Chapter 1 Concepts And Methods In Biology

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Beginning Java 8 Games Development Apress
Data structures and algorithms is a fundamental course in Computer Science, which enables learners across any discipline to develop the much-needed foundation of efficient programming, leading to better problem solving in their respective disciplines. A Textbook of Data Structures and Algorithms is a textbook that can be used as course material in classrooms, or as self-learning material. The book targets novice learners aspiring to acquire advanced knowledge of the topic. Therefore, the content of the book has been pragmatically structured across three volumes and kept comprehensive enough to help them in their progression from novice to expert. With this in mind, the book details concepts, techniques and applications pertaining to data structures and algorithms, independent of any programming language. It includes 181 illustrative problems and 276 review questions to reinforce a theoretical understanding and presents a suggestive list of 108 programming assignments to aid in the implementation of the methods covered.

Basic Science Methods for Clinical Researchers No Starch Press
LANDSCAPE GENETICS: CONCEPTS, METHODS, APPLICATIONS LANDSCAPE GENETICS: CONCEPTS, METHODS, APPLICATIONS Edited by Niko Balkenhol, Samuel A. Cushman, Andrew T. Storfer, Lisette P. Waits Landscape genetics is an exciting and rapidly growing field, melding methods and theory from landscape ecology and population genetics to address some of the most challenging and urgent ecological and evolutionary topics of our time. Landscape genetic approaches now enable researchers to study in detail how environmental complexity in space and time affect gene flow, genetic drift, and local adaptation. However, learning about the concepts and methods underlying the field remains challenging due to the highly interdisciplinary nature of the field, which relies on topics that have traditionally been treated separately in classes and textbooks. In this edited volume, some of the leading experts in landscape genetics provide the first comprehensive introduction to underlying concepts, commonly used methods, and current and future applications of landscape genetics. Consistent with the interdisciplinary nature of the field, the book includes textbook-like chapters that synthesize fundamental concepts and methods underlying landscape genetics (Part 1), chapters on advanced topics that deserve a more in-depth treatment (Part 2), and chapters illustrating the use of concepts and methods in empirical applications (Part 3). Aimed at beginning landscape geneticists and experienced researchers alike, this book will be helpful for all scientists and practitioners interested in learning, teaching, and applying landscape genetics.
Plant Propagation Concepts and Laboratory Exercises Lippincott Williams & Wilkins
This book introduces multiple criteria and multiple constraint levels linear programming (MC2LP), which is an extension of linear programming (LP) and multiple criteria linear programming (MCLP). In the last decade, the author and a group of researchers from the USA, China, Korea, Germany, and Hungary have been working on the theory and applications of MC2LP problems. This volume integrates their main research results ranging from theoretical bases to broad areas of real world applications. The theoretical bases include the formulation of MC2LP; integer MC2LP and MC2 transportation model; fuzzy MC2LP and fuzzy duality of MC2LP; optimal system designs and contingency plans; MC2 decision support system; and MC2 computer software development. The application areas are accounting, management information systems, production planning, and telecommunications management. The book serves as a seminar text for both undergraduates and graduates who have a linear algebra or equivalent background. For practitioners, it will help in handling LP type problems in multiple decision making environment.
Space, Time, and Archaeological Landscapes Springer Science & Business Media
This textbook teaches the basic concepts and methods of project management but also explains how to convert them to useful results in practice. Project management offers a promising working area for theoretical and practical applications, and developing software and decision support systems (DSS). This book specifically focuses on project planning and control, with an emphasis on mathematical modeling. Models and algorithms establish a good starting point for students to study the relevant literature and support pursuing academic work in related fields. The book provides an introduction to theoretical concepts, and it also provides detailed explanations, application examples, and case studies that deal with real-life problems. The chapter topics include questions that underlie critical thinking, interpretation, analytics, and making comparisons. Learning outcomes are defined and the content of the book is structured following these

goals. Chapter 1 begins by introducing the basic concepts, methods, and processes of project management. This Chapter constitutes the base for defining and modeling project management problems. Chapter 2 explores the fundamentals of organizing and managing projects from an organization's perspective. Issues related to project team formation, the role of project managers, and organization types are discussed. Chapter 3 is devoted to project planning and network modeling of projects, covering fundamental concepts such as project scope, Work Breakdown Structure (WBS), Organizational Breakdown Structure (OBS), Cost Breakdown Structure (CBS), project network modeling, activity duration, and cost estimating, activity-based costing (ABC), data and knowledge management. Chapter 4 introduces deterministic scheduling models, which can be used in constructing the time schedules. Models employing time-based and finance-based objectives are introduced. The CPM is covered. The unconstrained version of maximizing Net Present Value (NPV) is also treated here together with the case of time-dependent cash flows. Chapter 5 focuses on the time/cost trade-off problem, explaining how to reduce the duration of some of the activities and therefore reduce the project duration at the expense of additional costs. This topic is addressed for both continuous and discrete cases. Chapter 6 discusses models and methods of scheduling under uncertain activity durations. PERT is introduced for minimizing the expected project duration and extended to the PERT-Costing method for minimizing the expected project cost. Simulation is presented as another approach for dealing with the uncertainty in activity durations and costs. To demonstrate the use of the PERT, a case study on constructing an earthquake-resistant residential house is presented. Classifications of resource and schedule types are given in Chapter 7, and exact and heuristic solution procedures for the single- and multi-mode resource constrained project scheduling problem (RCPSP) are presented. The objective of maximizing NPV under resource constraints is addressed, and the capital-constrained project scheduling model is introduced. In Chapter 8, resource leveling, and further resource management problems are introduced. Total adjustment cost and resource availability cost problems are introduced. Various exact models are investigated. A heuristic solution procedure for the resource leveling problem is presented in detail. Also, resource portfolio management policies and the resource portfolio management problem are discussed. A case study on resource leveling dealing with the annual audit project of a major corporation is presented. Project contract types and payment schedules constitute the topics of Chapter 9. Contracts are legal documents reflecting the results of some form of client-contractor negotiations and sometimes of a bidding process, which deserve closer attention. Identification and allocation of risk in contracts, project control issues, disputes, and resolution management are further topics covered in this Chapter. A bidding model is presented to investigate client-contractor negotiations and the bidding process from different aspects. Chapter 10 focuses on processes and methods for project monitoring and control. Earned Value Management is studied to measure the project performance throughout the life of a project and to estimate the expected project time and cost based on the current status of the project. How to incorporate inflation into the analysis is presented. In Chapter 11, qualitative and quantitative techniques including decision trees, simulation, and software applications are introduced. Risk phases are defined and building a risk register is addressed. An example risk breakdown structure is presented. The design of risk management processes is introduced, and risk response planning strategies are discussed. At the end of the Chapter, the quantitative risk analysis is demonstrated at the hand of a team discussion case study. Chapter 12 covers several models and approaches dealing with various stochastic aspects of the decision environment. Stochastic models, generation of robust schedules, use of reactive and fuzzy approaches are presented. Sensitivity and scenario analysis are introduced. Also, simulation analysis, which is widely used to analyze the impacts of uncertainty on project goals, is presented. Chapter 13 addresses repetitive projects that involve the production or construction of similar units in batches such as railway cars or residential houses. Particularly in the construction industry repetitive projects represent a large portion of the work accomplished in this sector of the economy. A case study on the 50 km section of a motorway project is used for demonstrating the handling of repetitive project management. How best to select one or more of a set of candidate projects to maintain a project portfolio is an important problem for project-based organizations with limited resources. The project selection problem is inherently a multi-objective problem and is treated as such in Chapter 14. Several models and solution techniques are introduced. A multi-objective, multi-period project selection and scheduling model is presented. A case study that addresses a project portfolio selection and scheduling problem for the construction of a set of dams in a region is presented. Finally, Chapter 15 discusses three promising research areas in project management in detail: (i) Sustainability and Project Management, (ii) Project Management in the Era of Big Data, and (iii) the Fourth Industrial Revolution and the New Age Project Management. We elaborate on the importance of sustainability in project management practices, discuss how developments in data analytics might impact project life cycle management, and speculate how the infinite possibilities of the Fourth Industrial Revolution and the new technologies will transform project management practices.

Parametric and Feature-Based CAD/CAM

Waveland Press

The last 20 years have witnessed a proliferation of new approaches in archaeolog ical data recovery, analysis, and theory building that incorporate both new forms of information and new methods for investigating them. The growing importance of survey has meant an expansion of the spatial realm of traditional archaeological data recovery and analysis from its traditional focus on specific locations on the landscape-archaeological sites-to the incorporation of data both on-site and off-site from across extensive regions. Evolving survey methods have led to experiments with nonsite and distributional data recovery as well as the critical evaluation of the definition and role of archaeological sites in data recovery and analysis. In both survey and excavation, the geomorphological analysis of land scapes has become increasingly important in the analysis of archaeological ma terials. Ethnoarchaeology-the use of ethnography to sharpen archaeological understanding of cultural and natural

formation processes-has concentrated study on the formation processes underlying the content and structure of archae ological deposits. These actualistic studies consider patterns of deposition at the site level and the material results of human organization at the regional scale. Ethnoarchaeological approaches have also affected research in theoretical ways by expanding investigation into the nature and organization of systems of land use per se, thus providing direction for further study of the material results of those systems.

Epidemiology IGI Global

Basic Science Methods for Clinical Researchers addresses the specific challenges faced by clinicians without a conventional science background. The aim of the book is to introduce the reader to core experimental methods commonly used to answer questions in basic science research and to outline their relative strengths and limitations in generating conclusive data. This book will be a vital companion for clinicians undertaking laboratory-based science. It will support clinicians in the pursuit of their academic interests and in making an original contribution to their chosen field. In doing so, it will facilitate the development of tomorrow’s clinician scientists and future leaders in discovery science. Serves as a helpful guide for clinical researchers who lack a conventional science background Organized around research themes pertaining to key biological molecules, from genes, to proteins, cells, and model organisms Features protocols, techniques for troubleshooting common problems, and an explanation of the advantages and limitations of a technique in generating conclusive data Appendices provide resources for practical research methodology, including legal frameworks for using stem cells and animals in the laboratory, ethical considerations, and good laboratory practice (GLP)

Key Concepts and Techniques in GIS CRC Press

"TRB's National Cooperative Highway Research Program (NCHRP) Synthesis 455: Alternative Technical Concepts for Contract Delivery Methods Transportation documents various methods by which agencies have successfully implemented alternative technical concepts (ATCs) during the highway contracting process. The report identifies methods that promote transparency and fairness, while at the same time protecting the industry's right to confidentiality. The U.S. Federal Highway Administration defines an ATC as "a request by a proposer to modify a contract requirement, specifically for that proposer's use in gaining competitive benefit during the bidding or proposal process ... [and] must provide a solution that is equal to or better than the owner's base design requirements in the invitation for bid or request for proposal document."--Publisher's note.

A Textbook of Data Structures and Algorithms, Volume 1 Transportation Research Board

Intersection of straight line segments 103 Non-linearity and the intersection of curves 109 Subdivision and box-testing techniques 114 Closed curves 120 A data structure for closed curves 123 The merging of closed curves 125 Chapter 5: Representation of surfaces 133 Introduction 133 Ruled surfaces 134 Coons' patches 136 Surfaces through given points 141 Bezier surface patches 143 B-spline surfaces 148 The DUCT system 149 Problems involved in putting patches together 153 Chapter 6: MODCON: an example system 159 Background to the system 159 The use of primitive shapes 160 Putting primitives together 165 A simple example 170 Operation of the system 171 Limitations of the system 174 Conclusions 176 Chapter 7: Introduction to surface and solid modelling 177 Introduction 177 Types of geometric modeller 177 Solid modelling 181 Obtaining volumetric properties 186 Defining primitive volumetric shapes 188 Hidden line removal and surface shading 190 References 197 Index 199

CHAPTER 1 Review of some basic ideas Introduction The purpose of this chapter is to review some of the standard notation and concepts that underlie the material to be presented later. These are the ideas of mathematics and of numerical mathematics. They are important from a computer aided design (CAD) point of view because the only way in which we can persuade a computer system to deal with geometry for us is by reducing it to a set of numbers which can then be stored and manipulated.

Basic Concepts in the Methodology of the Social Sciences Routledge

The only text to feature examples of 30 key concept analyses supporting nursing research and practice This DNP and PhD doctoral-level nursing text delivers analyses of 30 core concepts that define nursing theory, research, education, and professional practice. Grounded in the concept analysis framework developed by Walker and Avant, the book clearly demonstrates how concepts are used to build theory, support research, and improve education and professional practice. Designed to facilitate practical applications of concept analysis methodology, all chapters provide an explicit description of each concept and a consistent framework for its analysis. Additionally, a diagrammatic representation of characteristics across concepts allows readers to make comparisons and ultimately to build on the text’s knowledge base. Expert authors from clinical and research disciplines focus on the core of nursing-- the nurse-patient relationship--grouping concepts into the categories of patient/client-focused concepts, career-focused concepts, and organizational/systems-focused concepts. Within these groups the book addresses such

contemporary themes as hope, postpartum depression, resilience, self-care, cultural competence, and many others. With its expansive descriptions and analyses of key nursing concepts within a consistent framework, the book will help nurse scholars to develop a sophisticated analytic ability and provide graduate nursing students with a foundation for developing a DNP capstone or PhD research project. Key Features: Offers in-depth description and analyses of 30 core concepts relevant to nursing and related disciplines Provides a consistent analytic framework throughout Demonstrates a highly practical application of concept analysis methodology Includes diagrams of characteristics across concepts for comparison Authored by renowned scholars and practitioners

Mathematical Concepts and Methods in Modern Biology Routledge

The complexity of biological systems has intrigued scientists from many disciplines and has given birth to the highly influential field of systems biology wherein a wide array of mathematical techniques, such as flux balance analysis, and technology platforms, such as next generation sequencing, is used to understand, elucidate, and predict the functions of complex biological systems. More recently, the field of synthetic biology, i.e., de novo engineering of biological systems, has emerged. Scientists from various fields are focusing on how to render this engineering process more predictable, reliable, scalable, affordable, and easy. Systems and control theory is a branch of engineering and applied sciences that rigorously deals with the complexities and uncertainties of interconnected systems with the objective of characterising fundamental systemic properties such as stability, robustness, communication capacity, and other performance metrics. Systems and control theory also strives to offer concepts and methods that facilitate the design of systems with rigorous guarantees on these properties. Over the last 100 years, it has made stellar theoretical and technological contributions in diverse fields such as aerospace, telecommunication, storage, automotive, power systems, and others. Can it have, or evolve to have, a similar impact in biology? The chapters in this book demonstrate that, indeed, systems and control theoretic concepts and techniques can have a significant impact in systems and synthetic biology. Volume I provides a panoramic view that illustrates the potential of such mathematical methods in systems and synthetic biology. Recent advances in systems and synthetic biology have clearly demonstrated the benefits of a rigorous and systematic approach rooted in the principles of systems and control theory - not only does it lead to exciting insights and discoveries but it also reduces the inordinately lengthy trial-and-error process of wet-lab experimentation, thereby facilitating significant savings in human and financial resources. In Volume I, some of the leading researchers in the field of systems and synthetic biology demonstrate how systems and control theoretic concepts and techniques can be useful, or should evolve to be useful, in order to understand how biological systems function. As the eminent computer scientist Donald Knuth put it, "biology easily has 500 years of exciting problems to work on". This edited book presents but a small fraction of those for the benefit of (1) systems and control theorists interested in molecular and cellular biology and (2) biologists interested in rigorous modelling, analysis and control of biological systems.

Concepts and Method in Social Science CRC Press

A nuanced re-evaluation of the ways in which gender affected the use of physical space in early modern England. Space was not simply a passive backdrop to a social system that had structural origins elsewhere; it was vitally important for marking out and maintaining the hierarchy that sustained social and gender order in sixteenth- and seventeenth-century England. Gender had a considerable influence on its use and organization; status and gender were displayed physically and spatially every moment of the day, from a person's place at table to the bed on which he orshe slept, in places of work and recreation, in dress, gesture and modes of address. Space was also the basis for the formation of gender identities which were constantly contested and restructured, as this book shows.Examining in turn domestic, social and sacred spaces and the spatial division of labour in gender construction, the author demonstrates how these could shift, and with them the position and power of women. She shows that the ideological assumption that all women are subject to all men is flawed, and exposes the limitations of interpretations which rely on the model and binary opposition of public/private, male/female, to describe gender relations and theirchanges across the period, thus offering a much more complex and picture than has hitherto been perceived. The book will be essential reading not just for historians of the family and of women, but for all those studying early modern social history. AMANDA FLATHER is a lecturer in the Department of History at the University of Essex.

Voice Attractiveness World Scientific Publishing Company

Across a variety of disciplines, data and statistics form the backbone of knowledge. To ensure the reliability and validity of data, appropriate measures must be taken in conducting studies and reporting findings. Research Methods: Concepts, Methodologies, Tools, and Applications compiles chapters on key considerations in the management, development, and distribution of data. With its focus on both fundamental concepts and

advanced topics, this multi-volume reference work will be a valuable addition to researchers, scholars, and students of science, mathematics, and engineering.

Classifying Science Springer Science & Business Media

A complete teaching guide with hands-on laboratories, this book is edited by two of the leading experts in the field. The text develops a working knowledge of the principles of plant propagation, as they apply in temperate and tropical environments. In addition to presenting the essential fundamentals, this carefully conceived w

Gender and Space in Early Modern England Walter de Gruyter GmbH & Co KG

This handbook provides a comprehensive overview of Partial Least Squares (PLS) methods with specific reference to their use in marketing and with a discussion of the directions of current research and perspectives. It covers the broad area of PLS methods, from regression to structural equation modeling applications, software and interpretation of results. The handbook serves both as an introduction for those without prior knowledge of PLS and as a comprehensive reference for researchers and practitioners interested in the most recent advances in PLS methodology.

Supply Chain Management: Concepts, Techniques And Practices: Enhancing The Value Through Collaboration Springer Science & Business Media

This book consists of three major sections. In the first, which includes chapters 1 to 7, the basic concepts of the methodology of the social social sciences are discussed. In the second, chapters 8 and 9, the most important concepts of part one are integrated in discussions on the writing of research proposals and research reports. The third section (appendices) consists of three "case studies" in which the most important methodological principles which were discussed in the preceding sections are illustrated.

Emergency Psychiatry John Wiley & Sons

Beginning Java 8 Games Development, written by Java expert and author Wallace Jackson, teaches you the fundamentals of building a highly illustrative game using the Java 8 programming language. In this book, you'll employ open source software as tools to help you quickly and efficiently build your Java game applications. You'll learn how to utilize vector and bit-wise graphics; create sprites and sprite animations; handle events; process inputs; create and insert multimedia and audio files; and more. Furthermore, you'll learn about JavaFX 8, now integrated into Java 8 and which gives you additional APIs that will make your game application more fun and dynamic as well as give it a smaller foot-print; so, your game application can run on your PC, mobile and embedded devices. After reading and using this tutorial, you'll come away with a cool Java-based 2D game application template that you can re-use and apply to your own game making ambitions or for fun.

Research Methods: Concepts, Methodologies, Tools, and Applications World Scientific Publishing Company

Careful work with concepts is a cornerstone of good social science methodology. This book, Concepts and Method in Social Science, demonstrates the crucial role of concepts, drawing on both the classic contributions of Giovanni Sartori and the writing of a younger generation of scholars. Part 1 includes selections from Sartori's writing on concepts and method. These chapters discuss concept formation, conceptual stretching, the necessary logical steps in moving from conceptualization to measurement, and relationships among meanings, terms, and observations. Part II presents work of scholars who extend the Sartori tradition, including chapters on five key concepts employed political research: revolution, culture, democracy, peasants, and institutionalization. Part III offers a broader picture of Sartori and his contributions. It includes an autobiographical essay by Sartori himself -- in which he explores the role of “Chance, Luck, and Stubbornness” in his career -- as well as reflections by five former students on Sartori as a teacher and mentor. The final chapter is a comprehensive bibliography of his work.

CAD: Computational Concepts and Methods HSRC Press

This book is designed to introduce doctoral and graduate students to the process of conducting scientific research in the social sciences, business, education, public health, and related disciplines. It is a one-stop, comprehensive, and compact source for foundational concepts in behavioral research, and can serve as a stand-alone text or as a supplement to research readings in any doctoral seminar or research methods class. This book is currently used as a research text at universities on six continents and will shortly be available in nine different languages.

Multiple Criteria and Multiple Constraint Levels Linear Programming Springer

Comprehensive in its coverage and suitable for graduate or upper-division undergraduate students in a wide range of health-related disciplines, this latest offering by William A. Oleckno is a full-scale, pedagogically rich introduction to fundamental ideas and procedures in epidemiology. The text covers the major concepts, principles, methods, and applications of both conventional and modern epidemiology using clear language and frequent examples to illustrate important points and facilitate understanding. While Oleckno provides thorough treatment of the more customary aspects of conventional and modern epidemiology, he also introduces several important design and analytical issues that are only rarely approached in fundamental epidemiology textbooks. Concepts as diverse as competing risks, maturation, futility, and the prevalence and bias effects in the context of

screening are just a few examples of the broad range of concepts covered in this text. A comprehensive glossary contains detailed definitions of over 700 terms used throughout the 14 chapters comprising the textbook. Aspiring public health professionals will appreciate the solid basis they gain from Epidemiology: Concepts and Methods and will want to keep a copy close by as a valuable reference throughout their careers.

Financial Accounting Springer Science & Business Media

The Art and Science of Embodied Research Design: Concepts, Methods, and Cases offers some of the nascent perspectives that situate embodiment as a necessary element in human research. This edited volume brings together philosophical foundations of embodiment research with application of embodied methods from several disciplines. The book is divided into two sections. Part I, Concepts in Embodied Research Design, suggests ways that embodied epistemology may bring deeper understanding to current research theory, and describes the ways in which embodiment is an integral part of the research process. In Part II, Methods and Cases, chapters propose novel ways to operationalize embodied data in the research process. The section is divided into four sub-sections: Somatic Systems of Analysis, Movement Systems of Analysis, Embodied Interviews and Observations, and Creative and Mixed Methods. Each chapter proposes a method case; an example of a previously used research method that exemplifies the way in which embodiment is used in a study. As such, it can be used as scaffold for designing embodied methods that suits the researcher’s needs. It is suited for many fields of study such as psychology, sociology, behavioral science, anthropology, education, and arts-based research. It will be useful for graduate coursework in somatic studies or as a supplemental text for courses in traditional research design.