Applied Minds How Engineers Think

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Three Sigma Leadership - Steven R. Hirshorn 2022-09-06
Congratulations on being selected as a Chief Engineer! You've been handed tremendous responsibilities and your success will play a huge role in achieving NASA's mission. Now what? Three Sigma Leadership is a practical guide through the challenges of leadership. It provides an overview of twenty-four key leadership skills, each described fully and backed with relevant real-life experiences from the author's career. NASA sets the bar high for its Chief Engineers, and Three Sigma Leadership explains those expectations in straightforward terminology. Each chapter provides familiar surroundings for engineers and speaks in their language, but also lays out the higher standard of leadership skills necessary to perform the job of a Chief Engineer.

Engineering Made Simple - Michael McRae 2020-10-06
Aspiring engineers will get a head start with this introduction to the past, present, and future of engineering. Enter a world of engineering with detailed explanations of the history of discovery and innovation that has made modern technology possible. Engineering Made Simple presents the fundamentals of making and creating, from the physics of flying to the chemistry of manufacturing. Each of the ten chapters will connect readers with a topic that helps make sense of engineering. Learn what it means to be an engineer, understand the laws scientists use to push the limits of speed and safety, and discover a past—and anticipate a future—of amazing machines and constructions. Each section will help aspiring young engineers engage with relevant areas in their school's curriculum, complete with knowledge-testing quizzes. Do you like the idea of designing and creating a better world? With this book, young people will discover just how simple—and exciting—engineering can be.

Citizen Engineer - David Douglas 2009-08-24
"Engineers create many of the inventions that shape our society, and as such they play a vital role in determining how we live. This new book does an outstanding job of filling in the knowledge and perspective that engineers must have to be good citizens in areas ranging from the environment, to intellectual property, to ensuring the health of the innovation ecosystem that has done so much for modern society. This is exactly the sort of book that engineers and those who work with them should read and discuss over pizza, coffee, or some other suitable, discussion-provoking consumable." —John L. Hennessy, president, Stanford University "Citizen Engineer is the bible for the new era of socially responsible engineering. It's an era where, as the authors show, engineers don't just need to know more, they need to be more. The work is an inspiration, an exhortation, and a practical how-to guide. All engineers concerned with the impact of their work—and that should be all engineers—must read this book." —Hal Abelson, professor of computer science and engineering, MIT "Code is law. Finally, a map to responsible law making. This accessible and brilliant book should be required of every citizen, and especially, the new citizen lawmakers we call engineers." —Lawrence Lessig, director, Safra Center for Ethics, Harvard University, and cofounder, Creative Commons Being an engineer today means being far more than an engineer. You need to consider not only the design requirements of your projects but the full impact of your work—from an ecological perspective, an intellectual property perspective, a business perspective, and a sociological perspective. And you must coordinate your efforts with many other engineers, sometimes hundreds of them. In short, we've entered an age that demands socially responsible engineering on a whole new scale:

The era of the Citizen Engineer. This engaging and thought-provoking book, written by computer industry luminaries David Douglas and Greg Papadopoulos, focuses on two topics that are becoming vitally important in the day-to-day work of engineers: eco engineering and intellectual property (IP). Citizen Engineer also examines how and why the world of engineering has changed, and provides practical advice to help engineers of all types master the new era and start thinking like Citizen Engineers.

An Engineer's Guide to Solving Problems - Bob Schmidt 2014
Engineers want to get employed and stay employed. "An Engineer's Guide to Solving Problems" targets engineering students and recent graduates. The transition from engineering school to real world problem solver can be rough. Suddenly, there is not just one correct response for a problem. There might be an infinite number of correct solutions, where some are simply better than others. Some problems are so layered and twisted that their solutions seem absurdly complex. Arm yourself for success with the methods in this book: * The Five Questions every problem solver must answer. * The best and worst ways to communicate your ideas. * New ways to see what other observers miss. * Mastering the right tools. * Six warnings to heed when you think you have a solution. * Critical challenge questions you must answer before you declare victory. Employers and customers cherish engineers who consistently meet their toughest challenges. This book delivers simple methods, practical advice, and entertaining stories to help you sharpen your skills. This book is intended for mature readers. The author occasionally uses strong language to humorous effect or makes references not intended for children. The Second Edition includes some updates plus a new cover and shorter title. The first edition was originally published as "The Dog Barks When the Phone Rings: An Engineer's Guide to Solving Problems."

Career Development in Bioengineering and Biotechnology - Guruprasad Madhavan 2009-01-07
This indispensable guide provides a roadmap to the broad and varied career development opportunities in bioengineering, biotechnology, and related fields. Eminent practitioners lay out career paths related to academia, industry, government and regulatory affairs, healthcare, law, marketing, entrepreneurship, and more. Lifetimes of experience and wisdom are shared, including "war stories," strategies for success, and discussions of the authors' personal views and motivations.

Mindshift - Barbara Oakley, PhD 2017-04-18
Mindshift reveals how we can overcome stereotypes and preconceived ideas about what is possible for us to learn and become. At a time when we are constantly being asked to retrain and reinvent ourselves to adapt to new technologies and changing industries, this book shows us how we can uncover and develop talents we didn't realize we had—no matter what our age or background. We're often told to "follow our passions." But in Mindshift, Dr. Barbara Oakley shows us how we can broaden our passions. Drawing on the latest neuroscientific insights, Dr. Oakley shepherds us past simplistic ideas of "aptitude" and "ability," which provide only a snapshot of who we are now—with little consideration about how we can change. Even seemingly "bad" traits, such as a poor memory, come with hidden advantages—like increased creativity. Profiling people from around the world who have overcome learning limitations of all kinds, Dr. Oakley shows us how we can turn perceived weaknesses, such as impostor syndrome and advancing age, into strengths. People may feel like they're at a disadvantage if they pursue a new field later in life; yet those who change careers can be fertile cross-pollinators: They bring valuable insights from one discipline to

another. Dr. Oakley teaches us strategies for learning that are backed by neuroscience so that we can realize the joy and benefits of a learning lifestyle. Mindshift takes us deep inside the world of how people change and grow. Our biggest stumbling blocks can be our own preconceptions, but with the right mental insights, we can tap into hidden potential and create new opportunities.

Reversing - Eldad Eilam 2011-12-12

Beginning with a basic primer on reverse engineering-including computer internals, operating systems, and assembly language-and then discussing the various applications of reverse engineering, this book provides readers with practical, in-depth techniques for software reverse engineering. The book is broken into two parts, the first deals with security-related reverse engineering and the second explores the more practical aspects of reverse engineering. In addition, the author explains how to reverse engineer a third-party software library to improve interfacing and how to reverse engineer a competitor's software to build a better product. * The first popular book to show how software reverse engineering can help defend against security threats, speed up development, and unlock the secrets of competitive products * Helps developers plug security holes by demonstrating how hackers exploit reverse engineering techniques to crack copy-protection schemes and identify software targets for viruses and other malware * Offers a primer on advanced reverse-engineering, delving into "disassembly"-code-level reverse engineering-and explaining how to decipher assembly language

The Innovation Delusion - Lee Vinsel 2020-09-08

"Innovation" is the hottest buzzword in business. But what if our obsession with finding the next big thing has distracted us from the work that matters most? "The most important book I've read in a long time . . . It explains so much about what is wrong with our technology, our economy, and the world, and gives a simple recipe for how to fix it: Focus on understanding what it takes for your products and services to last."—Tim O'Reilly, founder of O'Reilly Media It's hard to avoid innovation these days. Nearly every product gets marketed as being disruptive, whether it's genuinely a new invention or just a new toothbrush. But in this manifesto on thestate of American work, historians of technology Lee Vinsel and Andrew L. Russell argue that our way of thinking about and pursuing innovation has made us poorer, less safe, and—ironically—less innovative. Drawing on years of original research and reporting, The Innovation Delusion shows how the ideology of change for its own sake has proved a disaster. Corporations have spent millions hiring chief innovation officers while their core businesses tank. Computer science programs have drilled their students on programming and design, even though theoverwhelming majority of jobs are in IT and maintenance. In countless cities, suburban sprawl has left local governments with loads of deferred repairs that they can't afford to fix. And sometimes innovation even kills—like in 2018 when a Miami bridge hailed for its innovative design collapsed onto a highway and killed six people. In this provocative, deeply researched book, Vinsel and Russell tell the story of how we devalued the work that underpins modern life—and, in doing so, wrecked our economy and public infrastructure while lining the pockets of consultants who combine the ego of Silicon Valley with the worst of Wall Street's greed. The authors offer a compelling plan for how we can shift our focus away from the pursuit of growth at all costs, and back toward neglected activities like maintenance, care, and upkeep. For anyone concerned by the crumbling state of our roads and bridges or the direction our economy is headed, The Innovation Delusion is a deeply necessary reevaluation of a trend we can still disrupt.

Strengthening Forensic Science in the United States - National Research Council 2009-07-29

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.

Structures or Why things don't fall down - J. Gordon 2012-12-06

I am very much aware that it is an act of extreme rashness to attempt to write an elementary book about structures. Indeed it is only when the subject is stripped of its mathematics that one begins to realize how difficult it is to pin down and describe those structural concepts which are often called' elementary'; by which I suppose we mean 'basic' or 'fundamental'. Some of the omis sions and oversimplifications are intentional but no doubt some of them are due to my own brute ignorance and lack of under standing of the subject. Although this volume is more or less a sequel to The New Science of Strong Materials it can be read as an entirely separate book in its own right. For this reason a certain amount of repetition has been unavoidable in the earlier chapters. I have to thank a great many people for factual information, suggestions and for stimulating and sometimes heated discussions. Among the living, my colleagues at Reading University have been generous with help, notably Professor W. D. Biggs (Professor of Building Technology), Dr Richard Chaplin, Dr Giorgio Jeronimidis, Dr Julian Vincent and Dr Henry Blyth; Professor Anthony Flew, Professor of Philosophy, made useful suggestions about the last chapter. I am also grateful to Mr John Bartlett, Consultant Neurosurgeon at the Brook Hospital. Professor T. P. Hughes of the University of the West Indies has been helpful about rockets and many other things besides. My secretary, Mrs Jean Collins, was a great help in times of trouble. Mrs Nethercot of Vogue was kind to me about dressmaking. Mr Gerald Leach and also many of the editorial staff of Penguins have exercised their accustomed patience and helpfulness. Among the dead, l owe a great deal to Dr Mark Pryor - lately of Trinity College, Cambridge - especially for discussions about biomechanics which extended over a period of nearly thirty years. Lastly, for reasons which must surely be obvious, l owe a humble oblation to Herodotus, once a citizen of Halicamassus.

Ranking Vaccines - Institute of Medicine 2012-10-11

As a number of diseases emerge or reemerge thus stimulating new vaccine development opportunities to help prevent those diseases, it can be especially difficult for decision makers to know where to invest their limited resources. Therefore, it is increasingly important for decision makers to have the tools that can assist and inform their vaccine prioritization efforts. In this first phase report, the IOM offers a framework and proof of concept to account for various factors influencing vaccine prioritization-demographic, economic, health, scientific, business, programmatic, social, policy factors and public concerns. Ranking Vaccines: A Prioritization Framework describes a decision-support model and the blueprint of a software-called Strategic Multi-Attribute Ranking Tool for Vaccines or SMART Vaccines. SMART Vaccines should be of help to decision makers. SMART Vaccines Beta is not available for public use, but SMART Vaccines 1.0 is expected to be released at the end of the second phase of this study, when it will be fully operational and capable of guiding discussions about prioritizing the development and introduction of new vaccines.

Make, Think, Imagine - John Browne 2019-08-28

Today's unprecedented pace of change leaves many people wondering what new technologies are doing to our lives. Has social media robbed us of our privacy and fed us with false information? Are the decisions about our health, security and finances made by computer programs inexplicable and biased? Will these algorithms become so complex that we can no longer control them? Are robots going to take our jobs? Can we provide housing for our ever-growing urban populations? And has our demand for energy driven the Earth's climate to the edge of catastrophe?John Browne argues that we need not and must not put the brakes on technological advance. Civilization is founded on engineering innovation; all progress stems from the human urge to make things and to shape the world around us, resulting in greater freedom, health and wealth for all. Drawing on history, his own experiences and conversations with many of today's great innovators, he uncovers the basis for all progress and its consequences, both good and bad. He argues compellingly that the same spark that triggers each innovation can be used to counter its negative consequences. Make, Think, Imagine provides an eloquent blueprint for how we can keep moving towards a

brighter future.

Sustainability at Work - Marilyn Waite 2016-10-04
Sustainability at Work is a compelling guide for everyone who wants to have both a successful career and a career that makes a positive difference in society. Containing career advice of great value to students of sustainability, and explaining how they can apply their knowledge to their future careers, its appeal extends well beyond the classroom. Sustainability at Work includes an easy-to-follow framework that anyone wondering how they can make a sustainable difference in the workplace can apply. Professionals from a variety of backgrounds and territories explain how they brought a sustainability approach to various sectors: agriculture, health care, business, economics, and financial services, education and research, law and policy, science and technology, and entertainment and media. Through inspiring narratives and a structured framework, Sustainability at Work illustrates how sustainability can be incorporated into every imaginable career to impact the quadruple bottom line: environment, economy, society, and future generations.

Teaching Engineering, Second Edition - Phillip C. Wankat 2015-01-15
The majority of professors have never had a formal course in education, and the most common method for learning how to teach is on-the-job training. This represents a challenge for disciplines with ever more complex subject matter, and a lost opportunity when new active learning approaches to education are yielding dramatic improvements in student learning and retention. This book aims to cover all aspects of teaching engineering and other technical subjects. It presents both practical matters and educational theories in a format useful for both new and experienced teachers. It is organized to start with specific, practical teaching applications and then leads to psychological and educational theories. The "practical orientation" section explains how to develop objectives and then use them to enhance student learning, and the "theoretical orientation" section discusses the theoretical basis for learning/teaching and its impact on students. Written mainly for PhD students and professors in all areas of engineering, the book may be used as a text for graduate-level classes and professional workshops or by professionals who wish to read it on their own. Although the focus is engineering education, most of this book will be useful to teachers in other disciplines. Teaching is a complex human activity, so it is impossible to develop a formula that guarantees it will be excellent. However, the methods in this book will help all professors become good teachers while spending less time preparing for the classroom. This is a new edition of the well-received volume published by McGraw-Hill in 1993. It includes an entirely revised section on the Accreditation Board for Engineering and Technology (ABET) and new sections on the characteristics of great teachers, different active learning methods, the application of technology in the classroom (from clickers to intelligent tutorial systems), and how people learn.

Ending Discrimination Against People with Mental and Substance Use Disorders - National Academies of Sciences, Engineering, and Medicine 2016-09-03
Estimates indicate that as many as 1 in 4 Americans will experience a mental health problem or will misuse alcohol or drugs in their lifetimes. These disorders are among the most highly stigmatized health conditions in the United States, and they remain barriers to full participation in society in areas as basic as education, housing, and employment. Improving the lives of people with mental health and substance abuse disorders has been a priority in the United States for more than 50 years. The Community Mental Health Act of 1963 is considered a major turning point in America's efforts to improve behavioral healthcare. It ushered in an era of optimism and hope and laid the groundwork for the consumer movement and new models of recovery. The consumer movement gave voice to people with mental and substance use disorders and brought their perspectives and experience into national discussions about mental health. However over the same 50-year period, positive change in American public attitudes and beliefs about mental and substance use disorders has lagged behind these advances. Stigma is a complex social phenomenon based on a relationship between an attribute and a stereotype that assigns undesirable labels, qualities, and behaviors to a person with that attribute. Labeled individuals are then socially devalued, which leads to inequality and discrimination. This report contributes to national efforts to understand and change attitudes, beliefs and behaviors that can lead to stigma and discrimination. Changing stigma in a lasting way will require coordinated efforts, which are based on the best possible evidence, supported at the national level with

multiyear funding, and planned and implemented by an effective coalition of representative stakeholders. Ending Discrimination Against People with Mental and Substance Use Disorders: The Evidence for Stigma Change explores stigma and discrimination faced by individuals with mental or substance use disorders and recommends effective strategies for reducing stigma and encouraging people to seek treatment and other supportive services. It offers a set of conclusions and recommendations about successful stigma change strategies and the research needed to inform and evaluate these efforts in the United States.

Practicing Sustainability - Guru Madhavan 2012-10-19
Sustainability applies to everybody. But everybody applies it differently, by defining and shaping it differently—much as water is edged and shaped by its container. It is conceived in absolute terms but underpinned by a great diversity of relatively "green"—and sometimes contradictory—practices that can each make society only more or less sustainable. In Practicing Sustainability, chefs, poets, music directors, evangelical pastors, skyscraper architects, artists, filmmakers, as well as scientific leaders, entrepreneurs, educators, business executives, policy makers, and the contrarians, shed light on our understanding of sustainability and the role that each of us can play. Each contributor addresses what sustainability means, what is most appealing about the concept, and what they would like to change to improve the perception and practice of sustainability. What emerges from their essays is a wide spectrum of views that confirm an important insight: Sustainability is pursued in different ways not only due to different interpretations, but also because of varying incentives, trade-offs, and altruistic motives. Practicing and achieving sustainability starts with a willingness to look critically at the concept. It also means enabling rich and vigorous discussion based on pragmatism and common sense to determine a framework for best ideas and practices. With time and the much needed critical thinking, sustainable development will become a more integral part of our culture. By sharing experiences and crisp insights from today's savants, Practicing Sustainability serves as a stepping stone to the future.

Discovering the Brain - National Academy of Sciences 1992-01-01
The brain ... There is no other part of the human anatomy that is so intriguing. How does it develop and function and why does it sometimes, tragically, degenerate? The answers are complex. In Discovering the Brain, science writer Sandra Ackerman cuts through the complexity to bring this vital topic to the public. The 1990s were declared the "Decade of the Brain" by former President Bush, and the neuroscience community responded with a host of new investigations and conferences. Discovering the Brain is based on the Institute of Medicine conference, Decade of the Brain: Frontiers in Neuroscience and Brain Research. Discovering the Brain is a "field guide" to the brainâ€"an easy-to-read discussion of the brain's physical structure and where functions such as language and music appreciation lie. Ackerman examines: How electrical and chemical signals are conveyed in the brain. The mechanisms by which we see, hear, think, and pay attentionâ€"and how a "gut feeling" actually originates in the brain. Learning and memory retention, including parallels to computer memory and what they might tell us about our own mental capacity. Development of the brain throughout the life span, with a look at the aging brain. Ackerman provides an enlightening chapter on the connection between the brain's physical condition and various mental disorders and notes what progress can realistically be made toward the prevention and treatment of stroke and other ailments. Finally, she explores the potential for major advances during the "Decade of the Brain," with a look at medical imaging techniquesâ€"what various technologies can and cannot tell usâ€"and how the public and private sectors can contribute to continued advances in neuroscience. This highly readable volume will provide the public and policymakersâ€"and many scientists as wellâ€"with a helpful guide to understanding the many discoveries that are sure to be announced throughout the "Decade of the Brain."

Think Like an Engineer - Mushtak Al-Atabi 2014-08-01
Engineers conceive, design, implement, and operate (CDIO). 'Think Like an Engineer' presents CDIO and systematic thinking as a way to achieve the human potential. It explores how we think, feel and learn, and uses the latest brain research findings to help us unlock value and have a balanced life. The practical, easy to follow exercises given in the book can be used by individuals to improve their thinking and learning and by educators to empower their students to thrive for success.

Engineering and the Mind's Eye - Eugene S. Ferguson 1994-03-29

In this insightful and incisive essay, Eugene Ferguson demonstrates that good engineering is as much a matter of intuition and nonverbal thinking as of equations and computation. He argues that a system of engineering education that ignores nonverbal thinking will produce engineers who are dangerously ignorant of the many ways in which the real world differs from the mathematical models constructed in academic minds.

The Big Book of Conflict Resolution Games: Quick, Effective Activities to Improve Communication, Trust and Collaboration - Mary Scannell 2010-05-28

Make workplace conflict resolution a game that EVERYBODY wins! Recent studies show that typical managers devote more than a quarter of their time to resolving coworker disputes. The Big Book of Conflict-Resolution Games offers a wealth of activities and exercises for groups of any size that let you manage your business (instead of managing personalities). Part of the acclaimed, bestselling Big Books series, this guide offers step-by-step directions and customizable tools that empower you to heal rifts arising from ineffective communication, cultural/personality clashes, and other specific problem areas—before they affect your organization's bottom line. Let The Big Book of Conflict-Resolution Games help you to: Build trust Foster morale Improve processes Overcome diversity issues And more Dozens of physical and verbal activities help create a safe environment for teams to explore several common forms of conflict—and their resolution. Inexpensive, easy-to-implement, and proved effective at Fortune 500 corporations and mom-and-pop businesses alike, the exercises in The Big Book of Conflict-Resolution Games delivers everything you need to make your workplace more efficient, effective, and engaged.

Rock, Paper, Fire - Charlotte Gill 2013-10-15

A collection of the best poems and short stories written about various, sometimes risky wilderness experiences and adventures around the world, written for The Banff Centre's Mountain and Wilderness Writing program.

How We Understand Others - Shannon Spaulding 2018-05-15

In our everyday social interactions, we try to make sense of what people are thinking, why they act as they do, and what they are likely to do next. This process is called mindreading. Mindreading, Shannon Spaulding argues in this book, is central to our ability to understand and interact with others. Philosophers and cognitive scientists have converged on the idea that mindreading involves theorizing about and simulating others' mental states. She argues that this view of mindreading is limiting and outdated. Most contemporary views of mindreading vastly underrepresent the diversity and complexity of mindreading. She articulates a new theory of mindreading that takes into account cutting edge philosophical and empirical research on in-group/out-group dynamics, social biases, and how our goals and the situational context influence how we interpret others' behavior. Spaulding's resulting theory of mindreading provides a more accurate, comprehensive, and perhaps pessimistic view of our abilities to understand others, with important epistemological and ethical implications. Deciding who is trustworthy, knowledgeable, and competent are epistemically and ethically fraught judgments: her new theory of mindreading sheds light on how these judgments are made and the conditions under which they are unreliable. This book will be of great interest to students of philosophy of psychology, philosophy of mind, applied epistemology, cognitive science and moral psychology, as well as those interested in conceptual issues in psychology.

How People Learn - National Research Council 2000-08-11

First released in the Spring of 1999, How People Learn has been expanded to show how the theories and insights from the original book can translate into actions and practice, now making a real connection between classroom activities and learning behavior. This edition includes far-reaching suggestions for research that could increase the impact that classroom teaching has on actual learning. Like the original edition, this book offers exciting new research about the mind and the brain that provides answers to a number of compelling questions. When do infants begin to learn? How do experts learn and how is this different from non-experts? What can teachers and schools do-with curricula, classroom settings, and teaching methods--to help children learn most effectively? New evidence from many branches of science has significantly added to our understanding of what it means to know, from the neural processes that occur during learning to the influence of culture on what people see and absorb. How People Learn examines these findings and their implications for what we teach, how we teach it, and how we assess what

our children learn. The book uses exemplary teaching to illustrate how approaches based on what we now know result in in-depth learning. This new knowledge calls into question concepts and practices firmly entrenched in our current education system. Topics include: How learning actually changes the physical structure of the brain. How existing knowledge affects what people notice and how they learn. What the thought processes of experts tell us about how to teach. The amazing learning potential of infants. The relationship of classroom learning and everyday settings of community and workplace. Learning needs and opportunities for teachers. A realistic look at the role of technology in education.

Possible Minds - John Brockman 2020-02-18

Science world luminary John Brockman assembles twenty-five of the most important scientific minds, people who have been thinking about the field artificial intelligence for most of their careers, for an unparalleled round-table examination about mind, thinking, intelligence and what it means to be human. "Artificial intelligence is today's story--the story behind all other stories. It is the Second Coming and the Apocalypse at the same time: Good AI versus evil AI." --John Brockman More than sixty years ago, mathematician-philosopher Norbert Wiener published a book on the place of machines in society that ended with a warning: "we shall never receive the right answers to our questions unless we ask the right questions.... The hour is very late, and the choice of good and evil knocks at our door." In the wake of advances in unsupervised, self-improving machine learning, a small but influential community of thinkers is considering Wiener's words again. In Possible Minds, John Brockman gathers their disparate visions of where AI might be taking us. The fruit of the long history of Brockman's profound engagement with the most important scientific minds who have been thinking about AI--from Alison Gopnik and David Deutsch to Frank Wilczek and Stephen Wolfram--Possible Minds is an ideal introduction to the landscape of crucial issues AI presents. The collision between opposing perspectives is salutary and exhilarating; some of these figures, such as computer scientist Stuart Russell, Skype co-founder Jaan Tallinn, and physicist Max Tegmark, are deeply concerned with the threat of AI, including the existential one, while others, notably robotics entrepreneur Rodney Brooks, philosopher Daniel Dennett, and bestselling author Steven Pinker, have a very different view. Serious, searching and authoritative, Possible Minds lays out the intellectual landscape of one of the most important topics of our time.

Thinking Like an Engineer - Bill Lucas 2014

The Rape of the Mind: The Psychology of Thought Control, Menticide, and Brainwashing - Dr. Joost A. M. Meerloo 2015-11-06

"SINCE 1933, when a completely drugged and trial-conditioned human wreck confessed to having started the Reichstag fire in Berlin, Dr. Joost A. M. Meerloo has studied the methods by which systematic mental pressure brings people to abject submission, and by which totalitarians imprint their subjective "truth" on their victims' minds. The first two and one-half years of WWII, Dr. Meerloo spent under the pressure of Nazi-occupied Holland, witnessing at first-hand the Nazi methods of mental torture on more than one occasion...Then, after personal experiences with enforced interrogation, he escaped from a Nazi prison and certain death to England, where he was able, as Chief of the Psychological Department of the Netherlands Forces, to observe and study coercive methods officially.... After the war, he came to the United States...As more and more cases of thought control, brainwashing, and mental coercion were disclosed - Cardinal Mindszenty, Colonel Schwable, Robert Vogeler, and others - his interest grew. It was Dr. Meerloo who coined the word menticide, the killing of the spirit, for this peculiar crime... It is Dr. Meerloo's position that through pressure on the weak points in men's makeup, totalitarian methods can turn anyone into a "traitor." And in The Rape of the Mind he goes far beyond the direct military implications of mental torture to describing how our own culture unobtrusively shows symptoms of pressurizing people's minds. He presents a systematic analysis of the methods of brainwashing and mental torture and coercion, and shows how totalitarian strategy, with its use of mass psychology, leads to systematized "rape of the mind." He describes the new age of cold war with its mental terror, verbocracy, and semantic fog, the use of fear as a tool of mass submission and the problem of treason and loyalty, so loaded with dangerous confusion. The Rape of the Mind is written for the interested layman, not only for experts and scientists."-Print ed.

Practical Finite Element Analysis - Nitin S. Gokhale 2008

Highlights of the book: Discussion about all the fields of Computer Aided Engineering, Finite Element Analysis Sharing of worldwide experience by more than 10 working professionals Emphasis on Practical usuage and minimum mathematics Simple language, more than 1000 colour images International quality printing on specially imported paper Why this book has been written ... FEA is gaining popularity day by day & is a sought after dream career for mechanical engineers. Enthusiastic engineers and managers who want to refresh or update the knowledge on FEA are encountered with volume of published books. Often professionals realize that they are not in touch with theoretical concepts as being pre-requisite and find it too mathematical and Hi-Fi. Many a times these books just end up being decoration in their book shelves ... All the authors of this book are from IIT€Â™s & IISc and after joining the industry realized gap between university education and the practical FEA. Over the years they learned it via interaction with experts from international community, sharing experience with each other and hard route of trial & error method. The basic aim of this book is to share the knowledge & practices used in the industry with experienced and in particular beginners so as to reduce the learning curve & avoid reinvention of the cycle. Emphasis is on simple language, practical usage, minimum mathematics & no pre-requisites. All basic concepts of engineering are included as & where it is required. It is hoped that this book would be helpful to beginners, experienced users, managers, group leaders and as additional reading material for university courses.

Engineering Fundamentals: An Introduction to Engineering, SI Edition - Saeed Moaveni 2011-01-01
Specifically designed as an introduction to the exciting world of engineering, ENGINEERING FUNDAMENTALS: AN INTRODUCTION TO ENGINEERING encourages students to become engineers and prepares them with a solid foundation in the fundamental principles and physical laws. The book begins with a discovery of what engineers do as well as an inside look into the various areas of specialization. An explanation on good study habits and what it takes to succeed is included as well as an introduction to design and problem solving, communication, and ethics. Once this foundation is established, the book moves on to the basic physical concepts and laws that students will encounter regularly. The framework of this text teaches students that engineers apply physical and chemical laws and principles as well as mathematics to design, test, and supervise the production of millions of parts, products, and services that people use every day. By gaining problem solving skills and an understanding of fundamental principles, students are on their way to becoming analytical, detail-oriented, and creative engineers. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Applied Minds - Guru Madhavan 2015-08-04
A journey inside the minds that build our world. Dubai's Burj Khalifa—the world's tallest building—looks nothing like Microsoft's Office Suite, and digital surround sound doesn't work like a citywide telecommunication grid. Yet these engineering feats have much in common. Applied Minds explores the unique visions and mental tools of engineers to reveal the enormous—and often understated—influence they wield in transforming problems into opportunities. The resulting account pairs the innovators of modern history—Thomas Edison, the Wright brothers, Steve Jobs—with everything from ATMs and the ZIP code system to the disposable diaper. An engineer himself, Guru Madhavan introduces a flexible intellectual tool kit called modular systems thinking as he explains the discipline's penchant for seeing structure where there is none. The creations that result from this process express the engineer's answers to the fundamental questions of design: usefulness, functionality, reliability, and user friendliness. Through narratives and case studies spanning the brilliant history of engineering, Madhavan shows how the concepts of prototyping, efficiency, reliability, standards, optimization, and feedback are put to use in fields as diverse as transportation, retail, health care, and entertainment. Equal parts personal, practical, and profound, Applied Minds charts a path to a future where we apply strategies borrowed from engineering to create useful and inspired solutions to our most pressing challenges.

Applied Minds: How Engineers Think - Guru Madhavan 2015-08-03
"Engineers are titans of real-world problem-solving. . . . In this riveting study of how they think, [Guru Madhavan] puts behind-the-scenes geniuses . . . center stage."—Nature In this engaging account of innovative triumphs, Guru Madhavan examines the ways in which engineers throughout history created world-changing tools, from ATMs and ZIP codes to the digital camera and the disposable diaper. Equal parts personal, practical, and profound, Applied Minds charts a path to a future where we borrow strategies from engineering to find inspired solutions to our most pressing challenges.

Think Like an Engineer - Guruprasad Madhavan 2016-04

Applied Minds - Guru Madhavan 2016-07-27
Engineering comes in many forms. Dubai's Burj Khalifa—the world's tallest building—looks nothing like Microsoft's Office Suite, and digital surround sound doesn't work like a city-wide telecommunication grid. Yet these engineering feats have much in common. Applied Minds explores the unique visions and mental tools of engineers and reveals the enormous—and often understated—influence they wield in transforming problems into opportunities. Guru Madhavan's account pairs the innovators of modern history—Thomas Edison, the Wright brothers, Steve Jobs—with everything from ATMs and the ZIP code system to the disposable diaper. He peeks into the inner workings of complex systems and celebrates the men and women who shape our world. Anecdotal, insightful and ultimately visionary, Applied Minds charts a path to a future where we might apply strategies borrowed from engineering to create useful and inspired solutions to the world's most pressing challenges.

Engineering and Philosophy - Zachary Pirtle 2021-05-14
Engineers love to build "things" and have an innate sense of wanting to help society. However, these desires are often not connected or developed through reflections on the complexities of philosophy, biology, economics, politics, environment, and culture. To guide future efforts and to best bring about human flourishment and a just world, Engineering and Philosophy: Reimagining Technology and Progress brings together practitioners and scholars to inspire deeper conversations on the nature and varieties of engineering. The perspectives in this book are an act of reimagination: how does engineering serve society, and in a vital sense, how should it.

What Engineers Know and how They Know it - Walter Guido Vincenti 1990
"The biggest contribution of Vincenti's splendidly crafted book may well be that it offers us a believably human image of the engineer."--Technology Review. Johns Hopkins Studies in the History of Technology. Merritt Roe Smith, Series Editor.

Prosocial - Paul W.B. Atkins 2019-10-01
A groundbreaking, comprehensive program for designing effective and socially equitable groups of all sizes—from businesses and social justice groups to global organizations. Whether you work in business or schools, volunteer in neighborhoods or church organizations, or are involved in social justice and activism, you understand the enormous power of groups to enact powerful and lasting change in the world. But how exactly do you design, build, and sustain effective groups? Based on the work of Nobel Prize winning economist Elinor Ostrom and grounded in contextual behavioral science, evolutionary science, and acceptance and commitment therapy (ACT), Prosocial presents a practical, step-by-step approach to help you energize and strengthen your business or organization. Using the Prosocial model, you'll learn to design groups that are more harmonious, have better member or employee retention, have better relationships with other groups or business partners, and have more success and longevity. Most importantly, you'll learn to target the characteristics that foster cooperation and collaboration—key ingredients for any effective group.

Ethics, Technology, and Engineering - Ibo van de Poel 2011-03-23
Featuring a wide range of international case studies, Ethics, Technology, and Engineering presents a unique and systematic approach for engineering students to deal with the ethical issues that are increasingly inherent in engineering practice. Utilizes a systematic approach to ethical case analysis -- the ethical cycle -- which features a wide range of real-life international case studies including the Challenger Space Shuttle, the Herald of Free Enterprise and biofuels. Covers a broad range of topics, including ethics in design, risks, responsibility, sustainability, and emerging technologies Can be used in conjunction with the online ethics tool Agora (http://www.ethicsandtechnology.com) Provides engineering students with a clear introduction to the main ethical theories Includes an extensive glossary with key terms

Art of Doing Science and Engineering - Richard R. Hamming 2003-12-16
Highly effective thinking is an art that engineers and scientists can be taught to develop. By presenting

actual experiences and analyzing them as they are described, the author conveys the developmental thought processes employed and shows a style of thinking that leads to successful results is something that can be learned. Along with spectacular successes, the author also conveys how failures contributed to shaping the thought processes. Provides the reader with a style of thinking that will enhance a person's ability to function as a problem-solver of complex technical issues. Consists of a collection of stories about the author's participation in significant discoveries, relating how those discoveries came about and, most importantly, provides analysis about the thought processes and reasoning that took place as the author and his associates progressed through engineering problems.

Pathological Altruism - Barbara Oakley 2011-09-19

The benefits of altruism and empathy are obvious. These qualities are so highly regarded and embedded in both secular and religious societies that it seems almost heretical to suggest they can cause harm. Like most good things, however, altruism can be distorted or taken to an unhealthy extreme. Pathological Altruism presents a number of new, thought-provoking theses that explore a range of hurtful effects of altruism and empathy. Pathologies of empathy, for example, may trigger depression as well as the burnout seen in healthcare professionals. The selflessness of patients with eating abnormalities forms an important aspect of those disorders. Hyperempathy - an excess of concern for what others think and how they feel - helps explain popular but poorly defined concepts such as codependency. In fact, pathological altruism, in the form of an unhealthy focus on others to the detriment of one's own needs, may underpin some personality disorders. Pathologies of altruism and empathy not only underlie health issues, but also a disparate slew of humankind's most troubled features, including genocide, suicide bombing, self-righteous political partisanship, and ineffective philanthropic and social programs that ultimately worsen the situations they are meant to aid. Pathological Altruism is a groundbreaking new book - the first to explore the negative aspects of altruism and empathy, seemingly uniformly positive traits. The contributing authors provide a scientific, social, and cultural foundation for the subject of pathological altruism, creating a new field of inquiry. Each author's approach points to one disturbing truth: what we value so much, the altruistic "good" side of human nature, can also have a dark side that we ignore at our peril.

How We Think - John Dewey 1910

Our schools are troubled with a multiplication of studies, each in turn having its own multiplication of materials and principles. Our teachers find their tasks made heavier in that they have come to deal with pupils individually and not merely in mass. Unless these steps in advance are to end in distraction, some clew of unity, some principle that makes for simplification, must be found. This book represents the conviction that the needed steadying and centralizing factor is found in adopting as the end of endeavor that attitude of mind, that habit of thought, which we call scientific. This scientific attitude of mind might, conceivably, be quite irrelevant to teaching children and youth. But this book also represents the conviction that such is not the case; that the native and unspoiled attitude of childhood, marked by ardent curiosity, fertile imagination, and love of experimental inquiry, is near, very near, to the attitude of the scientific mind. If these pages assist any to appreciate this kinship and to consider seriously how its recognition in educational practice would make for individual happiness and the reduction of social waste, the book will amply have served its purpose. It is hardly necessary to enumerate the authors to whom I am indebted. My fundamental indebtedness is to my wife, by whom the ideas of this book were inspired, and through whose work in connection with the Laboratory School, existing in Chicago between 1896 and 1903, the ideas attained such concreteness as comes from embodiment and testing in practice. It is a pleasure, also, to acknowledge indebtedness to the intelligence and sympathy of those who coöperated as teachers and supervisors in the conduct of that school, and especially to Mrs. Ella Flagg Young, then a colleague in the University, and now Superintendent of the Schools of Chicago.

Engineering - Unesco 2010-01-01

This report reviews engineering's importance to human, economic, social and cultural development and in addressing the UN Millennium Development Goals. Engineering tends to be viewed as a national issue, but engineering knowledge, companies, conferences and journals, all demonstrate that it is as international as science. The report reviews the role of engineering in development, and covers issues including poverty reduction, sustainable development, climate change mitigation and adaptation. It presents the various fields of engineering around the world and is intended to identify issues and challenges facing engineering, promote better understanding of engineering and its role, and highlight ways of making engineering more attractive to young people, especially women.--Publisher's description.