

Information And Entropy Econometrics A Review And Synthesis Foundations And Trends In Econometrics

This series of books collects a diverse array of work that provides the reader with theoretical and applied information on data analysis methods, models and techniques, along with appropriate applications. Volume 2 begins with an introductory chapter by Gilbert Saporta, a leading expert in the field, who summarizes the developments in data analysis over the last 50 years. The book is then divided into four parts: Part 1 examines (in)dependence relationships, innovation in the Nordic countries, dentistry journals, dependence among growth rates of GDP of V4 countries, emissions mitigation, and five-star ratings; Part 2 investigates access to credit for SMEs, gender-based impacts given Southern Europe's economic crisis, and labor market transition probabilities; Part 3 looks at recruitment at university job-placement offices and the Program for International Student Assessment; and Part 4 examines discriminants, PageRank, and the political spectrum of Germany.

Info-metrics is a framework for modeling, reasoning, and drawing inferences under conditions of noisy and insufficient information. It is an interdisciplinary framework situated at the intersection of information theory, statistical inference, and decision-making under uncertainty. In *Advances in Info-Metrics*, Min Chen, J. Michael Dunn, Amos Golan, and Aman Ullah bring together a group of thirty experts to expand the study of info-metrics across the sciences and demonstrate how to solve problems using this interdisciplinary framework. Building on the theoretical underpinnings of info-metrics, the volume sheds new light on statistical inference, information, and general problem solving. The book explores the basis of information-theoretic inference and its mathematical and philosophical foundations. It emphasizes the interrelationship between information and inference and includes explanations of model building, theory creation, estimation, prediction, and decision making. Each of the nineteen chapters provides the necessary tools for using the info-metrics framework to solve a problem. The collection covers recent developments in the field, as well as many new cross-disciplinary case studies and examples. Designed to be accessible for researchers, graduate students, and practitioners across disciplines, this book provides a clear, hands-on experience for readers interested in solving problems when presented with incomplete and imperfect information.

This book constitutes the refereed proceedings of the Turing Centenary Conference and the 8th Conference on Computability in Europe, CiE 2012, held in Cambridge, UK, in June 2012. The 53 revised papers presented together with 6 invited lectures were carefully reviewed and selected with an acceptance rate of under 29,8%. The CiE 2012 Turing Centenary Conference will be remembered as a historic event in the continuing development of the powerful explanatory role of computability across a wide spectrum of research areas. The papers presented at CiE 2012 represent the best of current research in the area, and forms a fitting tribute to the short but brilliant trajectory of Alan Mathison Turing. Both the conference series and the association promote the development of computability-related science, ranging over mathematics, computer science and applications in various natural and engineering sciences such as physics and biology, and also including the promotion of related non-scientific fields such as philosophy and history of computing.

This book includes solar energy, wind energy, hybrid systems, biofuels, energy management and efficiency, optimization of renewable energy systems and much more. Subsequently, the book presents the physical and technical principles of promising ways of utilizing renewable energies. The authors provide the important data and parameter sets for the major possibilities of renewable energies utilization which allow an economic and environmental assessment. Such an assessment enables us to judge the chances and limits of the multiple options utilizing renewable energy sources. It will provide useful insights in the modeling and optimization of different renewable systems. The primary target audience for the book includes students, researchers, and people working on renewable energy systems.

This book offers a collection of recent contributions and emerging ideas in the areas of robust statistics presented at the International Conference on Robust Statistics 2015 (ICORS 2015) held in Kolkata during 12–16 January, 2015. The book explores the applicability of robust methods in other non-traditional areas which includes the use of new techniques such as skew and mixture of skew distributions, scaled Bregman divergences, and multilevel functional data methods; application areas being circular data models and prediction of mortality and life expectancy. The contributions are of both theoretical as well as applied in nature. Robust statistics is a relatively young branch of statistical sciences that is rapidly emerging as the bedrock of statistical analysis in the 21st century due to its flexible nature and wide scope. Robust statistics supports the application of parametric and other inference techniques over a broader domain than the strictly interpreted model scenarios employed in classical statistical methods. The aim of the ICORS conference, which is being organized annually since 2001, is to bring together researchers interested in robust statistics, data analysis and related areas. The conference is meant for theoretical and applied statisticians, data analysts from other fields, leading experts, junior researchers and graduate students. The ICORS meetings offer a forum for discussing recent advances and emerging ideas in statistics with a focus on robustness, and encourage informal contacts and discussions among all the participants. They also play an important role in maintaining a cohesive group of international researchers interested in robust statistics and related topics, whose interactions transcend the meetings and endure year round. This edited book contains several state-of-the-art papers devoted to econometrics of risk. Some papers provide theoretical analysis of the corresponding mathematical, statistical, computational, and economical models. Other papers describe applications of the novel risk-related econometric techniques to real-life economic situations. The book presents new methods developed just recently, in particular, methods using non-Gaussian heavy-tailed distributions, methods using non-Gaussian copulas to properly take into account dependence between different quantities, methods taking into account imprecise ("fuzzy") expert knowledge, and many other innovative techniques. This versatile volume helps practitioners to learn how to apply new techniques of econometrics of risk, and researchers to further improve the existing models and to come up with new ideas on how to best take into account economic risks.

Despite increases in women's employment, significant gender disparity exists in the time men and women spend on household and care work. Understanding how social expectations govern gender roles and contribute to this disparity is essential for designing policies that effectively promote a more equitable household division of labor. In this study, we examine how a woman's identity may affect the trade-offs between the time she spends on household and care work and her well-being, using an analytical framework we develop based on the work of Akerlof and Kranton. Analyzing data from rural Bangladesh, we find that longer hours spent on household work are associated with lower levels of subjective well-being among women who disagree with patriarchal

notions of gender roles, while the opposite is true for women who agree with patriarchal notions of gender roles. Importantly, this pattern holds only when a woman strongly identifies with patriarchal or egalitarian notions of gender role.

This book offers solutions to the problems commonly encountered by economists trying to squeeze information out of partial or incomplete data--which is usually what they have to work with.

Information and Entropy Econometrics A Review and Synthesis Now Publishers Inc

These three volumes contain an account of Professor Henri Theil's distinguished career as a leader, advisor, administrator, teacher, and researcher in economics and econometrics. The books also contain a selection of his contributions in many areas, such as econometrics, demand analysis, information theory, forecasting, statistics, economic policy analysis and management science. To date he has contributed over 250 articles in refereed journals and chapters in books, and 15 books, three of which became citation classics. His books and articles have appeared in (and have been translated into) many languages, such as Polish, Russian, Dutch, English, French, German, Hungarian, Italian and Japanese. This collection provides excellent reference material to researchers and graduate students working in a variety of disciplines, such as econometrics, economics, management science, operations research, and statistics. Moreover, Professor Theil's career serves as a role model for younger generations of scholars, both in terms of his approach to research and his commitment to his profession. Professor Theil's distinguished career as an academic began in 1953 when he was appointed Professor of Econometrics at the Netherlands School of Economics in Rotterdam (now Erasmus University). Three years later he founded the Econometric Institute in Rotterdam and served as its first director until 1966, when he accepted a joint appointment at the Graduate School of Business and Department of Economics, University of Chicago, U.S.A. In 1981, Theil was appointed to the McKethan-Matherly Eminent Chair at the Graduate School of Business Administration of the University of Florida in Gainesville. Theil has received many international honours including four honorary degrees.

Avoid downturn vulnerability by managing correlation dependency Asymmetric Dependence in Finance examines the risks and benefits of asset correlation, and provides effective strategies for more profitable portfolio management. Beginning with a thorough explanation of the extent and nature of asymmetric dependence in the financial markets, this book delves into the practical measures fund managers and investors can implement to boost fund performance. From managing asymmetric dependence using Copulas, to mitigating asymmetric dependence risk in real estate, credit and CTA markets, the discussion presents a coherent survey of the state-of-the-art tools available for measuring and managing this difficult but critical issue. Many funds suffered significant losses during recent downturns, despite having a seemingly well-diversified portfolio. Empirical evidence shows that the relation between assets is much richer than previously thought, and correlation between returns is dependent on the state of the market; this book explains this asymmetric dependence and provides authoritative guidance on mitigating the risks. Examine an options-based approach to limiting your portfolio's downside risk Manage asymmetric dependence in larger portfolios and alternate asset classes Get up to speed on alternative portfolio performance management methods Improve fund performance by applying appropriate models and quantitative techniques Correlations between assets increase markedly during market downturns, leading to diversification failure at the very moment it is needed most. The 2008 Global Financial Crisis and the 2006 hedge-fund crisis provide vivid examples, and many investors still bear the scars of heavy losses from their well-managed, well-diversified portfolios. Asymmetric Dependence in Finance shows you what went wrong, and how it can be corrected and managed before the next big threat using the latest methods and models from leading research in quantitative finance.

Publisher Description

Handbook of Empirical Economics and Finance explores the latest developments in the analysis and modeling of economic and financial data. Well-recognized econometric experts discuss the rapidly growing research in economics and finance and offer insight on the future direction of these fields. Focusing on micro models, the first group of chapters describes the statistical issues involved in the analysis of econometric models with cross-sectional data often arising in microeconomics. The book then illustrates time series models that are extensively used in empirical macroeconomics and finance. The last set of chapters explores the types of panel data and spatial models that are becoming increasingly significant in analyzing complex economic behavior and policy evaluations. This handbook brings together both background material and new methodological and applied results that are extremely important to the current and future frontiers in empirical economics and finance. It emphasizes inferential issues that transpire in the analysis of cross-sectional, time series, and panel data-based empirical models in economics, finance, and related disciplines.

The book showcases a selection of peer-reviewed papers, the preliminary versions of which were presented at a conference held 11-13 June 2011 in Bologna and organized jointly by the Italian Statistical Society (SIS), the Institute national Institute of Statistics (ISTAT) and the Bank of Italy. The theme of the conference was "Statistics in the 150 years of the Unification of Italy." The celebration of the anniversary of Italian unification provided the opportunity to examine and discuss the methodological aspects and applications from a historical perspective and both from a national and international point of view. The critical discussion on the issues of the past has made it possible to focus on recent advances, considering the studies of socio-economic and demographic changes in European countries.

Provides theory, open source R implementations, and the latest tools for reproducible nonparametric econometric research.

Medical Informatics is defined as an interdisciplinary field studying the effective use of biomedical data, information and knowledge for scientific inquiry, problem solving, and decision making, motivated by efforts to improve human health. To emphasize the broad character it is called Biomedical Informatics. The course LV 444.152 consists of the following 12 lectures: 1. Introduction: Computer Science meets Life Sciences, challenges and future directions; 2. Back to the future: Fundamentals of Data, Information and Knowledge; 3. Structured Data: Coding, Classification (ICD, SNOMED, MeSH, UMLS); 4. Biomedical Databases: Acquisition,

Storage, Information Retrieval and Use; 5. Semi structured and weakly structured data; 6. Multimedia Data Mining and Knowledge Discovery; 7. Knowledge and Decision: Cognitive Science and Human-Computer Interaction; 8. Biomedical Decision Making: Reasoning and Decision Support; 9. Intelligent Information Visualization and Visual Analytics; 10. Biomedical Information Systems and Medical Knowledge Management; 11. Biomedical Data: Privacy, Safety and Security 12. Methodology for Information Systems: System Design, Usability and Evaluation

Info-metrics is the science of modeling, reasoning, and drawing inferences under conditions of noisy and insufficient information. It is at the intersection of information theory, statistical inference, and decision-making under uncertainty. It plays an important role in helping make informed decisions even when there is inadequate or incomplete information because it provides a framework to process available information with minimal reliance on assumptions that cannot be validated. In this pioneering book, Amos Golan, a leader in info-metrics, focuses on unifying information processing, modeling and inference within a single constrained optimization framework. Foundations of Info-Metrics provides an overview of modeling and inference, rather than a problem specific model, and progresses from the simple premise that information is often insufficient to provide a unique answer for decisions we wish to make. Each decision, or solution, is derived from the available input information along with a choice of inferential procedure. The book contains numerous multidisciplinary applications and case studies, which demonstrate the simplicity and generality of the framework in real world settings. Examples include initial diagnosis at an emergency room, optimal dose decisions, election forecasting, network and information aggregation, weather pattern analyses, portfolio allocation, strategy inference for interacting entities, incorporation of prior information, option pricing, and modeling an interacting social system. Graphical representations illustrate how results can be visualized while exercises and problem sets facilitate extensions. This book is designed to be accessible for researchers, graduate students, and practitioners across the disciplines.

Econometrics as an applied discipline attempts to use information in a most efficient manner, yet the information theory and entropy approach developed by Shannon and others has not played much of a role in applied econometrics. Econometrics of Information and Efficiency bridges the gap. Broadly viewed, information theory analyzes the uncertainty of a given set of data and its probabilistic characteristics. Whereas the economic theory of information emphasizes the value of information to agents in a market, the entropy theory stresses the various aspects of imprecision of data and their interactions with the subjective decision processes. The tools of information theory, such as the maximum entropy principle, mutual information and the minimum discrepancy are useful in several areas of statistical inference, e.g., Bayesian estimation, expected maximum likelihood principle, the fuzzy statistical regression. This volume analyzes the applications of these tools of information theory to the most commonly used models in econometrics. The outstanding features of Econometrics of Information and Efficiency are: A critical survey of the uses of information theory in economics and econometrics; An integration of applied information theory and economic efficiency analysis; The development of a new economic hypothesis relating information theory to economic growth models; New lines of research are emphasized.

First published in 1952, the International Bibliography of the Social Sciences (anthropology, economics, political science, and sociology) is well established as a major bibliographic reference for students, researchers and librarians in the social sciences worldwide. Key features * Authority: Rigorous standards are applied to make the IBSS the most authoritative selective bibliography ever produced. Articles and books are selected on merit by some of the world's most expert librarians and academics. * Breadth: today the IBSS covers over 2000 journals - more than any other comparable resource. The latest monograph publications are also included. * International Coverage: the IBSS reviews scholarship published in over 30 languages, including publications from Eastern Europe and the developing world. * User friendly organization: all non-English titles are word sections. Extensive author, subject and place name indexes are provided in both English and French. Place your standing order now for the 2003 volumes of the the IBSS Anthropology: 2002 Vol.48 December 2003: 234x156: Hb: 0-415-32634-6: £195.00 Economics: 2002 Vol.51 December 2003: 234x156: Hb: 0-415-32635-4: £195.00 Political Science: 2002 Vol.51 December 2003: 234x156: Hb: 0-415-32636-2: £195.00 Sociology: 2002 Vol.52 December 2003: 234x156: Hb: 0-415-32637-0: £195.00

Informatie speelt een rol in bijna alle onderdelen van de samenleving: van thermodynamica tot DNA, van het gebruik van onze mobiele telefoon tot internet. In dit Elementaire Deeltje geeft filosoof Luciano Florido, een autoriteit op het gebied van informatiefilosofie en ethiek, op verhelderende manier uitleg over dit voor ons zo essentiële begrip. En hij legt uit dat we niet alleen het risico op 'fear of missing out' lopen, maar ook op een overdosis aan informatie die we niet meer kunnen verwerken, de 'infoglut'. Florido bespreekt thema's als toegankelijkheid en privacy, eigendom, auteursrecht en open source. Dit boek verduidelijkt het begrip informatie en laat zien hoe informatie ons kan helpen beter vat te krijgen op de wereld om ons heen. Geweldig verhelderend. Steven Poole, The Guardian -Luciano Floridi is hoogleraar filosofie en onderzoeker aan de Universiteit van Hertfordshire; daarnaast is hij verbonden als onderzoeker aan het St. Cross College van de Universiteit van Oxford.

This book focuses on the development of a theory of info-dynamics to support the theory of info-statics in the general theory of information. It establishes the rational foundations of information dynamics and how these foundations relate to the general socio-natural dynamics from the primary to the derived categories in the universal existence and from the potential to the actual in the ontological space. It also shows how these foundations relate to the general socio-natural dynamics from the potential to the possible to give rise to the possibility space with possibilistic thinking; from the possible to the probable to give rise to possibility space with probabilistic thinking; and from the probable to the actual to give rise to the space of knowledge with paradigms of thought in the epistemological space. The theory is developed to explain the general dynamics through various transformations in quality-quantity space in relation to the nature of information flows at each variety transformation. The theory explains the past-present-future connectivity of the evolving information structure in a manner that illuminates the transformation problem and its solution in the never-ending information production within matter-energy space under socio-natural technologies to connect the theory of info-statics, which in turn presents explanations to the transformation problem and its solution. The theoretical framework is developed with analytical tools based on the principle of opposites, systems of actual-potential polarities, negative-positive dualities under different time-structures with the use of category theory, fuzzy paradigm of thought and game theory in the fuzzy-stochastic cost-benefit space. The rational foundations are enhanced with categorial analytics. The value of the theory of info-dynamics is demonstrated in the explanatory and prescriptive structures of the transformations of varieties and categorial varieties at each point of time and over time from parent-offspring sequences. It constitutes a general explanation of dynamics of information-knowledge production through info-processes and info-processors induced by a socio-natural infinite set of technologies in the construction-destruction space.

This book presents cutting-edge research on urban and regional systems applying modern spatial analytical techniques of Geographic Information Science & Technologies (GIS&T), spatial statistics, and location modeling. The contributions, written by leading scholars from around the globe, adopt a spatially explicit analytical perspective and highlight methodological innovations and substantive breakthroughs on many facets of the socioeconomic and environmental reality of urban and regional contexts. The book is divided into three parts: The first part offers an introduction to the research field, while the second part discusses critical issues in urban growth and urban management, presenting case studies on city and urban environments, their growth, data infrastructures and spatial and management issues. The third part then broadens the analysis to the regional scale, addressing growth, convergence and adaptation to new economic and information-based realities. This book appeals to scholars of spatial and regional sciences as well as to policy decision-makers interested in advanced methods of spatial analysis, location modeling, and GIS&T.

It is commonly assumed that computers process information. But what is information? In a technical, important, but nevertheless rather narrow sense, Shannon's information theory gives a satisfactory answer to this question. This theory focuses on measuring the information content of a message. Essentially this measure is the reduction of the uncertainty obtained by receiving a message. The uncertainty of a situation of ignorance in turn is measured by entropy. This theory has had an immense impact on the technology of information storage, data compression, information transmission and coding and still is a very active domain of research. Shannon's theory has also attracted much interest in a more philosophic look at information, although it was readily remarked that it is only a "syntactic" theory of information and neglects "semantic" issues. Several attempts have been made in philosophy to give information theory a semantic flavor, but still mostly based on or at least linked to Shannon's theory. Approaches to semantic information theory also very often make use of formal logic. Thereby, information is linked to reasoning, deduction and inference, as well as to decision making. Further, entropy and related measure were soon found to have important connotations with regard to statistical inference. Surely, statistical data and observation represent information, information about unknown, hidden parameters. Thus a whole branch of statistics developed around concepts of Shannon's information theory or derived from them. Also some proper measurements - appropriate for statistics, like Fisher's information, were proposed.

Information and Entropy Econometrics - A Review and Synthesis summarizes the basics of information theoretic methods in econometrics and the connecting theme among these methods. It will benefit researchers looking for a concise introduction to the basics of IEE and enable applied researchers to learn new methods, and applications for extracting information from noisy and limited data and for learning from these data.

Introduction; 1 The information revolution; 2 The language of information; 3 Mathematical information; 4 Semantic information; 5 Physical information; 6 Biological information; 7 Economic information; 8 The ethics of information; Conclusion; References.

Non-extensive Entropy Econometrics for Low Frequency Series provides a new and robust power-law-based, non-extensive entropy econometrics approach to the economic modelling of ill-behaved inverse problems. Particular attention is paid to national account-based general equilibrium models known for their relative complexity. In theoretical terms, the approach generalizes Gibbs-Shannon-Golan entropy models, which are useful for describing ergodic phenomena. In essence, this entropy econometrics approach constitutes a junction of two distinct concepts: Jayne's maximum entropy principle and the Bayesian generalized method of moments. Rival econometric techniques are not conceptually adapted to solving complex inverse problems or are seriously limited when it comes to practical implementation. Recent literature showed that amplitude and frequency of macroeconomic fluctuations do not substantially diverge from many other extreme events, natural or human-related, once they are explained in the same time (or space) scale. Non-extensive entropy is a precious device for econometric modelling even in the case of low frequency series, since outputs evolving within the Gaussian attractor correspond to the Tsallis entropy limiting case of Tsallis q-parameter around unity. This book introduces a sub-discipline called Non-extensive Entropy Econometrics or, using a recent expression, Superstar Generalised Econometrics. It demonstrates, using national accounts-based models, that this approach facilitates solving nonlinear, complex inverse problems, previously considered intractable, such as the constant elasticity of substitution class of functions. This new proposed approach could extend the frontier of theoretical and applied econometrics.

This handbook presents the state of the art of quantitative methods and models to understand and assess the science and technology system. Focusing on various aspects of the development and application of indicators derived from data on scholarly publications, patents and electronic communications, the individual chapters, written by leading experts, discuss theoretical and methodological issues, illustrate applications, highlight their policy context and relevance, and point to future research directions. A substantial portion of the book is dedicated to detailed descriptions and analyses of data sources, presenting both traditional and advanced approaches. It addresses the main bibliographic metrics and indexes, such as the journal impact factor and the h-index, as well as altmetric and webometric indicators and science mapping techniques on different levels of aggregation and in the context of their value for the assessment of research performance as well as their impact on research policy and society. It also presents and critically discusses various national research evaluation systems. Complementing the sections reflecting on the science system, the technology section includes multiple chapters that explain different aspects of patent statistics, patent classification and database search methods to retrieve patent-related information. In addition, it examines the relevance of trademarks and standards as additional technological indicators. The Springer Handbook of Science and Technology Indicators is an invaluable resource for practitioners, scientists and policy makers wanting a systematic and thorough analysis of the potential and limitations of the various approaches to assess research and research performance.

If art and science have one thing in common, it's a hunger for the new—new ideas and innovations, new ways of seeing

and depicting the world. But that desire for novelty carries with it a fundamental philosophical problem: If everything has to come from something, how can anything truly new emerge? Is novelty even possible? In *Novelty*, Michael North takes us on a dazzling tour of more than two millennia of thinking about the problem of the new, from the puzzles of the pre-Socratics all the way up to the art world of the 1960s and '70s. The terms of the debate, North shows, were established before Plato, and have changed very little since: novelty, philosophers argued, could only arise from either recurrence or recombination. The former, found in nature's cycles of renewal, and the latter, seen most clearly in the workings of language, between them have accounted for nearly all the ways in which novelty has been conceived in Western history, taking in reformation, renaissance, invention, revolution, and even evolution. As he pursues this idea through centuries and across disciplines, North exhibits astonishing range, drawing on figures as diverse as Charles Darwin and Robert Smithson, Thomas Kuhn and Ezra Pound, Norbert Wiener and Andy Warhol, all of whom offer different ways of grappling with the idea of originality. *Novelty*, North demonstrates, remains a central problem of contemporary science and literature—an ever-receding target that, in its complexity and evasiveness, continues to inspire and propel the modern. A heady, ambitious intellectual feast, *Novelty* is rich with insight, a masterpiece of perceptive synthesis.

PREFACE TO THE COLLECTION PREAMBLE The editors are pleased to present a selection of Henri Theil's contributions to economics and econometrics in three volumes. In Volume I we have provided an overview of Theil's contributions, a brief biography, an annotated bibliography of his research, and a selection of published and unpublished articles and chapters in books dealing with topics in econometrics. Volume II contains Theil's contributions to demand analysis and information theory. Volume III includes Theil's contributions in economic policy and forecasting, and management science. The selection of articles is intended to provide examples of Theil's many seminal and pathbreaking contributions to economics in such areas as econometrics, statistics, demand analysis, information theory, economic policy analysis, aggregation theory, forecasting, index numbers, management science, sociology, operations research, higher education and much more. The collection is also intended to serve as a tribute to him on the occasion of his 67th birthday. These three volumes also highlight some of Theil's contributions and service to the profession as a leader, advisor, administrator, teacher, and researcher. Theil's contributions, which encompass many disciplines, have been extensively cited both in scientific and professional journals. These citations often place Theil among the top 10 researchers (ranked according to number of times cited) in the world in various disciplines.

In 1978 Edwin T. Jaynes and Myron Tribus initiated a series of workshops to exchange ideas and recent developments in technical aspects and applications of Bayesian probability theory. The first workshop was held at the University of Wyoming in 1981 organized by C.R. Smith and W.T. Grandy. Due to its success, the workshop was held annually during the last 18 years. Over the years, the emphasis of the workshop shifted gradually from fundamental concepts of Bayesian probability theory to increasingly realistic and challenging applications. The 18th international workshop on Maximum Entropy and Bayesian Methods was held in Garching / Munich (Germany) (27-31. July 1998). Opening lectures by G. Larry Bretthorst and by Myron Tribus were dedicated to one of the pioneers of Bayesian probability theory who died on the 30 of April 1998: Edwin Thompson Jaynes. Jaynes revealed and advocated the correct meaning of 'probability' as the state of knowledge rather than a physical property. This interpretation allowed him to unravel longstanding mysteries and paradoxes. Bayesian probability theory, "the logic of science" - as E.T. Jaynes called it - provides the framework to make the best possible scientific inference given all available experimental and theoretical information. We gratefully acknowledge the efforts of Tribus and Bretthorst in commemorating the outstanding contributions of E.T. Jaynes to the development of probability theory.

This book explores Information theory (IT) tools, which have become state of the art to solve and understand better many of the problems in visualization. This book covers all relevant literature up to date. It is the first book solely devoted to this subject, written by leading experts in the field.

This book discusses the development of a theory of info-statics as a sub-theory of the general theory of information. It describes the factors required to establish a definition of the concept of information that fixes the applicable boundaries of the phenomenon of information, its linguistic structure and scientific applications. The book establishes the definitional foundations of information and how the concepts of uncertainty, data, fact, evidence and evidential things are sequential derivatives of information as the primary category, which is a property of matter and energy. The sub-definitions are extended to include the concepts of possibility, probability, expectation, anticipation, surprise, discounting, forecasting, prediction and the nature of past-present-future information structures. It shows that the factors required to define the concept of information are those that allow differences and similarities to be established among universal objects over the ontological and epistemological spaces in terms of varieties and identities. These factors are characteristic and signal dispositions on the basis of which general definitional foundations are developed to construct the general information definition (GID). The book then demonstrates that this definition is applicable to all types of information over the ontological and epistemological spaces. It also defines the concepts of uncertainty, data, fact, evidence and knowledge based on the GID. Lastly, it uses set-theoretic analytics to enhance the definitional foundations, and shows the value of the theory of info-statics to establish varieties and categorial varieties at every point of time and thus initializes the construct of the theory of info-dynamics.

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