first edition, the organizational structure was: data → analysis → synthesis → application. In the second edition, the same structure remains, but the chapters that primarily focused on applications have been deleted.

This decision was motivated by several factors. Firstly, the main focus of this book is computational and statistical approaches in genomics research. Thus, the main emphasis is on methods rather than on applications. Secondly, many of the chapters already include numerous examples of applications of the discussed methods to current problems in biology.

The range of topics has been broadened to include newly contributed chapters on topics such as alternative splicing, tissue microarray image and data analysis, single nucleotide polymorphisms, serial analysis of gene expression, and gene shaving. Additionally, a number of chapters have been updated or revised.

Computational and Statistical Approaches to Genomics Second Edition is for researchers in both academia and industry involved with genomic problems in fields such as biology, computer science, statistics, and engineering. It can also be used as an advanced level textbook in a course focusing on genomic signals, information processing, or genome biology.

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