



Beach Cleaning at St. Andrew's Beach

# 20 24 NEWSLETTER

Kerala University of Digital Sciences, Innovation and Technology  
Digital University Kerala  
Thiruvananthapuram

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## DUK PROGRAMS

### DUK's Dynamic Celebration of International Women's Day: Empowering Women, Inspiring Success

This International Women's Day, DUK embraced the spirit of womanhood with a flourish, marking the occasion with a series of events that showcased the indomitable spirit and remarkable contributions of women in the academic and professional spheres. The day was filled with insightful speeches, engaging talks, and a host of activities that celebrated the success and empowerment of women.

The festivities commenced with an inspiring welcome speech by Prof Elizabeth Sherly, who illuminated the audience on the pivotal role women have played at DUK, setting a profound tone for the day. Prof A Mujeeb, Registrar, followed with a warm welcome, extending heartfelt greetings to all attendees and speakers, further heightening the sense of community and shared purpose.



Women Day 2024



The highlight of the event was the inauguration by Dr Divya S Iyer IAS, whose presence and words added an invaluable dimension to the celebration, resonating deeply with all present. The session was further enriched by 'Ignite talk' delivered by Wg Cdr Ragashree D Nair, whose powerful message sparked enthusiasm and motivated the audience to strive for excellence and leadership in their respective fields.

Sheeba Basil, an esteemed speaker, provided an invigorating invited talk that captivated the attendees, offering insights and inspiration on achieving success and overcoming challenges as women in today's world.

Dr. Sinnu Susan Thomas concluded the formal session with an eloquent address, wrapping up the insightful discussions and paving the way for an hour of networking. This segment allowed attendees to engage in meaningful conversations, exchange ideas, and build lasting connections, all the while enjoying an array of refreshments.



Adding a unique touch to the event, Chaitanya Hospital partnered to promote wellness among women by offering free eye check-ups to every invitee. This initiative underscored the importance of health and well-being as integral to empowering women to succeed in all spheres of life. The International Women's Day celebration at DUK on March 14, 2024, was indeed a vibrant and engaging affair. It not only celebrated the success of women but also empowered them by fostering a sense of community and inspiration. The event beautifully encapsulated the essence of International Women's Day, making it a memorable occasion for all who participated.





## India's Techade-Chips for Viksit Bharat

Digital University Kerala hosted an enlightening talk organized by IEEE-CASS featuring esteemed speakers Dr. Rajiv Joshi and Dr. Alex P. James. The focus of the session was on the evolution of computing technology, with Dr. Rajiv Joshi delving into the topic of "Long Live Computing Technology," while Dr. Alex P. James provided insights into VLSI education in India.

Dr. Rajiv Joshi commenced the session by providing a comprehensive overview of the journey of computing technology, tracing its roots from the 2nd World War period to the present day, encompassing significant milestones and breakthroughs along the way. He elucidated how computing technology has evolved, particularly highlighting the transition from transistors to the cutting-edge advancements witnessed today.

Following Dr. Joshi's insightful presentation, Dr. Alex P. James took the stage to discuss VLSI education in India. He began by introducing two key areas of VLSI: design and technology. Dr. James emphasized the abundant job opportunities available in companies within the VLSI domain and highlighted the importance of specialized skills in this field.

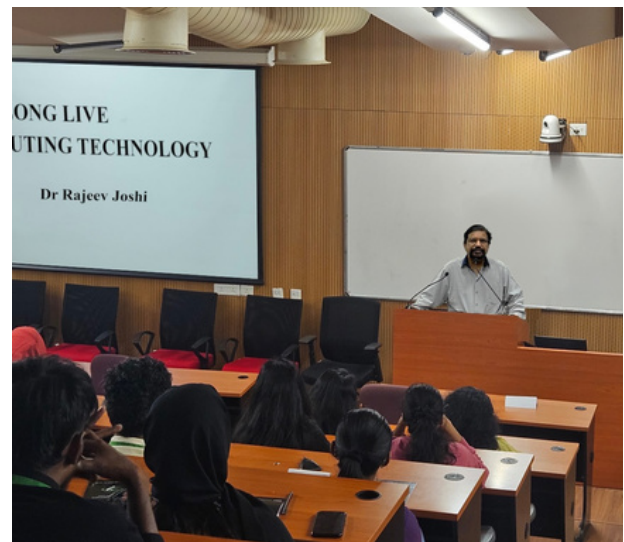




## IEEE CASS Workshop for School Children

IEEE CASS workshop at Digital University Kerala commenced at 10 am and concluded at 1 pm. Dr. Alex P. James and Dr. Rajeev Joshi on March 10, 2024 for grade 6th to grade 11 students. The session was initiated by Dr. Alex P. James providing an insightful introduction to circuits and systems, setting the stage for the participants to delve into the world of electronics. The workshop was expertly handled by Vineeta V. Nair, Aswini A.R, Shilpa Pavithran and Anitha Gopi.

The workshop delved into fundamental concepts such as the binary system of numbers and Boolean algebra of gates, laying the groundwork for a deeper understanding of circuits and systems. A highlight of the workshop was the practical session where students engaged in circuit simulation using Tinkercad. Under the guidance of the organizers and volunteers, students enthusiastically explored circuit design and simulation, fostering a hands-on learning experience. The workshop was a resounding success, marked by the active participation and enthusiasm of the students.







IEEE CASS Workshop for School Children



## Matlab for Image Processing and FPGA Implementation

Image Processing and FPGA Design Take Center Stage This March, the Digital University of Kerala hosted two fantastic events showcasing the power of MATLAB in cutting-edge fields. Here's a recap: Getting Started with Image Processing Using MATLAB Led by Siva Subramanian R, Application Engineer, participants explored image processing fundamentals. Key areas included image import/export, histograms, contrast enhancement, thresholding, edge detection, and morphological operations. This event equipped attendees with the tools to manipulate and extract valuable information from digital images. Introduction to MATLAB for FPGA Design.

Also led by Siva Subramanian R, this event offered an insightful look into using MATLAB to design Field-Programmable Gate Arrays (FPGAs). Participants learned about FPGA basics, MATLAB's role in hardware design, Simulink's visual approach, and saw a practical hardware demonstration. Attendees gained a foundational understanding of MATLAB's capabilities in the realm of FPGA design.





## DIGITAL DEFENDERS Strengthening Security Awareness Workshop

We are pleased to share the success and accomplishments of the DIGITAL DEFENDERS - Strengthening Security Awareness Workshop conducted in March 2024 by the Kerala Security Audit and Assurance Centre (KSAAC) in collaboration with the Center for Executive Education & Continuing Studies (CEECS) across three colleges. The primary objective of this initiative was to empower faculty and students with essential knowledge and skills in cybersecurity, addressing the critical challenges posed by cyber threats in today's digital landscape.



The workshop covered a wide range of crucial topics in cybersecurity. Participants were introduced to the fundamentals of cybersecurity, including password security and the ethical considerations surrounding hacking. The workshop also delved into specific cyber threats such as phishing attacks and explored advanced concepts like cryptography, steganography, hashing, and digital signatures. Moreover, participants gained insights into the dark web and learned about the tools and techniques used in hardware hacking. Overall, the workshop provided a comprehensive understanding of cybersecurity principles and practices essential for safeguarding digital assets.





The participating colleges included SD College Alappuzha on March 12, 2024, Mar Baselios College on March 18, 2024, and Noorul Islam College on March 22, 2024. The resource persons for these sessions were Prof. Md Meraj Udin, Mr. Rasic A Azeez, Ms Sruthi Krishna G, Ms Gopika S, and Ms Trupti, who shared their expertise and insights with the participants.

The workshops received an overwhelming response, with a total participation count of 180 faculty and students. This initiative not only equipped faculty and students with vital cybersecurity knowledge but also fostered a culture of security awareness and preparedness among the participants.



We express our sincere gratitude to Prof Santhosh Kurup Chair CEECS, participants, resource persons, and organizing colleges for their contributions in making the DIGITAL DEFENDERS Strengthening Security Awareness Workshop a resounding success. Such initiatives are pivotal in fostering a robust cybersecurity ecosystem and empowering individuals to protect digital assets effectively.





## Basic IT Training for Department of Archaeology

The Centre for Digital Transformation and Innovation (CDTI) organized a training programme on "Basic IT" in connection with the Centralized eTicket Issuing and Monitoring System (CeTMS) project. This program was designed for the Department of Archaeology, Government of Kerala, and was conducted from March 18th to 22nd, 2024 at the Digital University Kerala, Technopark Phase I campus (IIITMK). The 5 day training programme focused on empowering government employees in the field of digital technologies aiming to alleviate the digital divide. The program involved familiarization of different desktop applications and hands-on training for their usage. Hands-on sessions were handled and coordinated by DUK team Ms. Panchami S, Mr. Vimal D Kumar and Ms. Anitha V R. Mr. Arun S from Irrigation Department, Govt. of Kerala handled sessions on e-office, BiMS, BAMS, PRISM and SPARK etc. The Honorable Registrar delivered the valedictory address and distributed certificates to all attendees.





## DUK Sports League 2024

On March 20 and 21, 2024, the DUK Sports League hosted two exhilarating events, leaving fans on the edge of their seats with captivating displays of athleticism and teamwork.

**Football League Match Recap:** The DUK Sports League witnessed a thrilling Football League Match on March 20, 2024, as teams from various schools battled it out on the field. In the ultimate showdown, Participant 7 emerged victorious, showcasing exceptional teamwork and determination. Their outstanding performance secured them the championship title amidst roaring applause and cheers from fans.

**County Cricket League Match Recap:** Following the football matches, cricket enthusiasts gathered to witness the County Cricket League Match on March 21, 2024. The finals saw Team ROV emerging victorious, displaying exemplary skills and teamwork. The tournament was marked by thrilling encounters between teams, with each match filled with excitement and suspense.

Congratulations to Participant 7 and Team ROV for their outstanding performances in their respective sports. The DUK Sports League continues to deliver high-octane sporting action, leaving fans eagerly anticipating future events.

## WINNERS ANNOUNCEMENT

### FOOTBALL LEAGUE:

**1st Place: Team Number 07 - Captain Kannan**

**2nd Place: Team Number 08 - Captain Rohith**

### COUNTY CRICKET LEAGUE:

**1st Place: Team ROV**

**2nd Place: Team Expandables**







## WINNERS









## Ramadan Iftar Meet

On April 4, 2024, DUK hosted a heartwarming Iftar Meet, bringing together students and staff to break their fast during the holy month of Ramadan. It was a voluntary gathering that fostered a sense of community and togetherness.

The Iftar Meet showcased the true spirit of unity and compassion, as students and staff came together to share in the blessings of Ramadan. It was a testament to the diverse and inclusive community we cherish at DUK.





## SOCIAL ENGAGEMENT CENTRE

# Two-day Workshop on Water Budgeting under the Unnat Bharat Abhiyan 'Partnering in Development' - Advancing Water Resources Management in Pothencode Panchayat

Water resources management is critical for sustainable development. Understanding its importance, the Social Engagement Centre at DUK, in collaboration with Haritha Keralam Mission, organized a two-day workshop on water budgeting- "Jalasuraksha"- on 21- 22 March 2024. The workshop was aimed at promoting Integrated Water Resource Management in the Pothencode Panchayat. Stakeholders from various government departments such as Minor Irrigation, Veterinary, MGNREGA, and the Pothencode Panchayat Representatives, DUK faculty members from Geospatial Technology and Ecological Informatics, the Technical Committee Members in Pothencode panchayat and students from DUK participated the event.

The workshop commenced with a dynamic opening session by Mr. T.R. Anil Kumar, President of Pothencode Panchayat, Prof T. Radhakrishnan from the Centre for Geospatial Technologies at DUK, Mr. Asok C., District Coordinator of Haritha Keralam Mission, Prof. Pradeep Kumar K, (Faculty, SEC Coordinator, DUK) and Dr. Sreelekha Nair (SEC, DUK).



During the presentation, Dr. Sreelekha Nair (SEC, DUK) provided an overview of the Social Engagement Centre's efforts on the Integrated Water Resource Management initiative in Pothencode panchayat as part of the Unnat Bharat Abhiyan. She emphasized the significance of water budgeting and its role in promoting the responsible stewardship of local water resources.



An awareness session was organized for the Pothencode panchayat representatives on water budgeting and sustainable management of water resources as part of the workshop. The session was conducted by Mr. Ashok C, District Coordinator of Haritha Keralam Mission. The purpose of the session was to make the representatives aware of the significance of water budgeting and to provide insights on managing local water resources effectively. Representatives, Digital University Kerala, and MGNREGS contributed to the session, sharing their knowledge and expertise. Prof. T. Radhakrishnan discussed geospatial technologies, highlighting their pivotal role in effectively understanding and managing water resources. His informative session on the work already done by the Centre for Geospatial Technologies for the waterbody management of Pothencode enlightened the audience on the possibilities of geospatial technologies in sustainable development.

On the first day, the most important session was related to pooling data, which was required to prepare the water budget. The participants were divided into three groups and assigned to verify the data on the supply and use of water in Pothencode. Various stakeholders including the Pothencode Panchayat, Krishibhavan, Department of Irrigation and Veterinary and others, collaborated in the effort.



Digital University students from the School of Digital Science - Mr. Albin Varun, Ms. Aswathi M, Ms. Greeshma, Ms. Nandana Rajesh, and Mr. Sreevishak - presented their study on the Pothencode Pond as part of the DACE-1 course that was just concluded in the beginning of March. During their presentation, the students outlined the problem identified by them and proposed a sustainable solution for the management of the pond and the community around.



On the second day, the Social Engagement Centre presented a video showcasing their recent activities. The session also included examples from the works of Dr. Rajender Singh, known as the "Waterman of India." The day also witnessed a very informative and thought-provoking session on water conservation and restoration of disrupted ecosystems by Dr. Sooraj N.P. from C.V. Raman Laboratory of Ecological Informatics.

Mr. Asok C., District Coordinator of Haritha Keralam Mission, announced the plans regarding the formal launch of the Water Budget Document. Plans for time-bound work to all those involved were given, while acknowledging their dedication and commitment to fostering sustainable water management practices. Ms. Jeslin Saji, a student volunteer of the Social Engagement Centre recounted the benefits students accrued from the water management activities of the Centre through Unnat Bharat Abhiyan. The two-day workshop ended with a thank you note from Mr. Sai Sankar, a Core Committee member of the Social Engagement Centre.



## Beach Cleaning at St.Andrew's Beach

A collaborative initiative on beach cleaning was organised by the Social Engagement Centre(SEC) at St.Andrew's Beach, Menamkulam, Trivandrum, on 16th March 2024. This endeavour was made possible through a collaboration with Project Management Institute(PMI Kerala). With a shared commitment to preserving our coastal ecosystems, volunteers from SEC and various organizations from Technopark came together to make a tangible difference. Not only did this initiative contribute to the immediate beautification of St. Andrews Beach, but it also served as a powerful reminder of the importance of responsible waste management.



By working together, we were able to demonstrate that small actions can lead to significant outcomes when driven by a collective sense of responsibility towards our environment. Moving forward, let us continue to build on this momentum and inspire others to join us in safeguarding our precious natural resources. Social Engagement Centre wants to remind that "together, we can create a cleaner, healthier environment for generations to come".





## PUBLICATIONS

- Balasubramaniam, S., Kadry, S., & Kumar, K. S. (2024). Osprey Gannet optimization enabled CNN based Transfer learning for optic disc detection and cardiovascular risk prediction using retinal fundus images. *Biomedical Signal Processing and Control*, 93, 106177.
- Balasubramaniam, S., Seifedine Kadry, S., Dhanaraj, R. K., & Manthiramoorthy, C. (2024). Res-UNET based blood vessel segmentation and cardiovascular disease prediction using chronological chef-based optimization algorithm based deep residual network from retinal fundus images. *Multimedia Tools and Applications*, 1-30. <https://doi.org/10.1007/s11042-024-18810-y>
- Mari, E., Duraisamy, M., Eswaran, M., Sellappan, S., Won, K., Chandra, P., ... & Ponnusamy, V. K. (2024). Highly electrochemically active Ti3C2Tx MXene/MWCNT nanocomposite for the simultaneous sensing of paracetamol, theophylline, and caffeine in human blood samples. *Microchimica Acta*, 191(4), 1-14. [10.1007/s00604-024-06273-9](https://doi.org/10.1007/s00604-024-06273-9)
- Indu V & Sabu M Thampi, Misinformation Detection in Social Networks using Emotion Analysis and User Behavior Analysis, *Elsevier Pattern Recognition Letters* (Accepted for publication).
- Shanujas V., Workplace Cyberbullying, Employee Wellbeing, and Intention to Stay in Remote and Hybrid work setting, 84th Annual Meeting of the Academy of Management, Chicago, Illinois, USA. (Accepted for publication).

## PATENT GRANTED

**Dr. Malu G**, Assistant Professor - School of Computer Science and Engineering, for the grant of a patent entitled "An Automated Lesion Detection System for DCE-MRI Images using Circular Mesh-based Shape and Margin Descriptor".





## INVITED TALK

- Dr. Shanujas V, Assistant Professor, School of Digital Humanities and Liberal Arts attended a Research Colloquium on 6th March 2024 as a delegate, and also delivered a talk on 'New Phase of Indian Economy - Opportunities and Challenges' on 7th March 2024 conducted by the PG Department of Commerce and Management at Blossom Arts and Science College, Kondotty, Malappuram.

- Dr. Malu G, gave an invited talk on "Crafting a Responsible Digital World" organised by the Department of MCA, KVM College of Engineering & IT, on 20th March 2024.

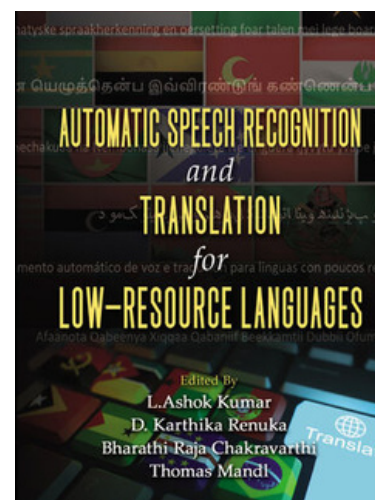


- Dr. Malu G, gave an invited talk on "Designing the Digital Future" organised by Amal College of Advanced Studies, Nilambur, on 26th March 2024.

## BOOK CHAPTER

Sherly, Elizabeth., Pillai, Leena . G., & Manohar, Kavya . (2024). ASR Models from Conventional Statistical Models to Transformers and Transfer Learning. Automatic Speech Recognition and Translation for Low Resource Languages, 69-112.

Print ISBN:9781394213580 | Online ISBN:9781394214624 | DOI:10.1002/9781394214624



### Chapter 6

## ASR Models from Conventional Statistical Models to Transformers and Transfer Learning

Elizabeth Sherly, Leena G. Pillai, Kavya Manohar

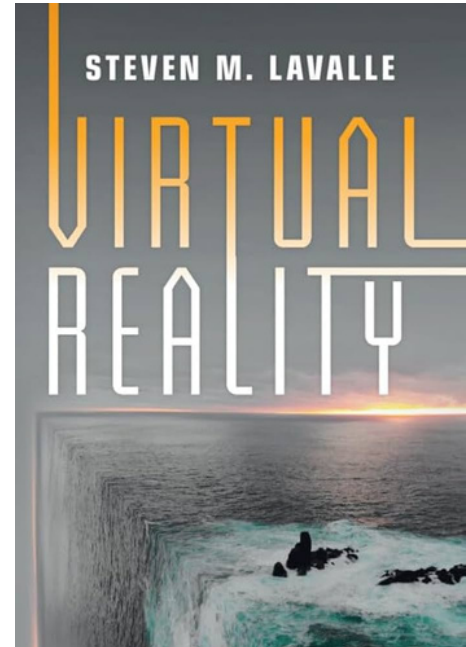
Book Editor(s): L. Ashok Kumar, D. Karthika Renuka, Bharathi Raja Chakravarthi, Thomas Mandl



## NEW ADDITIONS TO THE KNOWLEDGE CENTRE COLLECTION

### Virtual Reality

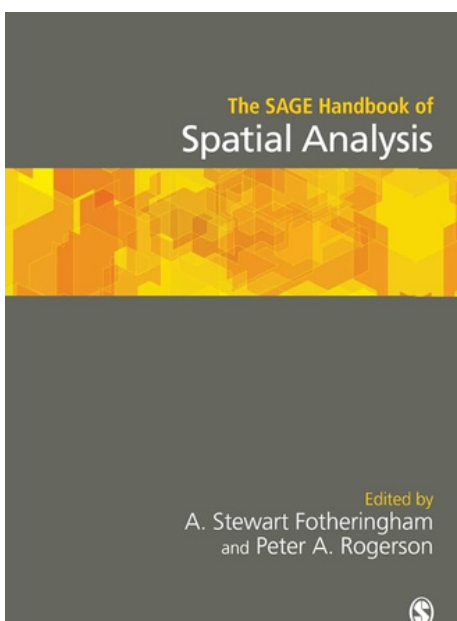
Virtual reality (VR) is a powerful technology that promises to transform our lives. This balanced and interdisciplinary text blends the key components from computer graphics, perceptual psychology, human physiology, behavioural science, media studies, human-computer interaction, optical engineering, and sensing and filtering, showing how each contributes to engineering perceptual illusions. Steven LaValle draws on his unique experience as a teacher, researcher, and early founder of Oculus VR to demonstrate how the best practices and insights from industry are built on fundamental computer science principles. Topics include media history, geometric modelling, optical systems, displays, eyes, ears, low-level perception, neuroscience of vision, graphical rendering, tracking systems, interaction mechanisms, audio, evaluating VR systems, and mitigating side effects. Students, researchers, and developers will gain a clear understanding of timeless foundations and new applications, enabling them to make innovative contributions to this growing field as scientists, engineers, business developers, and content makers.



Source: Amazon

Lavalle, Steven M (2023) Virtual Reality. UK, Cambridge University Press.

### The SAGE Handbook of Spatial Analysis



The widespread use of Geographical Information Systems (GIS) has significantly increased the demand for knowledge about spatial analytical techniques across a range of disciplines. As growing numbers of researchers realize they are dealing with spatial data, the demand for specialized statistical and mathematical methods designed to deal with spatial data is undergoing a rapid increase." "Responding to this demand, The SAGE Handbook of Spatial Analysis is a comprehensive and authoritative discussion of issues and techniques in the field of spatial data analysis. Aimed at an international audience of academics, The SAGE Handbook of Spatial Analysis will also prove essential to graduate level students and all researchers working with spatial data.

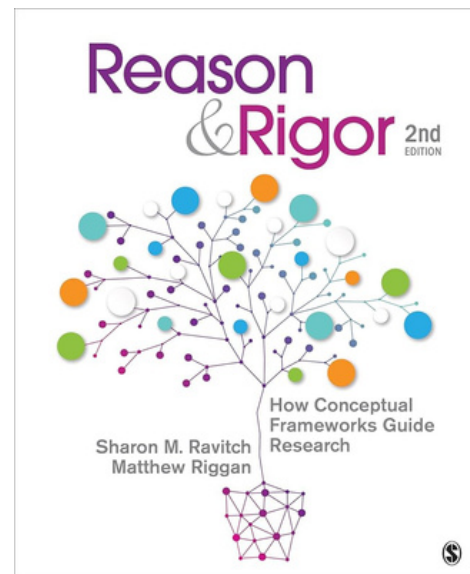
Source: Worldcat

Fotheringham, A. Stewart | Rogerson, Peter A (2009) The SAGE Handbook of Spatial Analysis. London, Sage Publications Ltd.



## Reason & Rigor: How Conceptual Frameworks Guide Research

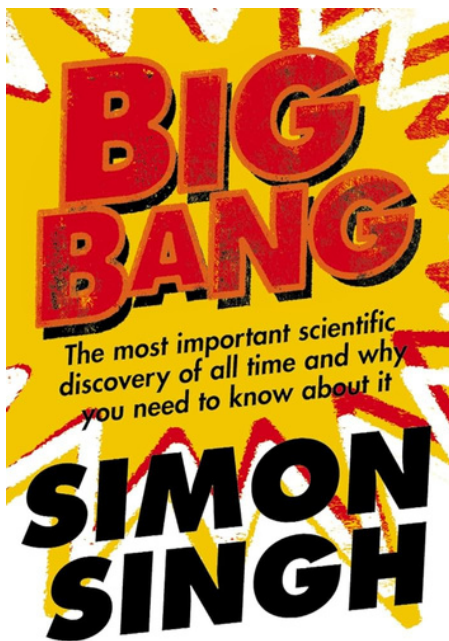
Designed for novice as well as more experienced researchers, Reason & Rigor presents conceptual frameworks as a mechanism for aligning literature review, research design, and methodology. The book explores the conceptual framework—defined as both a process and a product—that helps to direct and ground researchers as they work through common research challenges. Focusing on published studies on a range of topics and employing both quantitative and qualitative methods, the updated Second Edition features two new chapters and clearly communicates the processes of developing and defining conceptual frameworks.



Source: Sage Publications

Ravitch, Sharon M | Riggan, Matthew (2017) Reason & rigor: how conceptual frameworks guide research. Los Angeles, SAGE

## Big Bang: The Most Important Scientific Discovery of All Time and Why You Need to Know About it



The bestselling author of 'Fermat's Last Theorem' and 'The Code Book' tells the story of the brilliant minds that deciphered the mysteries of the Big Bang. Albert Einstein once said: 'The most incomprehensible thing about the universe is that it is comprehensible.' Simon Singh believes geniuses like Einstein are not the only people able to grasp the physics that govern the universe. We all can. As well as explaining what the Big Bang theory actually is, the book will address why cosmologists believe that it is an accurate description of the origin of the universe. It will also tell the story of the scientists who fought against the establishment idea of an eternal and unchanging universe. Simon Singh, renowned for making difficult ideas much less difficult than they first seem, is the perfect guide for this journey. Everybody has heard of the Big Bang Theory. But how many of us can actually claim to understand it? With characteristic clarity and a narrative peppered with anecdotes and personal histories of those who have struggled to understand creation, Simon Singh has written the story of the most important theory ever.

Source: Amazon

Singh, Simon (2005) Big Bang: The Most Important Scientific Discovery of All Time and Why You Need to Know About it. London, Harper Perennial.

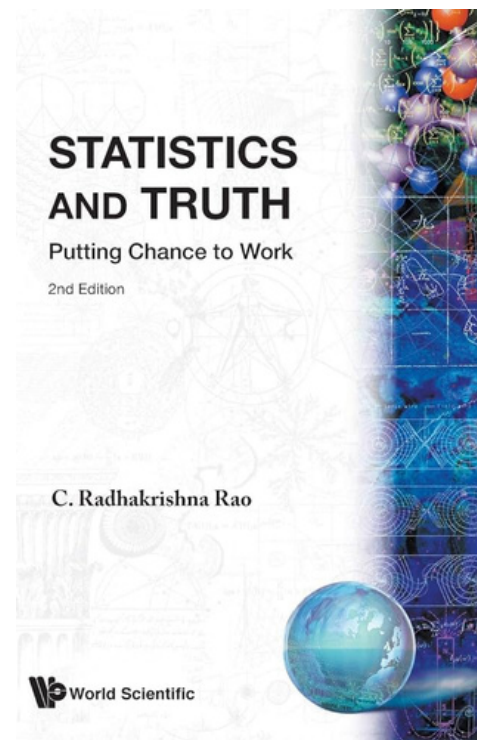


## Statistics and Truth : Putting Chance to Work

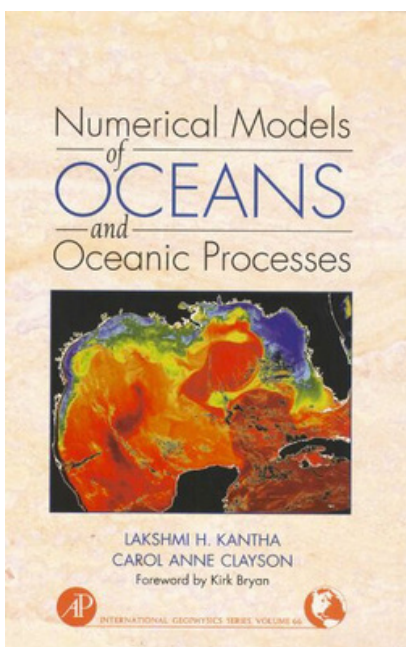
Written by one of the top most statisticians with experience in diverse fields of applications of statistics, the book deals with the philosophical and methodological aspects of information technology, collection and analysis of data to provide insight into a problem, whether it is scientific research, policy making by government or decision making in our daily lives. The author dispels the doubts that chance is an expression of our ignorance, which makes accurate prediction impossible, and illustrates how our thinking has changed with the quantification of uncertainty by showing that chance is no longer the obstructor but a way of expressing our knowledge. Indeed, chance can create and help in the investigation of truth. It is eloquently demonstrated with numerous examples of applications that statistics is the science, technology and art of extracting information from data and is based on a study of the laws of chance

Source: Amazon

Rao, C Radhakrishna (1997) *Statistics And Truth: Putting Chance To Work*. Singapore, World Scientific



## Numerical Models of Oceans and Oceanic Processes



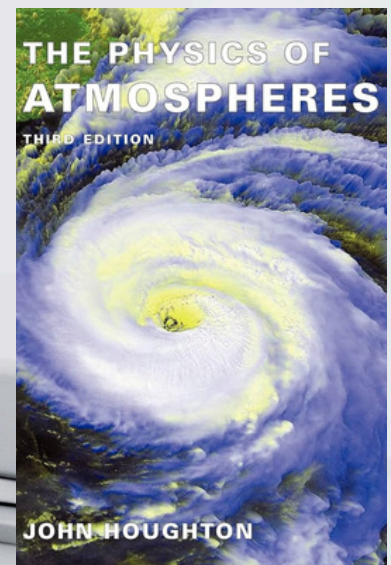
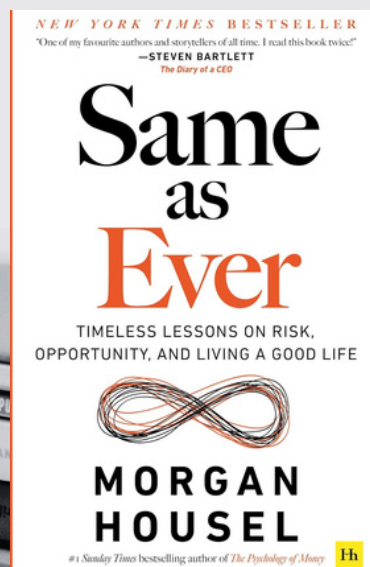
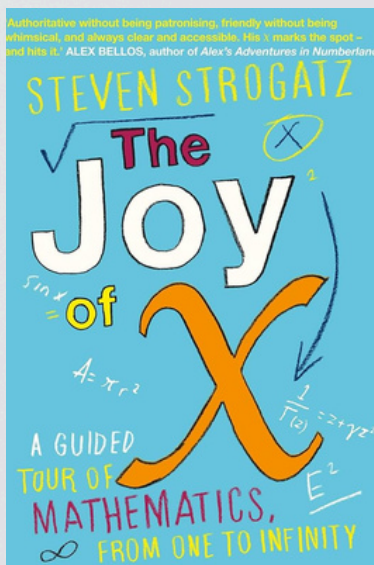
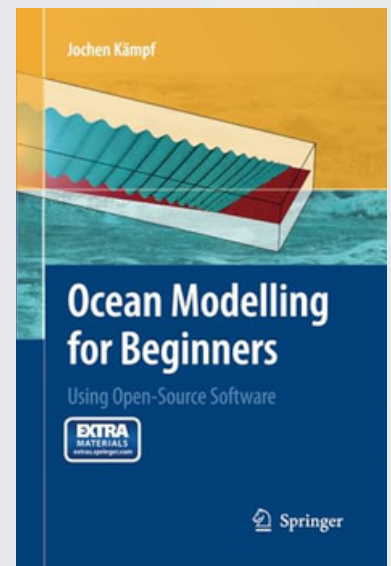
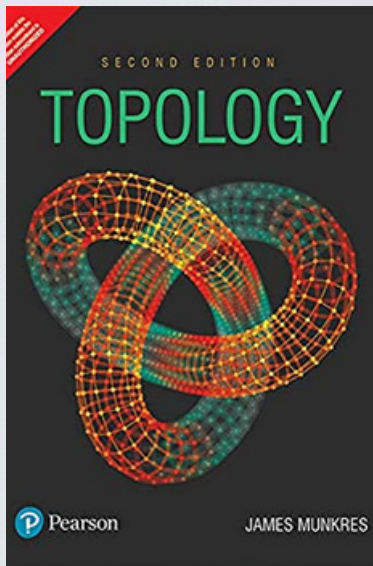
Numerical Models of Oceans and Oceanic Processes is a survey of the current state of knowledge in this field. It brings together a discussion of salient oceanic dynamics and processes, numerical solution methods, and ocean models to provide a comprehensive treatment of the topic. Starting with elementary concepts in ocean dynamics, it deals with equatorial, mid-latitude, high latitude, and coastal dynamics from the perspective of a modeler. A comprehensive and up-to-date chapter on tides is also included. This is followed by a discussion of different kinds of numerical ocean models and the pre- and post-processing requirements and techniques. Air-sea and ice-ocean coupled models are described, as well as data assimilation and nowcast/forecasts. Comprehensive appendices on wavelet transforms and empirical orthogonal functions are also included. This comprehensive and up-to-date survey of the field should be of interest to oceanographers, atmospheric scientists, and climatologists.

Source: Amazon

Kantha, Lakshmi H | Clayson, Carol Anne (2022) *Numerical Models of Oceans and Oceanic Processes*. San Diego, Academic Press.



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