Physical Scinces Memorandum Papers 2013

Established in 1871 on the outskirts of London, the Royal Indian Engineering College at Coopers Hill was arguably the first engineering school in Britain. For thirty-five years the college helped staff the government institutions of British India responsible for the railways, irrigation systems, telegraph network, and forests. Founded to meet the high demand for engineers in that country, it was closed thirty-five years later because its educational innovations had been surpassed by Britain ' s universities - on both occasions against the wishes of the Government of India. Imperial Engineers offers a complete history of the Royal Indian Engineering College. Drawing on the diaries of graduates working in India, the college magazine, student and alumni periodicals, and other archival documents, Richard Hornsey details why the college was established and how the students ' education prepared them for their work. Illustrating the impact of the college and its graduates in India and beyond, Imperial Engineers illuminates the personal and professional experiences of British men in India as well as the transformation of engineering education at a time of social and technological change.

As the availability of high-throughput data-collection technologies, such as information-sensing mobile devices, remote sensing, internet log records, and wireless sensor networks has grown, science, engineering, and business have rapidly transitioned from striving to develop information from scant data to a situation in which the challenge is now that the amount of information exceeds a human's ability to examine, let alone absorb, it. Data sets are increasingly complex, and this potentially increases the problems associated with such concerns as missing information and other quality concerns, data heterogeneity, and differing data formats. The nation's ability to make use of data depends heavily on the availability of a workforce that is properly trained and ready to tackle high-need areas. Training students to be capable in exploiting big data requires experience with statistical analysis, machine learning, and computational infrastructure that permits the real problems associated with massive data to be revealed and, ultimately, addressed. Analysis of big data requires cross-disciplinary skills, including the ability to make modeling decisions while balancing trade-offs between optimization and approximation, all while being attentive to useful metrics and system robustness. To develop those skills in students, it is important to identify whom to teach, that is, the educational background, experience, and characteristics of a prospective data-science student; what to teach, that is, the technical and practical content that should be taught to the student; and how to teach, that is, the structure and organization of a data-science program. Training Students to Extract Value from Big Data summarizes a workshop convened in April 2014 by the National Research Council's Committee on Applied and Theoretical Statistics to explore how best to train students to use big data. The workshop explored the need for training and curricula and coursework that should be included. One impetus for the workshop was the current fragmented view of what is meant by analysis of big data, data analytics, or data science. New graduate programs are introduced regularly, and they have their own notions of what is meant by those terms and, most important, of what students need to know to be proficient in data-intensive work. This report provides a variety of perspectives about those elements and about their integration into courses and curricula.

The Office of the Under Secretary of Defense (Personnel & Readiness), referred to throughout this report as P&R, is responsible for the total force management of all Department of Defense (DoD) components including the recruitment, readiness, and retention of personnel. Its work and policies are supported by a number of organizations both within DoD, including the Defense Manpower Data Center (DMDC), and externally, including the federally funded research and development centers (FFRDCs) that work for DoD. P&R must be able to answer questions for the Secretary of Defense such as how to recruit people with an aptitude for and interest in various specialties and along particular career tracks and how to assess on an ongoing basis service members' career satisfaction and their ability to meet new challenges. P&R must also address larger-scale questions, such as how the current realignment of forces to the Asia-Pacific area and other regions will affect recruitment, readiness, and retention. While DoD makes use of large-scale data and mathematical analysis in intelligence, surveillance, reconnaissance, and elsewhere â € "exploiting techniques such as complex network analysis, machine learning, streaming social media analysis, and anomaly detection â € "these skills and capabilities have not been applied as well to the personnel and readiness enterprise. Strengthening Data Science Methods for Department of Defense Personnel and Readiness Missions offers and roadmap and implementation plan for the integration of data analysis in support of decisions within the purview of P&R.

This book is the fourth volume of the sub series of the Lecture Notes in Mobility dedicated to Road Vehicle Automation. Its chapters have been written by researchers, engineers and analysts from all around the globe. Topics covered include public sector activities, human factors and challenges, ethical, legal, energy and technology perspectives, vehicle systems development, as well as transportation infrastructure and planning. The book is based on the Automated Vehicles Symposium which took place in San Francisco, California (USA) in July 2016.

The IceCube Observatory has been called the “weirdest” of the seven wonders of modern astronomy by Scientific American. In The Telescope in the Ice, Mark Bowen tells the amazing story of the people who built the instrument and the science involved. Located near the U. S. Amundsen-Scott Research Station at the geographic South Pole, IceCube is unlike most telescopes in that it is not designed to detect light. It employs a cubic kilometer of diamond-clear ice, more than a mile beneath the surface, to detect an elementary particle known as the neutrino. In 2010, it detected the first extraterrestrial high-energy neutrinos and thus gave birth to a new field of astronomy. IceCube is also the largest particle physics detector ever built. Its scientific goals span not only astrophysics and cosmology but also pure particle physics. And since the neutrino is one of the strangest and least understood of the known elementary particles, this is fertile ground. Neutrino physics is perhaps the most active field in particle physics today, and IceCube is at the forefront. The Telescope in the Ice is, ultimately, a book about people and the thrill of the chase: the struggle to understand the neutrino and the pioneers and inventors of neutrino astronomy. It is a success story.

For the Physical Sciences

Strengthening Forensic Science in the United States

A Guide for Authors and Editors

Science, Cold War and the American State

Encyclopedia of the Anthropocene

Coastal Sediments 2015

Biofuels for Aviation

This book addresses critical questions and analyses key issues regarding Indigenous/Aboriginal Peoples and governance of land and protected areas in the Arctic. It brings together contributions from scientists, indigenous and non-indigenous researchers, local leaders, and members of the policy community that: document Indigenous/Aboriginal approaches to governance of land and protected areas at the local, regional and international level; explore new territorial governance models that are emerging as part of the Indigenous/Aboriginal governance within Arctic States, provinces, territories and regions; analyse the recognition or lack thereof concerning indigenous rights to self-determination in the Arctic; and examine how traditional decision-making arrangements and practices can be linked with governments in the process of good governance. The book highlights essential lessons learned, success stories, and remaining issues, all of which are useful to address issues of Arctic governance of land and protected areas today, and which could also be relevant for future governance arrangements.

The world is changing with extraordinary rapidity, driven by many influences, including shifts in production and consumption patterns, continuing technological innovation, new ways of doing business and, of course, policy. The World Trade Report 2013 focuses on how trade is both a cause and an effect of change and looks into the factors shaping the future of world trade. One of the most significant drivers of change is technology. Not only have revolutions in transport and communications transformed our world but new developments, such as 3D printing, and the continuing spread of information technology will continue to do so. Trade and foreign direct investment, together with a greater geographical spread of income growth and opportunity, will integrate a growing number of countries into more extensive international exchange. Higher incomes and larger populations will put new strains on both renewable and non-renewable resources, calling for careful resource management. Environmental issues will also call for increasing attention. Economic and political institutions along with the interplay of cultural customs among countries all help to shape international cooperation, including in the trade field. The future of trade will also be affected by the extent to which politics and policies successfully address issues of growing social concern, such as the availability of jobs and persistent income inequality. These and other factors are all examined in the World Trade Report 2013.

Biofuels for Aviation: Feedstocks, Technology and Implementation presents the issues surrounding the research and use of biofuels for aviation, such as policy, markets, certification and performance requirements, life cycle assessment, and the economic and technical barriers to their full implementation. Readers involved in bioenergy and aviation sectors—research, planning, or policy making activities—will benefit from this thorough overview. The aviation industry's commitment to reducing GHG emissions along with increasing oil prices have sparked the need for renewable and affordable energy sources tailored to this sector's very specific needs. As jet engines cannot be readily electrified, turning to biofuels is the most viable option. However, aviation is a type of transportation for which traditional biofuels, such as bioethanol and biodiesel, do not fulfill key fuel requirements. Therefore, different solutions to this situation are being researched and tested around the globe, which makes navigating this scenario particularly challenging. This book guides readers through this intricate subject, bringing them up to speed with its current status and future prospects both from the academic and the industry point of view. Science and technology chapters delve into the technical aspects of the currently tested and the most promising technology in development, as well as their respective feedstocks and the use of additives as a way of adapting them to meet certain specifications. Conversion processes such as hydrotreatment, synthetic biology, pyrolysis, hydrothermal liquefaction and Fisher-Tropsch are explored and their results are assessed for current and future viability. Presents the current status of biofuels for the aviation sector, including technologies that are currently in use and the most promising future technologies, their production processes and viability Explains the requirements for certification and performance of aviation fuels and how that can be achieved by biofuels Explores the economic and policy issues, as well as life cycle assessment, a comparative techno-economic analysis of promising technologies and a roadmap to the future Explores conversion processes such as hydrotreatment, synthetic biology, pyrolysis, hydrothermal liquefaction and Fisher-Tropsch

Vibrios are Gram-negative bacilli that occur naturally in marine, estuarine, and freshwater systems. Some species include human and animal pathogens capable of causing gastroenteritis, wound infections, cholera, and fatal septicemia. Over the past decades, cutting edge research on Vibrio genomics has promoted a tremendous advance in our knowledge of these pathogens. Significant developments include the discovery of emerging epidemic clones, tracking the spread of new strain variants, and an intensified appreciation of the role of mobile genetic elements in antibiotic resistance spread as well as pathogenesis. Furthermore, improved understanding of the interaction of Vibrios with a variety of living organisms in the aquatic environment has documented the significant role of environmental reservoirs in their seasonal cycle favoring persistence of the pathogen during inter-epidemic periods and enhancing disease transmission. This Research Topic is dedicated to our current understanding in these areas and will bring together leading experts in the field to provide a deep overview of Vibrios ecology and evolution, and will suggest the pathway of future research in this field.

This Proceedings contains over 260 papers on cutting-edge research presented at the eighth international Symposium on Coastal Sediment Processes, held May 11 ? 15, 2015, in San Diego, California, USA. This technical specialty conference was devoted to promoting an interdisciplinary exchange of state-of-the-art knowledge among researchers in the fields of coastal engineering, geology, oceanography, and related disciplines, with the theme of Understanding and Working with Nature. Focusing on the physical aspects of the sediment processes in various coastal environments, this Proceedings provides findings from the latest research and newest engineering applications. Sessions covered a wide range of topics including barrier islands,

beaches, climate and sea level, cohesive and noncohesive sediments, coastal bluffs, coastal marsh, dredged sediments, inlet and navigation channels, regional sediment management, river deltas, shore protection, tsunamis, and vegetation-sediment interaction. Several special sessions included: Relevant science for changing coastlines: A Tribute to Gary Griggs; North Atlantic Coast Comprehensive Study and post-super-storm Sandy work; long-term coastal evolution; barrier islands of Louisiana; sea-level rise and super storms in a warming world; predicting decadal coastal geomorphic evolution; and contrasting Pacific coastal behavior with El Ni¤o Southern Oscillation (ENSO), are also featured. Contents:Keynote Addresses:Coastal Evolution and Human-Induced Sea-Level Rise: History and Prognosis (Robert J Nicholls)Addressing Local and Global Sediment Imbalances: Coastal Sediments as Rare Minerals (Dano Roelvink)Barrier Islands:Complex Responses of Barriers to Sea-Level Rise Emerging from a Model of Alongshore-Coupled Dynamic Profile Evolution (Andrew D Ashton & Jorge Lorenzo-Trueba)Deformation of an Isolated Offshore Sand Bar on Tidal Flat and Mergence with Beach Due to Waves (Toshiro San-Nami, Takaaki Uda, Shiho Miyahara & Masumi Serizawa)Beaches:Modeling Gravel Barrier Resilience During Storms with XBeach-G: The Role of Infiltration (Robert Mccall, Gerhard Masselink, Timothy Poate & Dano Roelvink)Numerical Investigation of Beach Profile Evolution Using a New Sediment Concentration Model (R Rahman, R Jayaratne, A E Tejada-Martinez & P Wang)Beach Changes Triggered by Imbalance of Longshore Sand Transport and Ground Subsidence on South Kujukuri Beach (Takaaki Uda, Ryoji Yoshida & Takahiro Todoroki)Climate and Sea Level:What Do We Do Now? (J William Kamphuis)A New Profile Fitting Approach to Estimating Beach Recession by Sea Level Rise (Wonchul Cho, Jong Sung Yoon, Dong Soo Hur & Jung L Lee)Coastal Bluffs:Evaluating Changes to Arctic Coastal Bluffs Using Repeat Aerial Photography and Structure-From-Motion Elevation Models (Ann E Gibbs, Matt Nolan & Bruce M Richmond)Puget Sound Feeder Bluff Mapping: Compiling and Completing a Sound-Wide Geomorphic Dataset (Andrea Maclennan, Jim Johannessen & Hugh Shipman)Coastal Marsh and Vegetation:Hydrodynamics and Sediment Dynamics in an Ice Covered Tidal Flat (Urs Neumeier & Colette Cheng)Mechanics of Sediment Suspension and Transport Within a Fringing Reef (Andrew W M Pomeroy, Ryan J Lowe, Marco Ghisalberti, Curt D Storlazzi, Michael Cuttler & Graham Symonds)Cohesive and Noncohesive Sediments:In-Situ Measurement of Erosion of Mixed Sand-Mud Sediments (Kevin B Briggs & J Calantoni)Stochastic Model of Fluid Mud Transport Under Wave and Current (Yasuyuki Nakagawa, Kazuo Nadaoka, Hiroshi Yagi, Yasuo Nihei & Hiroshi Uchikawa)Dredged Sediment:Numerical Model Studies to Support the Sustainable Management of Dredge Spoil Deposition in a Complex Nearshore Environment (Simon Weppe, Peter Mccomb & Lincoln Coe)Life Cycle Assessment for Dredged Sediment Placement Strategies (Matthew E Bates, Cate Fox-Lent, Linda Seymour, Ben A Wender & Igor Linkov)Inlet and Navigation Channels:A Tale of Five Harbours: Fluvial vs. Longshore Sediment Sources in Great Lakes Harbours (J Doucette & C Pinilla)Comparing Two Numerical Models in Simulating Hydrodynamics and Sediment Transport at a Dual Inlet System, West-Central Florida (Ping Wang, Jun Cheng, Mark H Horwitz & Kelly R Legault)Regional Sediment Management:Engineering with Nature: Nearshore Berm Placements At Fort Myers Beach And Perdido Key, Florida, USA (Katherine E Brutsch□, Ping Wang, Julie D Rosati & Cheryl E Pollock)Preview Analysis to Sand Bypass System Design in the Port of Sisal, Yucat n (P E Reyes, P Salles, J L¢pez & E Casillas)River Deltas:Freshwater Vegetation Influence on Sediment Spatial Distribution in River Delta During Flood (W Nardin, D A Edmonds & S Fagherazzi)Observation of Sediment Processes of a Flood Event at the River Mouth of Tenryu, Japan with X-Band Radar and In Situ Measurements (Satoshi Takewaka, Takumi Okabe, Shigeru Kato & Shinichi Aoki)Shore Protection:Field Observations of Tidal Flow Separation at a Mega-Scale Beach Nourishment (Max Radermacher, Wilmar Zeelenberg, Matthieu De Schipper & Ad Reniers)Ecologically-Oriented Coastal Engineering: A New Approach for Bird Island Restoration and Avian Conservation at Sundown Island, Matagorada Bay, Texas (Cris Weber, Thomas Dixon, Dave Buzan, Juan Moya & Iliana Pe¤a)Tsunamis:Hindcast of Bathymetry Change in Oarai Port, Japan, Caused by the 2011 Tsunami (Yoshiaki Kuriyama, Yoshiyuki Uno & Kazuhiko Honda)Tsunami Sediment Analysis Based on Luminescence Measurement (Shinji Sato, Kanto Nishiguchi & Yusuke Yamanaka)Barrier Island of Louisiana:Mississippi River Delta Plain Barrier Island Sediment Dynamics and Implications for Managing Coastal Transgressionion (Michael D Miner, Ioannis Y Georgiou, Mark Kulp & Duncan Fitzgerald)Differential Sediment Consolidation Associated with Barrier Beach Restoration: Caminada Headland, South Louisiana (Mark R Byrnes, Chester Hedderman, Michael Hasen, P E, Harry Roberts, Syed Khalil & Steven G Underwood)Constrasting Pacific Coastal Behaviour with Enso:Constrasting Pacific Coastal Behaviour with Enso Modeling Interannual to Multi-Decadal Shoreline Rotations of Headland-Bounded Littoral Cells (Dylan Anderson & Peter Ruggiero)Wave Climate Change Associated with Enso Modoki and Tropical Expansion in Southeast Australia and Implications for Coastal Stability (Thomas R Mortlock & Ian D Goodwin)Long Term Coastal Evolution:Predicting Centuries of Morphodynamics in San Pablo Bay, California: Hindcast and Forecast Including Sea Level Rise (Mick van der Wegen, Bruce E Jaffe & Dano Roelvink)Modelling Long-Term Morphodynamics in Practice: Uncertainties and Compromises (J J Williams, T Conduch□ & L S Esteves)North Atlantic Coast Comprehensive Study and Post Supper Storm Sandy Work:Modeling the Effects of Hard Structures on Dune Erosion and Overwash ? A Case Study of the Impact of Hurricane Sandy on the New Jersey Coast (C M Nederhoff, Q J Lodder, M Boers, J P Den Bieman & J K Miller)Conceptual Regional Sediment Budget for the US North Atlantic Coast (Julie Dean Rosati, Ashley E Frey, Alison S Grzegorzewski, Coraggio Maglio, Andrew Morang & Robert C Thomas)Predicting Decadal Coastal Geomorphic Evolution:Decadal Scale Shoreline Change Arises from Large-Scale Interactions, While Small-Scale Changes are Forgotten: Observational Evidence (A B Murray, E D Lazarus, L J Moore, J Lightfoot, A D Ashton, D E Mcnamara & K Ells)Equilibrium-Based Foreshore Beach Profile Change Model for Long-Term Data (Masayuki Banno, Yoshiaki Kuriyama & Noriaki Hashimoto)Relevant Science for Changing Coastline a Tribute to Gary Griggs:Quantifying the Geomorphic Resiliency of Barrier Island Beaches (Cheryl J Hapke, Owen T Brenner & Rachel E Henderson)Sedimentology of Intertidal Sediment Deposits After Dam Removal on a Coastal River (Ian M Miller, Andrea Ogston & Julia Dolan)Sea Level Rise and Super Storm in a Warming World:Multi-Annual Sand and Gravel Beach Response to Storms in the Southwest of England (Tim Scott, Gerd Masselink, Tim O'hare, Mark Davidson & Paul Russell)Regional Variability in Atlantic Storm Response Along the Southwest Coast of England (Gerd Masselink, Tim Scott, Daniel Conley, Mark Davidson & Paul Russell)and other papers Readership: Graduate students and research in coastal

engineering. Key Features:Most up-to-date information and knowledgeBroad world-wide attendanceIn depth technical focus. These proceedings have and should continue to serve as widely used reference booksKeywords:Coastal Engineering;Coastal Geology;Coastal Processes;Shore Protection;Sediment Transport;Beach Processes;Coastal Morphology

Chemical Energy from Natural and Synthetic Gas

Life-Cycle of Engineering Systems: Emphasis on Sustainable Civil Infrastructure

AMA Manual of Style

Yearbook of International Organizations 2012-2013

Force Multiplying Technologies for Logistics Support to Military Operations

Managing Medical Devices within a Regulatory Framework

Road Vehicle Automation 4

One of the pathways by which the scientific community confirms the validity of a new scientific discovery is by repeating the research that produced it. When a scientific effort fails to independently confirm the computations or results of a previous study, some fear that it may be a symptom of a lack of rigor in science, while others argue that such an observed inconsistency can be an important precursor to new discovery. Concerns about reproducibility and replicability have been expressed in both scientific and popular media. As these concerns came to light, Congress requested that the National Academies of Sciences, Engineering, and Medicine conduct a study to assess the extent of issues related to reproducibility and replicability and to offer recommendations for improving rigor and transparency in scientific research. Reproducibility and Replicability in Science defines reproducibility and replicability and examines the factors that may lead to non-reproducibility and non-replicability in research. Unlike the typical expectation of reproducibility between two computations, expectations about replicability are more nuanced, and in some cases a lack of replicability can aid the process of scientific discovery. This report provides recommendations to researchers, academic institutions, journals, and funders on steps they can take to improve reproducibility and replicability in science.

The Bulk Collection of Signals Intelligence: Technical Options study is a result of an activity called for in Presidential Policy Directive 28 (PPD-28), issued by President Obama in January 2014, to evaluate U.S. signals intelligence practices. The directive instructed the Office of the Director of National Intelligence (ODNI) to produce a report within one year "assessing the feasibility of creating software that would allow the intelligence community more easily to conduct targeted information acquisition rather than bulk collection." ODNI asked the National Research Council (NRC) -- the operating arm of the National Academy of Sciences and National Academy of Engineering -- to conduct a study, which began in June 2014, to assist in preparing a response to the President. Over the ensuing months, a committee of experts appointed by the Research Council produced the report.

The AMA Manual of Style is a must-have resource for anyone involved in medical, health, and scientific publishing. Written by an expert committee of JAMA Network editors, this latest edition addresses issues that face authors, editors, and publishers in the digital age. Extensive updates are included in the References chapter, with examples of how to cite digital publications, preprints, databases, data repositories, podcasts, apps and interactive games, and social media. Full-color examples grace the chapter on data display, with newer types of graphic presentations and updated guidance on formatting tables and figures. The manual thoroughly covers ethical and legal issues such as authorship, conflicts of interest, scientific misconduct, intellectual property, open access and public access, and corrections. The Usage chapter has been revised to bring the manual up-to-date on word choice, especially in writing about individuals with diseases or conditions and from various socioeconomic, racial/ethnic, and sexual orientation populations. Specific nomenclature entries in many disciplines are presented to guide users in issues of diction, formatting, and preferred terminology. Guidance on numbers, SI units, and math has been updated, and the section on statistics and study design has undergone a major expansion. In sum, the answer to nearly any issue facing a writer or editor in medicine, health care, and related disciplines can be found in the 11th edition of the AMA Manual of Style. Available for institutional purchase or subscription or individual subscription. Visit AMAManualofStyle.com or contact your sales rep for more details.

Commercial development of energy from renewables and nuclear is critical to long-term industry and environmental goals. However, it will take time for them to economically compete with existing fossil fuel energy resources and their infrastructures. Gas fuels play an important role during and beyond this transition away from fossil fuel dominance to a balanced approach to fossil, nuclear, and renewable energies. Chemical Energy from Natural and Synthetic Gas illustrates this point by examining the many roles of natural and synthetic gas in the energy and fuel industry, addressing it as both a "transition" and "end game" fuel. The book describes various types of gaseous fuels and how are they are recovered, purified, and converted to liquid fuels and electricity generation and used for other static and mobile applications. It emphasizes methane, syngas, and hydrogen as fuels, although other volatile hydrocarbons are considered. It also covers storage and transportation infrastructure for natural gas and hydrogen and methods and processes for cleaning and reforming synthetic gas. The book also deals applications, such as the use of natural gas in power production in power plants, engines, turbines, and vehicle needs. Presents a unified and collective look at gas in the energy and fuel industry, addressing it as both a "transition" and "end game" fuel. Emphasizes methane, syngas, and hydrogen as fuels. Covers gas storage and transport infrastructure. Discusses thermal gasification, gas reforming, processing, purification and upgrading. Describes biogas and bio-hydrogen production. Deals with the use of natural gas in power production in power plants, engines, turbines, and vehicle needs.

We all know that the financial crisis of 2008 came dangerously close to pushing the United States and the world into a depression rivaling that of the 1930s. But what is astonishing -- and should make us not just afraid but very afraid -- are the shenanigans of the biggest banks since the crisis. Bob Ivry passionately, eloquently, and convincingly details the operatic ineptitude of America's best-compensated executives and the ways the government kowtows to what it mistakenly imagines is their competence and success. Ivry shows that the only thing that has changed since the meltdown is how too-big-to-fail banks and their fellow travelers in Washington have nudged us ever closer to an even bigger economic calamity. Informed by deep reporting from New York, Washington, and the heartland, The Seven Sins of Wall Street, like no other book, shows how we're all affected by the financial industry's inhumanity. The transgressions of

"Wall Street titans" and "masters of the universe" are paid for by real people. In fierce, plain English, Ivry indicts a financial industry that continues to work for the few at the expense of the rest of us. Problems that financiers deemed too complicated to be understood by ordinary folks are shown by Ivry to be financial legerdemain -- a smokescreen of complexity and jargon that hide the bankers' nefarious activities. The Seven Sins of Wall Street is irreverent and timely, an infuriating black comedy. The Great Depression of the 1930s moved the American political system to real reform that kept the finance industry in check. With millions so deeply affected since the crisis of 2008, you'll finish this book asking yourself how it is that so many of the nation's leading financial institutions remain such exasperating problem children.

Plant Defense Mechanisms

Training Students to Extract Value from Big Data

Strengthening Data Science Methods for Department of Defense Personnel and Readiness Missions

Indigenous Peoples Governance of Land and Protected Territories in the Arctic

Technological Innovation in Legacy Sectors

The Triumph of Idealism and the Return of Realism

Factors Shaping the Future of World Trade

Encyclopedia of the Anthropocene presents a currency-based, global synthesis cataloguing the impact of humanity's global ecological footprint. Covering a multitude of aspects related to Climate Change, Biodiversity, Contaminants, Geological, Energy and Ethics, leading scientists provide foundational essays that enable researchers to define and scrutinize information, ideas, relationships, meanings and ideas within the Anthropocene concept. Questions widely debated among scientists, humanists, conservationists, politicians and others are included, providing discussion on when the Anthropocene began, what to call it, whether it should be considered an official geological epoch, whether it can be contained in time, and how it will affect future generations. Although the idea that humanity has driven the planet into a new geological epoch has been around since the dawn of the 20th century, the term 'Anthropocene' was only first used by ecologist Eugene Stoermer in the 1980s, and hence popularized in its current meaning by atmospheric chemist Paul Crutzen in 2000. Presents comprehensive and systematic coverage of topics related to the Anthropocene, with a focus on the Geosciences and Environmental science Includes point-counterpoint articles debating key aspects of the Anthropocene, giving users an even-handed navigation of this complex area Provides historic, seminal papers and essays from leading scientists and philosophers who demonstrate changes in the Anthropocene concept over time

The first book to consider intermittency as a key point of an energy system, Energy Intermittency describes different levels of variability for traditional and renewable energy sources, presenting detailed solutions for handling energy intermittency through trade, collaboration, demand management, and active energy storage. Addressing energy supply intermittency systematically, this practical text: Analyzes typical time-distributions and intervals between episodes of demand-supply mismatch and explores their dependence on system layouts and energy source characteristics Simulates scenarios regarding resource time-flow, energy conversion devices, and demand structure to assist in evaluating the technical viability of the proposed solutions Discusses the conditions for establishing such systems in terms of economic requirements and regulatory measures In one concise and convenient volume, Energy Intermittency provides a comprehensive overview of all the causes and remedies of energy supply intermittency.

The academic biomedical research community is a hub of employment, economic productivity, and scientific progress. Academic research institutions are drivers of economic development in their local and state economies and, by extension, the national economy. Beyond the economic input that the academic biomedical research community both receives and provides, it generates knowledge that in turn affects society in myriad ways. The United States has experienced and continues to face the threat of disasters, and, like all entities, the academic biomedical research community can be affected. Recent disasters, from hurricanes to cyber-attacks, and their consequences have shown that the investments of the federal government and of the many other entities that sponsor academic research are not uniformly secure. First and foremost, events that damage biomedical laboratories and the institutions that house them can have impacts on the safety and well-being of humans and research animals. Furthermore, disasters can affect career trajectories, scientific progress, and financial stability at the individual and institutional levels. Strengthening the Disaster Resilience of the Academic Biomedical Research Community offers recommendations and guidance to enhance the disaster resilience of the academic biomedical research community, with a special focus on the potential actions researchers, academic research institutions, and research sponsors can take to mitigate the impact of future disasters.

This book discusses higher education research as a field of study in Asia. It traces the evolution of research in the field of higher education in several Asian countries, and shares ideas about the evolving higher education research communities in Asia. It also identifies common and dissimilar challenges across national communities, providing researchers and policymakers essential new insights into the relevance of a greater regional articulation of national higher education research communities, and their further integration into and contribution to the international higher education research community as a whole.

Managing Medical Devices within a Regulatory Framework helps administrators, designers, manufacturers, clinical engineers, and biomedical support staff to navigate worldwide regulation, carefully consider the parameters for medical equipment patient safety, anticipate problems with equipment, and efficiently manage medical device acquisition budgets throughout the total product life cycle. This contributed book contains perspectives from industry professionals and academics providing a comprehensive look at health technology management (HTM) best practices for medical records management, interoperability between and among devices outside of healthcare, and the dynamics of implementation of new devices. Various chapters advise on how to achieve patient confidentiality compliance for medical devices and their software, discuss legal issues surrounding device use in the hospital environment of care, the impact of device failures on patient safety, methods to advance skillsets for HTM professionals, and resources to assess digital technology. The authors bring forth relevant challenges and demonstrate how management can foster increased clinical and non-clinical collaboration to enhance patient outcomes and the bottom line by translating the regulatory impact on operational requirements. Covers compliance with FDA and CE regulations, plus EU directives for service and maintenance of medical devices Provides operational and clinical practice recommendations in regard to regulatory changes for risk management Discusses best practices for equipment procurement and maintenance Provides guidance on dealing with the challenge of medical records management and compliance with patient confidentiality using information from medical devices

Reproducibility and Replicability in Science

Vibrio ecology, pathogenesis and evolution

Big Banks, their Washington Lackeys, and the Next Financial Crisis

The Telescope in the Ice

America's Search for Security
The Seven Sins of Wall Street
Protecting the Nation's Investment

This book illuminates how Berkner became a model that produced the scientist/advisor/policymaker that helped build post-war America. It does so by providing a detailed account of the personal and professional beliefs of one of the most influential figures in the American scientific community; a figure that helped define the political and social climates that existed in the United States during the Cold War.

Volume 1 (A and B) of the "Yearbook of International Organizations" covers international organizations throughout the world, comprising their aims, activities and events. This includes names (in English, French and, where available, other languages), abbreviations and descriptions of over 34,000 not-for-profit organizations currently active in every field of human endeavor, as well as references to associated organizations, whose goals cross all economic, political and geographical borders, offering an insight into new, productive relationships. The volume also allows quick and easy cross-referencing from volumes 2, 3, 4, and 6.

Provides a comprehensive tour of the mathematical methods needed by physical science students.

A proposal for using cost-benefit analysis to evaluate the socioeconomic impact of public investment in large scientific projects. Large particle accelerators, outer space probes, genomics platforms: all are scientific enterprises managed through the new form of the research infrastructure, in which communities of scientists collaborate across nations, universities, research institutions, and disciplines. Such large projects are often publicly funded, with no accepted way to measure the benefits to society of these investments. In this book, Massimo Florio suggests the use of cost-benefit analysis (CBA) to evaluate the socioeconomic impact of public investment in large and costly scientific projects. The core concept of CBA of any infrastructure is to undertake the consistent intertemporal accounting of social welfare effects using the available information. Florio develops a simple framework for such accounting in the research infrastructure context and then offers a systematic analysis of the benefits in terms of the social agents involved. He measures the benefits to scientists, students, and postdoctoral researchers; the effect on firms of knowledge spillovers; the benefits to users of information technology and science-based innovation; the welfare effects on the general public of cultural services provided by RIs; and the willingness of taxpayers to fund scientific knowledge creation. Finally, Florio shows how these costs and benefits can be expressed in the form of stochastic net present value and other summary indicators.

From April through December of 1945, ten of Nazi Germany's greatest nuclear physicists were detained by Allied military and intelligence services in a kind of gilded cage at Farm Hall, an English country manor near Cambridge. The physicists knew the Reich had failed to develop an atomic bomb, and they soon learned, from a BBC radio report on August 6, that the Allies had succeeded in their own efforts to create such a weapon. But what they did not know was that many of their meetings and private conversations were being monitored and recorded by British agents. This book contains the complete collection of transcripts that were made from these secret recordings, providing an unprecedented view of how the German scientists, including two Nobel Laureates, thought and spoke about their roles during the war.

Medical Data Privacy Handbook
Imperial Engineers
Twort's Water Supply
Strategies for Team Science Success
Handbook of Evidence-Based Principles for Cross-Disciplinary Science and Practical Lessons Learned from Health Researchers
Energy Intermittency
Feedstocks, Technology and Implementation

Philanthropic Foundations in International DevelopmentRockefeller, Ford and GatesRoutledge

Twort's Water Supply, Seventh Edition, has been expanded to provide the latest tools and techniques to meet engineering challenges over dwindling natural resources. Approximately 1.1 billion people in rural and peri-urban communities of developing countries do not have access to safe drinking water. The mortality from diarrhea-related diseases amounts to 2.2 million people each year from the consumption of unsafe water. This update reflects the latest WHO, European, UK, and US standards, including the European Water Framework Directive. The book also includes an expansion of waste and sludge disposal, including energy and sustainability, and new chapters on intakes, chemical storage, handling, and sampling. Written for both professionals and students, this book is essential reading for anyone working in water engineering. Features expanded coverage of waste and sludge disposal to include energy use and sustainability Includes a new chapter on intakes Includes a new chapter on chemical storage and handling

Collaborations that integrate diverse perspectives are critical to addressing many of our complex scientific and societal problems. Yet those engaged in cross-disciplinary team science often face institutional barriers and collaborative challenges. Strategies for Team Science Success offers readers a comprehensive set of actionable strategies for reducing barriers and overcoming challenges and includes practical guidance for how to implement effective team science practices. More than 100 experts--including scientists, administrators, and funders from a wide range of disciplines and professions-- explain evidence-based principles, highlight state-of the-art strategies, tools, and resources, and share first-person accounts of how they've applied them in their own successful team science initiatives. While many examples draw from cross-disciplinary team science initiatives in the health domain, the handbook is designed to be useful across all areas of science. Strategies for Team Science Success will inspire and enable readers to embrace cross-disciplinary team science, by

articulating its value for accelerating scientific progress, and by providing practical strategies for success. Scientists, administrators, funders, and others engaged in team science will also leave equipped to develop new policies and practices needed to keep pace in our rapidly changing scientific landscape. Scholars across the Science of Team Science (SciTS), management, organizational, behavioral and social sciences, public health, philosophy, and information technology, among other areas of scholarship, will find inspiration for new research directions to continue advancing cross-disciplinary team science.

Volume Two of Business and Society 360 focuses on research drawn from work grounded in "corporate social responsibility" and "corporate citizenship."

Recent human migrations, technological advances, agricultural activities, and climate change-induced phenomenon have forced plants to increasingly adapt to new environments. This book highlights current morphological, anatomical, physiological, molecular, and genomic advances in plant defense mechanisms. These advances, including epigenetic mechanisms, have been linked to observed phenotypic plant plasticity. Researchers have found intriguing plant interactions and novel mechanisms, which have increased our understanding of how sessile plants adapt to and thrive in challenging environments. The studies in this book consider the resilience and sustainability of plant genomes and epigenomes and the role they will play in the next generation of food systems.

Investing in Science

Philanthropic Foundations in International Development

Capitalism vs. The Climate

Corporate Social Responsibility

Inventing a New Astronomy at the South Pole

A Guided Tour of Mathematical Methods

A Path Forward

The American economy faces two deep problems: expanding innovation and raising the rate of quality job creation. Both have roots in a neglected problem: the resistance of Legacy economic sectors to innovation. While the U.S. has focused its policies on breakthrough innovations to create new economic frontiers like information technology and biotechnology, most of its economy is locked into Legacy sectors defended by technological/ economic/ political/ social paradigms that block competition from disruptive innovations that could challenge their models. Americans like to build technology "covered wagons" and take them "out west" to open new innovation frontiers; we don't head our wagons "back east" to bring innovation to our Legacy sectors. By failing to do so, the economy misses a major opportunity for innovation, which is the bedrock of U.S. competitiveness and its standard of living. Technological Innovation in Legacy Sectors uses a new, unifying conceptual framework to identify the shared features underlying structural obstacles to innovation in major Legacy sectors: energy, air and auto transport, the electric power grid, buildings, manufacturing, agriculture, health care delivery and higher education, and develops approaches to understand and transform them. It finds both strengths and obstacles to innovation in the national innovation environments - a new concept that combines the innovation system and the broader innovation context - for a group of Asian and European economies. Manufacturing is a major Legacy sector that presents a particular challenge because it is a critical stage in the innovation process. By increasingly offshoring production, the U.S. is losing important parts of its innovation capacity. "Innovate here, produce here," where the U.S. took all the gains of its strong innovation system at every stage, is being replaced by "innovate here, produce there," which threatens to lead to "produce there, innovate there." To bring innovation to Legacy sectors, authors William Bonvillian and Charles Weiss recommend that policymakers focus on all stages of innovation from research through implementation. They should fill institutional gaps in the innovation system and take measures to address structural obstacles to needed disruptive innovations. In the specific case of advanced manufacturing, the production ecosystem can be recreated to reverse "jobless innovation" and add manufacturing-led innovation to the U.S.'s still-strong, research-oriented innovation system.

In the past few years, interest in plug-in electric vehicles (PEVs) has grown. Advances in battery and other technologies, new federal standards for carbon-dioxide emissions and fuel economy, state zero-emission-vehicle requirements, and the current administration's goal of putting millions of alternative-fuel vehicles on the road have all highlighted PEVs as a transportation alternative. Consumers are also beginning to recognize the advantages of PEVs over conventional vehicles, such as lower operating costs, smoother operation, and better acceleration; the ability to fuel up at home; and zero tailpipe emissions when the vehicle operates solely on its battery. There are, however, barriers to PEV deployment, including the vehicle cost, the short all-electric driving range, the long battery charging time, uncertainties about battery life, the few choices of vehicle models, and the need for a charging infrastructure to support PEVs. What should industry do to improve the performance of PEVs and make them more attractive to consumers? At the request of Congress, Overcoming Barriers to Deployment of Plug-in Electric Vehicles identifies barriers to the introduction of electric vehicles and recommends ways to mitigate these barriers. This report examines the characteristics and capabilities of electric vehicle technologies, such as cost, performance, range, safety, and durability, and assesses how these factors might create barriers to widespread deployment. Overcoming Barriers to Deployment of Plug-in Electric Vehicles provides an overview of the current status of PEVs and makes recommendations to spur the industry and increase the attractiveness of this promising technology for consumers. Through consideration of consumer behaviors, tax incentives, business models, incentive programs, and infrastructure needs, this book studies the state of the industry and makes recommendations to further its development and acceptance.

This book details the ways in which America’s ascendancy to global superpower status was the result of its dueling foreign policy philosophies and forces: an historically expansive idealism balanced with an equally constant realist restraint. In America's Search for Security, Sean Kay surveys major historical trends in American foreign policy and provides a new context for thinking about America’s rise to power from the founding period through the end of the Cold War. It details the post-Cold War rise of idealist foreign policy goals and the costs of abandoning realist roots, analyzing in-depth the wars in Iraq and Afghanistan as examples of what disappointing, if not disastrous, outcomes can befall America abroad when foreign policy objectives are muddied, unclear, and fail to remain grounded in what historically has made America an unquestionable world power. This book also focuses on America’s recent “pivot” to Asia, and efforts to restore a realist balance abroad and at home in the second Obama administration, concluding with a look at what the future of American power will look like in a rapidly evolving world in need of newer, more modernized, and adaptable forms of leadership. Tracing the tension between idealism and realism, Kay provides a detailed explanation of the rise of a post-Cold War idealist consensus in Washington, D.C. - and shows how that culminated in a return to realism in both the 2013 debates over intervention in Syria and the 2014 crisis with Russia.

Scores of talented and dedicated people serve the forensic science community, performing vitally important work. However, they are often constrained by lack of adequate resources, sound policies, and national support. It is clear that change and advancements, both systematic and scientific, are needed in a number of forensic science disciplines to ensure the reliability of work, establish enforceable standards, and

promote best practices with consistent application. Strengthening Forensic Science in the United States: A Path Forward provides a detailed plan for addressing these needs and suggests the creation of a new government entity, the National Institute of Forensic Science, to establish and enforce standards within the forensic science community. The benefits of improving and regulating the forensic science disciplines are clear: assisting law enforcement officials, enhancing homeland security, and reducing the risk of wrongful conviction and exoneration. Strengthening Forensic Science in the United States gives a full account of what is needed to advance the forensic science disciplines, including upgrading of systems and organizational structures, better training, widespread adoption of uniform and enforceable best practices, and mandatory certification and accreditation programs. While this book provides an essential call-to-action for congress and policy makers, it also serves as a vital tool for law enforcement agencies, criminal prosecutors and attorneys, and forensic science educators.

The mission of the United States Army is to fight and win our nation's wars by providing prompt, sustained land dominance across the full range of military operations and spectrum of conflict in support of combatant commanders. Accomplishing this mission rests on the ability of the Army to equip and move its forces to the battle and sustain them while they are engaged. Logistics provides the backbone for Army combat operations. Without fuel, ammunition, rations, and other supplies, the Army would grind to a halt. The U.S. military must be prepared to fight anywhere on the globe and, in an era of coalition warfare, to logistically support its allies. While aircraft can move large amounts of supplies, the vast majority must be carried on ocean going vessels and unloaded at ports that may be at a great distance from the battlefield. As the wars in Afghanistan and Iraq have shown, the costs of convoying vast quantities of supplies is tallied not only in economic terms but also in terms of lives lost in the movement of the materiel. As the ability of potential enemies to interdict movement to the battlefield and interdict movements in the battlespace increases, the challenge of logistics grows even larger. No matter how the nature of battle develops, logistics will remain a key factor. Force Multiplying Technologies for Logistics Support to Military Operations explores Army logistics in a global, complex environment that includes the increasing use of antiaccess and area-denial tactics and technologies by potential adversaries. This report describes new technologies and systems that would reduce the demand for logistics and meet the demand at the point of need, make maintenance more efficient, improve inter- and intratheater mobility, and improve near-real-time, in-transit visibility. Force Multiplying Technologies also explores options for the Army to operate with the other services and improve its support of Special Operations Forces. This report provides a logistics-centric research and development investment strategy and illustrative examples of how improved logistics could look in the future.

Rockefeller, Ford and Gates

Proceedings of the Fifth International Symposium on Life-Cycle Civil Engineering (IALCCE 2016), 16-19 October 2016, Delft, The Netherlands

Technical Options

Organization Descriptions and Cross-References

Overcoming Barriers to Deployment of Plug-in Electric Vehicles

Summary of a Workshop

Marine Design XIII collects the contributions to the 13th International Marine Design Conference (IMDC 2018, Espoo, Finland, 10-14 June 2018). The aim of this IMDC series of conferences is to promote all aspects of marine design as an engineering discipline. The focus is on key design challenges and opportunities in the area of current maritime technologies and markets, with special emphasis on: • Challenges in merging ship design and marine applications of experience-based industrial design • Digitalisation as technological enabler for stronger link between efficient design, operations and maintenance in future • Emerging technologies and their impact on future designs • Cruise ship and icebreaker designs including fleet compositions to meet new market demands To reflect on the conference focus, Marine Design XIII covers the following research topic series: •State of art ship design principles - education, design methodology, structural design, hydrodynamic design; •Cutting edge ship designs and operations - ship concept design, risk and safety, arctic design, autonomous ships; •Energy efficiency and propulsions - energy efficiency, hull form design, propulsion equipment design; •Wider marine designs and practices - navy ships, offshore and wind farms and production. Marine Design XIII contains 2 state-of-the-art reports on design methodologies and cruise ships design, and 4 keynote papers on new directions for vessel design practices and tools, digital maritime traffic, naval ship designs, and new tanker design for arctic. Marine Design XIII will be of interest to academics and professionals in maritime technologies and marine design.

Integrated Disaster Science and Management: Global Case Studies in Mitigation and Recovery bridges the gap between scientific research on natural disasters and the practice of disaster management. It examines natural hazards, including earthquakes, landslides and tsunamis, and uses integrated disaster management techniques, quantitative methods and big data analytics to create early warning models to mitigate impacts of these hazards and reduce the risk of disaster. It also looks at mitigation as part of the recovery process after a disaster, as in the case of the Nepal earthquake. Edited by global experts in disaster management and engineering, the book offers case studies that focus on the critical phases of disaster management. Identifies advanced techniques and models based on natural disaster science for forecasting disasters and analyzing risk Offers a holistic approach to the problem of disaster management, including preparation, recovery, and resilience Includes coverage of social, economic, and environmental impacts on disasters

This handbook covers Electronic Medical Record (EMR) systems, which enable the storage, management, and sharing of massive amounts of demographic, diagnosis, medication, and genomic information. It presents privacy-preserving methods for medical data, ranging from laboratory test results to doctors’ comments. The reuse of EMR data can greatly benefit medical science and practice, but must be performed in a privacy-preserving way according to data sharing policies and regulations. Written by world-renowned leaders in this field, each chapter offers a survey of a research direction or a solution to problems in established and emerging research areas. The authors explore scenarios and techniques for facilitating the anonymization of different types of medical data, as well as various data mining tasks. Other chapters present methods for emerging data privacy applications and medical text de-identification, including detailed surveys of deployed systems. A part of the book is devoted to legislative and policy issues, reporting on the US and EU privacy legislation and the cost of

privacy breaches in the healthcare domain. This reference is intended for professionals, researchers and advanced-level students interested in safeguarding medical data.
The most important book yet from the author of the international bestseller The Shock Doctrine, a brilliant explanation of why the climate crisis challenges us to abandon the core “free market” ideology of our time, restructure the global economy, and remake our political systems. In short, either we embrace radical change ourselves or radical changes will be visited upon our physical world. The status quo is no longer an option. In This Changes Everything Naomi Klein argues that climate change isn’t just another issue to be neatly filed between taxes and health care. It’s an alarm that calls us to fix an economic system that is already failing us in many ways. Klein meticulously builds the case for how massively reducing our greenhouse emissions is our best chance to simultaneously reduce gaping inequalities, re-imagine our broken democracies, and rebuild our gutted local economies. She exposes the ideological desperation of the climate-change deniers, the messianic delusions of the would-be geoengineers, and the tragic defeatism of too many mainstream green initiatives. And she demonstrates precisely why the market has not—and cannot—fix the climate crisis but will instead make things worse, with ever more extreme and ecologically damaging extraction methods, accompanied by rampant disaster capitalism. Klein argues that the changes to our relationship with nature and one another that are required to respond to the climate crisis humanely should not be viewed as grim penance, but rather as a kind of gift—a catalyst to transform broken economic and cultural priorities and to heal long-festering historical wounds. And she documents the inspiring movements that have already begun this process: communities that are not just refusing to be sites of further fossil fuel extraction but are building the next, regeneration-based economies right now. Can we pull off these changes in time? Nothing is certain. Nothing except that climate change changes everything. And for a very brief time, the nature of that change is still up to us.
This volume contains the papers presented at IALCCE2016, the fifth International Symposium on Life-Cycle Civil Engineering (IALCCE2016), to be held in Delft, The Netherlands, October 16-19, 2016. It consists of a book of extended abstracts and a DVD with full papers including the Fazlur R. Khan lecture, keynote lectures, and technical papers from all over the world. All major aspects of life-cycle engineering are addressed, with special focus on structural damage processes, life-cycle design, inspection, monitoring, assessment, maintenance and rehabilitation, life-cycle cost of structures and infrastructures, life-cycle performance of special structures, and life-cycle oriented computational tools. The aim of the editors is to provide a valuable source for anyone interested in life-cycle of civil infrastructure systems, including students, researchers and practitioners from all areas of engineering and industry.
Bulk Collection of Signals Intelligence
World Trade Report 2013
Social Cost-Benefit Analysis of Research Infrastructures
The Proceedings of the Coastal Sediments 2015
Marine Design XIII
This Changes Everything
Strengthening the Disaster Resilience of the Academic Biomedical Research Community
This book focuses on the influence of philanthropic foundations in global development, and on how the global south has engaged with them. The idea of corporate philanthropy stretches back a long way, with the late 19th industrialist Andrew Carnegie seeing it as an important obligation of the very wealthy. In the modern day, Bill Gates has taken up this call, suggesting that the very wealthy should donate half their wealth to philanthropic causes, and endowing his own foundation with something in the order of $50 billion. This book brings together case studies of the most influential of these foundations over the last one hundred years: the Rockefeller, Ford, and Gates' Foundations, investigating their impact on education and research, health and agriculture. The book concludes by asking whether global south foundations such as Al Waleed Philanthropies, Tata Trusts, and those from China may point to the future of global philanthropic foundations. The sheer scale of resources that foundations can devote to their work results in significant influence in global politics, to the point that Foundations can drive and even set government policy. This influence is likely to grow in the post-Covid environment, making this book an important resource for researchers, practitioners and policy makers working on global development.
Researching Higher Education in Asia
Hitler’s Uranium Club
History, Development and Future
The Royal Indian Engineering College, Coopers Hill
The Secret Recordings at Farm Hall
Integrating Disaster Science and Management
Proceedings of the 13th International Marine Design Conference (IMDC 2018), June 10-14, 2018, Helsinki, Finland