Engineering Science N3 Memorandum April 2014

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Technical Abstract Bulletin - 1982

Machine Drawing - K. L. Narayana 2009-06-30
About the Book: Written by three distinguished authors with ample academic and teaching experience, this textbook, meant for diploma and degree students of Mechanical Engineering as well as those preparing for AMIE examination, incorporates the latest st
Debt and Entanglements Between the Wars - Mr.Thomas J Sargent 2019-11-08
World War I created a set of forces that affected the political arrangements and economies of all the countries involved. This period in global economic history between World War I and II offers rich material for studying international monetary and sovereign debt policies. Debt and Entanglements between the Wars focuses on the experiences of the United States, United Kingdom, four countries in the British Commonwealth (Australia, New Zealand, Canada, Newfoundland), France, Italy, Germany, and Japan, offering unique insights into how political and economic interests influenced alliances, defaults, and the unwinding of debts. The narratives presented show how the absence of effective international collaboration and resolution mechanisms inflicted damage on the global economy, with disastrous consequences.

Knowledge Graphs - Aidan Hogan 2021-11-08
This book provides a comprehensive and accessible introduction to knowledge graphs, which have recently garnered notable attention from both industry and academia. Knowledge graphs are founded on the principle of applying a graph-based abstraction to data, and are now broadly deployed in scenarios that require integrating and extracting value from multiple, diverse sources of data at large scale. The book defines knowledge graphs and provides a high-level overview of how they are used. It presents and contrasts popular graph models that are commonly used to represent data as graphs, and the languages by which they can be queried before describing how the resulting data graph can be enhanced with notions of schema, identity, and context. The book discusses how ontologies and rules can be used to encode knowledge as well as how inductive techniques—based on statistics, graph analytics, machine learning, etc.—can be used to encode and extract knowledge. It covers techniques for the creation, enrichment, assessment, and refinement of knowledge graphs and surveys recent open and enterprise knowledge graphs and the industries or applications within which they have been most widely adopted. The book closes by discussing the current limitations and future directions along which knowledge graphs are likely to evolve. This book is aimed at students, researchers, and

practitioners who wish to learn more about knowledge graphs and how they facilitate extracting value from diverse data at large scale. To make the book accessible for newcomers, running examples and graphical notation are used throughout. Formal definitions and extensive references are also provided for those who opt to delve more deeply into specific topics.

Economic and Management Sciences, Grade 8 - Marietjie Barnard 2013-07-11
Study & master economic and management sciences grade 8 has been especially developed by an experienced author team for the Curriculum and Assessment Policy Statement (CAPS). This new and easy-to-use course helps learners to master essential content and skills in economic and management sciences.

Engineering Science N1 - 2000

The Energy Index - 1979

Law of Persons and the Family - Amanda Barratt 2017

China's Aviation Industry: Lumbering Forward - Robert Steward 2019-07-26
As we move further into the era of 21st century great power competition, it is important to understand with whom we are competing. This study is the first in a series of studies by the China Aerospace Studies Institute that seeks to lay the foundation for better understanding the Aerospace Sector of the People's Republic of China (PRC). This study focuses on the major actors and institutions in the aviation portion of the PRC's aerospace sector. Further case studies will examine specific programs within the sector, as well as the role of so-called 'private' or 'commercial' companies. This foundational study looks at the national-level, and the state-owned enterprises (SOE) that make up the bulk of PRC aviation.It goes without saying that the PRC's system of research, development, and acquisition (RD&A) is very different from that of the United States. As such, it is important to understand just how different it is, in order to really understand the nature of the competition. Whereas the United States largely relies on competition between commercial companies, typically large publicly traded multinationals, for R&D and production, the PRC uses all levers of Party and State power to pursue its goals. This study maps those relations, policy bodies, and centers of specialization.While this report focuses mainly on the military aspects of the aviation sector, largely because that has been the nearly exclusive focus for the PRC for decades, it is useful to remember that as the PRC attempts to build it own commercial aviation sector, that the bulk of the knowledge, funding, support, manpower, etc. will still come from these SOEs, and the many subsidiaries that they hold or manage. Indeed, it is likely that the next series of major break throughs in technology and systems integration that the PRC achieves, will be transfers of intellectual property and technical expertise from the commercial-civil sector back to the military applications, under the PRC's Military-Civil Fusion (军民融合) state policy dictate.

Modern Industrial Statistics - Ron S. Kenett 2014-01-28
Fully revised and updated, this book combines a theoretical background with examples and references to R, MINITAB and JMP, enabling practitioners to find state-of-the-art material on both foundation and implementation tools to support their work. Topics addressed include computer-intensive data analysis, acceptance sampling, univariate and multivariate statistical process control, design of experiments, quality by design, and reliability using classical and Bayesian methods. The book can be used for workshops or courses on acceptance sampling, statistical process control, design of experiments, and reliability. Graduate and post-graduate students in the areas of statistical quality and engineering, as well as industrial statisticians, researchers and practitioners in these fields will all benefit from the comprehensive combination of theoretical and practical information provided in this single volume. Modern Industrial Statistics: With applications in R, MINITAB and JMP: Combines a practical approach with theoretical foundations and computational support. Provides examples in R using a dedicated package called MISTAT, and also refers to MINITAB and JMP. Includes

exercises at the end of each chapter to aid learning and test knowledge. Provides over 40 data sets representing real-life case studies. Is complemented by a comprehensive website providing an introduction to R, and installations of JMP scripts and MINITAB macros, including effective tutorials with introductory material: www.wiley.com/go/modern_industrial_statistics.

Doing Global Science - InterAcademy Partnership 2016-03-01
An essential introduction to the responsible conduct of science in today's interconnected world This concise introductory guide explains the values that should inform the responsible conduct of scientific research in today's global setting. Featuring accessible discussions and ample real-world scenarios, Doing Global Science covers proper conduct, fraud and bias, the researcher's responsibilities to society, communication with the public, and much more. The book places special emphasis on the international and highly networked environment in which modern research is done, presenting science as an enterprise that is being transformed by globalization, interdisciplinary research projects, team science, and information technologies. Accessibly written by an InterAcademy Partnership committee comprised of leading scientists from around the world, Doing Global Science is required reading for students, practitioners, and anyone concerned about the responsible conduct of science today. Provides practical guidance and instructions for doing scientific research in today's global setting Covers everything from responsible conduct to communication with the public Features numerous real-world scenarios drawn from an array of disciplines and national contexts Focuses on issues commonly encountered in international collaborations Written by a panel of leading experts from around the world An essential guide for practicing scientists and anyone concerned about fostering research integrity

Operations (ADP 3-0) - Headquarters Department of the Army 2019-09-27
ADP 3-0, Operations, constitutes the Army's view of how to conduct prompt and sustained operations across multiple domains, and it sets the foundation for developing other principles, tactics, techniques, and procedures detailed in subordinate doctrine publications. It articulates the Army's operational doctrine for unified land operations. ADP 3-0 accounts for the uncertainty of operations and recognizes that a military operation is a human undertaking. Additionally, this publication is the foundation for training and Army education system curricula related to unified land operations. The principal audience for ADP 3-0 is all members of the profession of arms. Commanders and staffs of Army headquarters serving as joint task force (JTF) or multinational headquarters should also refer to applicable joint or multinational doctrine concerning the range of military operations and joint or multinational forces. Trainers and educators throughout the Army will use this publication as well.

Scientific and Technical Aerospace Reports - 1967-07

Global Climate Change Impacts in the United States - U.S. Global Change Research Program 2009-08-24
Summarizes the science of climate change and impacts on the United States, for the public and policymakers.

The Current Population Survey - United States. Bureau of the Census 1978

The Mathematical Theory of Communication - Claude E Shannon 1998-09-01
Scientific knowledge grows at a phenomenal pace--but few books have had as lasting an impact or played as important a role in our modern world as The Mathematical Theory of Communication, published originally as a paper on communication theory more than fifty years ago. Republished in book form shortly thereafter, it has since gone through four hardcover and sixteen paperback printings. It is a revolutionary work, astounding in its foresight and contemporaneity. The University of Illinois Press is pleased and honored to issue this commemorative reprinting of a classic.

Navy Planning, Programming, Budgeting and Execution - Irv Blickstein 2016-10-04

This tool documents key but enduring aspects of how the Navy implements the Planning, Programming, Budgeting, and Execution process so that action officers and Navy leaders can successfully navigate and effectively contribute to the process.

Minefill 2020-2021 - Ferri Hassani 2021-06-02
The series of International Symposiums on Mining with Backfill explores both the theoretical and practical aspects of the application of mine fill, with many case studies from both underground and open-pit mines. Minefill attendees and the Proceedings book audience include mining practitioners, engineering students, operating and regulatory professionals, consultants, academics, researchers, and interested individuals and groups. The papers presented at Minefill symposiums regularly offer the novelties and most modern technical solutions in technology, equipment, and research. In that way, the papers submitted for the Minefill Symposia represent the highest quality and level in the conference domain. For the 2020-2021 edition organizers hope that the papers presented in this publication will also be received with interest by readers around the world, providing inspiration and valuable examples for industry and R&D research.

Solar Engineering of Thermal Processes - John A. Duffie 2006-08-25
The updated, cornerstone engineering resource of solar energy theory and applications. Solar technologies already provide energy for heat, light, hot water, electricity, and cooling for homes, businesses, and industry. Because solar energy only accounts for one-tenth of a percent of primary energy demand, relatively small increases in market penetration can lead to very rapid growth rates in the industry???which is exactly what has been projected for coming years as the world moves away from carbon-based energy production. Solar Engineering of Thermal Processes, Third Edition provides the latest thinking and practices for engineering solar technologies and using them in various markets. This Third Edition of the acknowledged leading book on solar engineering features: Complete coverage of basic theory, systems design, and applications Updated material on such cutting-edge topics as photovoltaics and wind power systems New homework problems and exercises

Neural Network Design - Martin T. Hagan 2003

Aircraft Metal Work - United States. Bureau of Naval Personnel 1945

Looking Forward to High School and College - Elaine Allensworth 2014-09-01
Grades and attendance-not test scores-are the middle grade factors most strongly connected with both high school and college success. In fact, grades and attendance matter more than test scores, race, poverty, or other background characteristics for later academic success. This report follows approximately 20,000 Chicago Public Schools students as they transition from elementary to high school. It is designed to help answer questions about which markers should be used to gauge whether students are ready to succeed in high school and beyond. It also considers the performance levels students need to reach in middle school to have a reasonable chance of succeeding in high school.

Introduction to Applied Linear Algebra - Stephen Boyd 2018-06-07
A groundbreaking introduction to vectors, matrices, and least squares for engineering applications, offering a wealth of practical examples.

Witten Non Abelian Localization for Equivariant K-theory, and the [Q,R]=0 Theorem - Paul-Emile Paradan 2019-12-02
The purpose of the present memoir is two-fold. First, the authors obtain a non-abelian localization theorem when M is any even dimensional compact manifold : following an idea of E. Witten, the authors deform an elliptic symbol associated to a Clifford bundle on M with a vector field associated to a moment map. Second, the authors use this general approach to reprove the [Q,R]=0 [Q,R]=0 theorem of Meinrenken-Sjamaar in the Hamiltonian case and obtain mild generalizations to almost complex manifolds. This non-abelian localization theorem can be used to obtain a geometric description of the multiplicities of the index of general spin c spinc Dirac operators.

Writing Literature Reviews - Jose L. Galvan 2017-04-05
Guideline 12: If the Results of Previous Studies Are Inconsistent or

Widely Varying, Cite Them Separately
Communicating Science - Toss Gascoigne 2020-09-14
Modern science communication has emerged in the twentieth century as a field of study, a body of practice and a profession—and it is a practice with deep historical roots. We have seen the birth of interactive science centres, the first university actions in teaching and conducting research, and a sharp growth in employment of science communicators. This collection charts the emergence of modern science communication across the world. This is the first volume to map investment around the globe in science centres, university courses and research, publications and conferences as well as tell the national stories of science communication. How did it all begin? How has development varied from one country to another? What motivated governments, institutions and people to see science communication as an answer to questions of the social place of science? Communicating Science describes the pathways followed by 39 different countries. All continents and many cultures are represented. For some countries, this is the first time that their science communication story has been told.

Disciplinary Convergence in Systems Engineering Research - Azad M. Madni 2017-11-24
The theme of this volume on systems engineering research is disciplinary convergence: bringing together concepts, thinking, approaches, and technologies from diverse disciplines to solve complex problems. Papers presented at the Conference on Systems Engineering Research (CSER), March 23-25, 2017 at Redondo Beach, CA, are included in this volume. This collection provides researchers in academia, industry, and government forward-looking research from across the globe, written by renowned academic, industry and government researchers.

Vehicle Dynamics - Reza N. Jazar 2013-11-19
This textbook is appropriate for senior undergraduate and first year graduate students in mechanical and automotive engineering. The contents in this book are presented at a theoretical-practical level. It explains vehicle dynamics concepts in detail, concentrating on their practical use. Related theorems and formal proofs are provided, as are real-life applications. Students, researchers and practicing engineers alike will appreciate the user-friendly presentation of a wealth of topics, most notably steering, handling, ride, and related components. This book also: Illustrates all key concepts with examples Includes exercises for each chapter Covers front, rear, and four wheel steering systems, as well as the advantages and disadvantages of different steering schemes Includes an emphasis on design throughout the text, which provides a practical, hands-on approach

A First Course in Probability - Sheldon M. Ross 2002
This market-leading introduction to probability features exceptionally clear explanations of the mathematics of probability theory and explores its many diverse applications through numerous interesting and motivational examples. The outstanding problem sets are a hallmark feature of this book. Provides clear, complete explanations to fully explain mathematical concepts. Features subsections on the probabilistic method and the maximum-minimums identity. Includes many new examples relating to DNA matching, utility, finance, and applications of the probabilistic method. Features an intuitive treatment of probability—intuitive explanations follow many examples. The Probability Models Disk included with each copy of the book, contains six probability models that are referenced in the book and allow readers to quickly and easily perform calculations and simulations.

IBM Power Systems SR-IOV: Technical Overview and Introduction - Scott Vetter 2017-01-12
This IBM® RedpaperTM publication describes the adapter-based virtualization capabilities that are being deployed in high-end IBM POWER7+TM processor-based servers. Peripheral Component Interconnect Express (PCIe) single root I/O virtualization (SR-IOV) is a virtualization technology on IBM Power Systems servers. SR-IOV allows multiple logical partitions (LPARs) to share a PCIe adapter with little or no run time involvement of a hypervisor or other virtualization intermediary. SR-IOV does not replace the existing virtualization capabilities that are offered as part of the IBM PowerVM® offerings. Rather, SR-IOV compliments them with additional capabilities. This

paper describes many aspects of the SR-IOV technology, including: A comparison of SR-IOV with standard virtualization technology Overall benefits of SR-IOV Architectural overview of SR-IOV Planning requirements SR-IOV deployment models that use standard I/O virtualization Configuring the adapter for dedicated or shared modes Tips for maintaining and troubleshooting your system Scenarios for configuring your system This paper is directed to clients, IBM Business Partners, and system administrators who are involved with planning, deploying, configuring, and maintaining key virtualization technologies.

Computer Science - J. Glenn Brookshear 2012
Computer Science: An Overview uses broad coverage and clear exposition to present a complete picture of the dynamic computer science field. Accessible to students from all backgrounds, Glenn Brookshear uses a language-independent context to encourage the development of a practical, realistic understanding of the field. An overview of each of the important areas of Computer Science (e.g. Networking, OS, Computer Architecture, Algorithms) provides students with a general level of proficiency for future courses. The Eleventh Edition features two new contributing authors (David Smith — Indiana University of PA; Dennis Brylow — Marquette University), new, modern examples, and updated coverage based on current technology.

Biotechnology Research in an Age of Terrorism - National Research Council 2004-03-02
In recent years much has happened to justify an examination of biological research in light of national security concerns. The destructive application of biotechnology research includes activities such as spreading common pathogens or transforming them into even more lethal forms. Policymakers and the scientific community at large must put forth a vigorous and immediate response to this challenge. This new book by the National Research Council recommends that the government expand existing regulations and rely on self-governance by scientists rather than adopt intrusive new policies. One key recommendation of the report is that the government should not attempt to regulate scientific publishing but should trust scientists and journals to screen their papers for security risks, a task some journals have already taken up. With biological information and tools widely distributed, regulating only U.S. researchers would have little effect. A new International Forum on Biosecurity should encourage the adoption of similar measures around the world. Seven types of risky studies would require approval by the Institutional Biosafety Committees that already oversee recombinant DNA research at some 400 U.S. institutions. These "experiments of concern" include making an infectious agent more lethal and rendering vaccines powerless.

Mathematics and Statistics for Financial Risk Management - Michael B. Miller 2013-12-31
Mathematics and Statistics for Financial Risk Management is a practical guide to modern financial risk management for both practitioners and academics. Now in its second edition with more topics, more sample problems and more real world examples, this popular guide to financial risk management introduces readers to practical quantitative techniques for analyzing and managing financial risk. In a concise and easy-to-read style, each chapter introduces a different topic in mathematics or statistics. As different techniques are introduced, sample problems and application sections demonstrate how these techniques can be applied to actual risk management problems. Exercises at the end of each chapter and the accompanying solutions at the end of the book allow readers to practice the techniques they are learning and monitor their progress. A companion Web site includes interactive Excel spreadsheet examples and templates. Mathematics and Statistics for Financial Risk Management is an indispensable reference for today's financial risk professional.

Mathematical Statistics with Applications in R - Kandethody M. Ramachandran 2014-09-14
Mathematical Statistics with Applications in R, Second Edition, offers a modern calculus-based theoretical introduction to mathematical statistics and applications. The book covers many modern statistical computational and simulation concepts that are not covered in other texts, such as the Jackknife, bootstrap methods, the EM algorithms, and Markov chain Monte Carlo (MCMC) methods such as the Metropolis algorithm,

Metropolis-Hastings algorithm and the Gibbs sampler. By combining the discussion on the theory of statistics with a wealth of real-world applications, the book helps students to approach statistical problem solving in a logical manner. This book provides a step-by-step procedure to solve real problems, making the topic more accessible. It includes goodness of fit methods to identify the probability distribution that characterizes the probabilistic behavior or a given set of data. Exercises as well as practical, real-world chapter projects are included, and each chapter has an optional section on using Minitab, SPSS and SAS commands. The text also boasts a wide array of coverage of ANOVA, nonparametric, MCMC, Bayesian and empirical methods; solutions to selected problems; data sets; and an image bank for students. Advanced undergraduate and graduate students taking a one or two semester mathematical statistics course will find this book extremely useful in their studies. Step-by-step procedure to solve real problems, making the topic more accessible Exercises blend theory and modern applications Practical, real-world chapter projects Provides an optional section in each chapter on using Minitab, SPSS and SAS commands Wide array of coverage of ANOVA, Nonparametric, MCMC, Bayesian and empirical methods

Concise Computer Vision - Reinhard Klette 2014-01-04
This textbook provides an accessible general introduction to the essential topics in computer vision. Classroom-tested programming exercises and review questions are also supplied at the end of each chapter. Features: provides an introduction to the basic notation and mathematical concepts for describing an image and the key concepts for mapping an image into an image; explains the topologic and geometric basics for analysing image regions and distributions of image values and discusses identifying patterns in an image; introduces optic flow for representing dense motion and various topics in sparse motion analysis; describes special approaches for image binarization and segmentation of still images or video frames; examines the basic components of a computer vision system; reviews different techniques for vision-based 3D shape reconstruction; includes a discussion of stereo matchers and the phase-

congruency model for image features; presents an introduction into classification and learning.

Reinforcement Learning, second edition - Richard S. Sutton 2018-11-13
The significantly expanded and updated new edition of a widely used text on reinforcement learning, one of the most active research areas in artificial intelligence. Reinforcement learning, one of the most active research areas in artificial intelligence, is a computational approach to learning whereby an agent tries to maximize the total amount of reward it receives while interacting with a complex, uncertain environment. In Reinforcement Learning, Richard Sutton and Andrew Barto provide a clear and simple account of the field's key ideas and algorithms. This second edition has been significantly expanded and updated, presenting new topics and updating coverage of other topics. Like the first edition, this second edition focuses on core online learning algorithms, with the more mathematical material set off in shaded boxes. Part I covers as much of reinforcement learning as possible without going beyond the tabular case for which exact solutions can be found. Many algorithms presented in this part are new to the second edition, including UCB, Expected Sarsa, and Double Learning. Part II extends these ideas to function approximation, with new sections on such topics as artificial neural networks and the Fourier basis, and offers expanded treatment of off-policy learning and policy-gradient methods. Part III has new chapters on reinforcement learning's relationships to psychology and neuroscience, as well as an updated case-studies chapter including AlphaGo and AlphaGo Zero, Atari game playing, and IBM Watson's wagering strategy. The final chapter discusses the future societal impacts of reinforcement learning.

Software-Defined Radio for Engineers - Alexander M. Wyglinski 2018-04-30
Based on the popular Artech House classic, Digital Communication Systems Engineering with Software-Defined Radio, this book provides a practical approach to quickly learning the software-defined radio (SDR) concepts needed for work in the field. This up-to-date volume guides readers on how to quickly prototype wireless designs using SDR for real-

world testing and experimentation. This book explores advanced wireless communication techniques such as OFDM, LTE, WLA, and hardware targeting. Readers will gain an understanding of the core concepts behind wireless hardware, such as the radio frequency front-end, analog-to-digital and digital-to-analog converters, as well as various processing technologies. Moreover, this volume includes chapters on timing estimation, matched filtering, frame synchronization message decoding, and source coding. The orthogonal frequency division multiplexing is explained and details about HDL code generation and deployment are provided. The book concludes with coverage of the WLAN toolbox with OFDM beacon reception and the LTE toolbox with downlink reception. Multiple case studies are provided throughout the book. Both MATLAB and Simulink source code are included to assist readers with their projects in the field.

Identifying the Culprit - National Research Council 2015-01-16 Eyewitnesses play an important role in criminal cases when they can identify culprits. Estimates suggest that tens of thousands of eyewitnesses make identifications in criminal investigations each year. Research on factors that affect the accuracy of eyewitness identification procedures has given us an increasingly clear picture of how identifications are made, and more importantly, an improved understanding of the principled limits on vision and memory that can lead to failure of identification. Factors such as viewing conditions, duress, elevated emotions, and biases influence the visual perception experience. Perceptual experiences are stored by a system of memory that is highly malleable and continuously evolving, neither retaining nor divulging content in an informational vacuum. As such, the fidelity of our memories to actual events may be compromised by many factors at all stages of processing, from encoding to storage and retrieval. Unknown to the individual, memories are forgotten, reconstructed, updated, and distorted. Complicating the process further, policies governing law enforcement procedures for conducting and recording identifications are not standard, and policies and practices to address the issue of misidentification vary widely. These limitations can produce mistaken identifications with significant consequences. What can we do to make certain that eyewitness identification convicts the guilty and exonerates the innocent? Identifying the Culprit makes the case that better data collection and research on eyewitness identification, new law enforcement training protocols, standardized procedures for administering line-ups, and improvements in the handling of eyewitness identification in court can increase the chances that accurate identifications are made. This report explains the science that has emerged during the past 30 years on eyewitness identifications and identifies best practices in eyewitness procedures for the law enforcement community and in the presentation of eyewitness evidence in the courtroom. In order to continue the advancement of eyewitness identification research, the report recommends a focused research agenda. Identifying the Culprit will be an essential resource to assist the law enforcement and legal communities as they seek to understand the value and the limitations of eyewitness identification and make improvements to procedures.

Dugard's International Law - John Dugard 2019-01-07 This fifth edition of International Law: A South African Perspective is now titled Dugard's International Law: A South African Perspective, in recognition of the fact that this work is a continuation of the earlier editions written by John Dugard. The substance of the work has undergone major changes to take account of new developments both on the international legal scene and in South Africa. Dugard's International Law: A South African Perspective presents a South African perspective of international law. The basic principles of international law are described and examined with reference to the principal sources of international law. This examination, however, takes place within the context of South African law. South African state practice, judicial decisions and legislation on international law receive equal treatment with international law as it is practised and taught abroad. The present work is designed to assist judicial officers and practitioners, educate students, and guide diplomats in the intricacies of international law both at home in South Africa and abroad.

Quantum Computing - National Academies of Sciences, Engineering, and Medicine 2019-04-27
Quantum mechanics, the subfield of physics that describes the behavior of very small (quantum) particles, provides the basis for a new paradigm of computing. First proposed in the 1980s as a way to improve computational modeling of quantum systems, the field of quantum computing has recently garnered significant attention due to progress in building small-scale devices. However, significant technical advances will be required before a large-scale, practical quantum computer can be achieved. Quantum Computing: Progress and Prospects provides an introduction to the field, including the unique characteristics and constraints of the technology, and assesses the feasibility and implications of creating a functional quantum computer capable of addressing real-world problems. This report considers hardware and software requirements, quantum algorithms, drivers of advances in quantum computing and quantum devices, benchmarks associated with relevant use cases, the time and resources required, and how to assess the probability of success.