

data science john kelleher

Data Science John Kelleher: Insights from a Leading Expert in the Field

data science john kelleher represents a name synonymous with clarity and expertise in the ever-evolving domain of data science. For anyone diving into this multifaceted field, understanding the contributions and perspectives of established professionals like John Kelleher is invaluable. His work not only demystifies complex concepts but also makes data science accessible to learners and practitioners worldwide.

John Kelleher is an accomplished academic and author whose writings and teachings have significantly influenced how data science is taught and perceived. His approach often bridges theoretical frameworks with practical applications, ensuring that both beginners and seasoned data scientists can benefit. In this article, we'll explore John Kelleher's contributions, his unique perspective on data science, and how his insights can shape your understanding and application of data analytics.

Who is John Kelleher in the Context of Data Science?

John Kelleher is a researcher, educator, and author with a background deeply rooted in artificial intelligence and data science. He has authored several influential books, including **Data Science** and **Deep Learning**, which serve as essential resources for students and professionals alike. Kelleher's expertise encompasses machine learning, natural language processing, and the broader AI landscape, making his insights particularly valuable as data science increasingly integrates these technologies.

His academic career, including his role as a professor and researcher, allows him to stay at the forefront of data science innovations. Moreover, Kelleher's ability to communicate complex ideas in a straightforward and engaging manner has earned him a reputation as a leading educator in this space.

John Kelleher's Approach to Data Science

One of the distinguishing features of John Kelleher's work is his emphasis on practical understanding combined with theoretical rigor.

Bridging Theory and Practice

In many data science resources, there can be an overwhelming focus on either abstract mathematical concepts or on code snippets without context. Kelleher strikes a balance by explaining the theoretical foundations—such as statistical methods, algorithms, and data structures—while also demonstrating how these principles are applied in real-world scenarios. This approach helps learners build a robust mental model of data science processes.

Focus on Machine Learning and AI

As machine learning and AI continue to dominate the data science landscape, Kelleher's work often highlights these subfields. His book **Deep Learning** dives into neural networks and AI architectures, making these advanced topics accessible. Importantly, he discusses not just how these models work, but also their implications, limitations, and ethical considerations.

Key Concepts from John Kelleher's Data Science Philosophy

Understanding data science through John Kelleher's lens reveals several foundational concepts that are essential for mastering the field.

Data Preparation and Cleaning

Kelleher stresses that data science is not just about sophisticated algorithms but often about the less glamorous task of data cleaning and preparation. He points out that a significant portion of a data scientist's time is spent on wrangling data—handling missing values, correcting inconsistencies, and transforming data into usable formats. This emphasis encourages practitioners to invest effort upfront for better results.

Exploratory Data Analysis (EDA)

Before jumping into modeling, Kelleher advocates for thorough exploratory data analysis. EDA involves visualizing data distributions, identifying patterns, and uncovering relationships between variables. This helps in selecting appropriate models and avoiding pitfalls such as overfitting.

Model Evaluation and Validation

Another important theme in Kelleher's work is rigorous model evaluation. He explains various metrics and validation techniques, including cross-validation, precision, recall, and ROC curves, to ensure models generalize well to new data. This focus helps prevent common errors and encourages continuous model improvement.

Learning Data Science with John Kelleher's Resources

For aspiring data scientists, John Kelleher's books and lectures provide a structured path to build competence.

Recommended Books

- **Data Science:** This book offers a comprehensive introduction to the field, covering fundamental topics like data manipulation, machine learning algorithms, and practical case studies.
- **Deep Learning:** Co-authored by Kelleher, this work breaks down complex AI topics into digestible sections, ideal for learners who want to delve deeper into neural networks and modern AI methods.

Online Lectures and Courses

John Kelleher has contributed to various online platforms where his courses integrate theory with hands-on coding exercises. These courses often emphasize Python programming, a staple language in data science, enabling learners to apply concepts immediately.

How John Kelleher's Insights Help in Real-World Data Science Applications

Data science is not just about theory—it's a practical discipline aimed at solving real problems. Kelleher's work illustrates this by connecting concepts to tangible use cases.

Business Intelligence and Decision Making

By understanding data patterns and predictive models, organizations can leverage Kelleher's teachings to enhance decision-making processes. His approach to data cleaning and validation ensures that insights are reliable, leading to more informed business strategies.

Natural Language Processing (NLP)

Given Kelleher's expertise in AI, his perspectives on NLP offer valuable guidance for projects involving text data. Whether it's sentiment analysis, chatbots, or document classification, his explanations of algorithms and model architectures help practitioners develop effective solutions.

Ethical Considerations in Data Science

An increasingly important aspect of data science involves ethics. Kelleher addresses concerns around

bias in datasets, transparency in AI models, and responsible data usage. His balanced viewpoint encourages data scientists to consider the broader societal impact of their work.

Tips Inspired by John Kelleher for Aspiring Data Scientists

Learning from experts like John Kelleher can accelerate your growth in data science. Here are some practical tips inspired by his teachings:

1. **Master the Basics:** Focus on foundational statistics, linear algebra, and programming before jumping into advanced topics.
2. **Practice Data Wrangling:** Spend time cleaning and preprocessing datasets to understand their nuances.
3. **Explore Data Visually:** Use visualization tools to gain intuition about your data.
4. **Experiment with Models:** Try different machine learning algorithms and compare their performance using proper validation techniques.
5. **Stay Updated:** Follow John Kelleher's latest work and similar experts to keep up with emerging trends.

These actions reflect Kelleher's holistic approach to becoming a competent data scientist.

Why John Kelleher's Work Matters in Today's Data-Driven World

In a landscape flooded with technical jargon and rapidly evolving tools, John Kelleher's clear and structured approach serves as a beacon for learners and professionals. His emphasis on understanding core principles rather than just chasing the latest buzzwords helps build a sustainable skill set. Moreover, his integration of AI, machine learning, and ethical considerations prepares data scientists to tackle modern challenges thoughtfully.

Whether you're a student, a professional pivoting into data science, or a seasoned analyst seeking deeper knowledge, exploring data science John Kelleher-style can provide clarity and direction. His works encourage curiosity, critical thinking, and practical application—qualities essential for success in this dynamic field.

Frequently Asked Questions

Who is John Kelleher in the field of data science?

John Kelleher is a well-known author and expert in the field of data science and artificial intelligence, recognized for his contributions to machine learning and AI education.

What are some notable books authored by John Kelleher on data science?

John Kelleher has authored several influential books including 'Data Science: An Introduction' and 'Deep Learning', which are widely used in academic and professional circles.

What topics does John Kelleher focus on in his data science work?

John Kelleher focuses on machine learning, deep learning, natural language processing, and the practical applications of AI and data science.

How can John Kelleher's books help beginners in data science?

His books provide clear, accessible introductions to key concepts in data science and machine learning, making them ideal for beginners seeking to build foundational knowledge.

Does John Kelleher offer any online courses or tutorials on data science?

John Kelleher has contributed to online learning platforms with courses and tutorials that cover machine learning and AI fundamentals, helping learners worldwide.

What is John Kelleher's approach to teaching machine learning?

John Kelleher emphasizes practical understanding through examples and real-world applications, aiming to bridge the gap between theory and practice.

Has John Kelleher contributed to any research papers in data science?

Yes, John Kelleher has co-authored several research papers focusing on AI, machine learning algorithms, and their applications in various domains.

Where can I find more resources by John Kelleher on data science?

Resources by John Kelleher can be found on his official website, academic publication platforms, and major book retailers like Amazon.

What makes John Kelleher a trusted name in data science education?

John Kelleher's clear communication style, practical approach, and extensive experience in AI and machine learning education make him a respected figure in the data science community.

Additional Resources

Data Science John Kelleher: An In-Depth Look at a Leading Voice in Data Science Education

data science john kelleher represents a pivotal figure in the landscape of data science education and literature. With a career that bridges academia and industry, John D. Kelleher has become a recognized authority on machine learning, artificial intelligence, and data science methodologies. His contributions, particularly through his published works and teaching roles, have shaped the way aspiring data scientists understand the complexities of data-driven technologies. This article delves into the professional profile of John Kelleher, his impact on data science education, and the relevance of his work in today's rapidly evolving data ecosystem.

Who is John Kelleher?

John Kelleher is a professor, researcher, and author whose expertise centers on data science, machine learning, and artificial intelligence. He holds academic positions primarily in Ireland, where he has been instrumental in developing curricula that respond to the growing demand for data science skills across various industries. Kelleher's work is characterized by a clear, accessible approach to complex topics, making advanced concepts approachable for students and professionals alike.

His academic background and research contributions encompass the development of algorithms, natural language processing, and the ethical considerations of AI deployment. Additionally, Kelleher has authored several influential books, including "Data Science," which is widely used in universities and professional courses worldwide. This book, among others, is praised for its comprehensive coverage of data science principles, practical applications, and emerging trends.

John Kelleher's Contributions to Data Science Education

One of the most significant aspects of John Kelleher's career is his dedication to education. Through his textbooks and teaching, he has demystified complex data science concepts for a broad audience.

Unlike many technical texts that focus solely on theory, Kelleher's works balance foundational knowledge with real-world applications, making them particularly valuable for learners seeking to transition from theory to practice.

Comprehensive Coverage of Data Science Topics

Kelleher's book "Data Science" is structured to cover a wide range of topics fundamental to the field, including:

- Data preprocessing and cleaning techniques
- Exploratory data analysis
- Data visualization methods
- Statistical modeling and inference
- Machine learning algorithms and their applications
- Big data technologies and frameworks
- Ethical issues in data science and AI

This breadth ensures that readers gain a holistic understanding of the data science pipeline, from raw data handling to deploying predictive models. By integrating case studies and practical examples, Kelleher enhances the learning experience, enabling readers to see how theoretical concepts translate into actionable insights.

Balancing Theory with Practicality

In the rapidly evolving field of data science, practical skills are as crucial as theoretical knowledge. John Kelleher's approach emphasizes hands-on learning, encouraging readers and students to engage with real datasets and coding exercises. His instructional style often incorporates Python, the dominant programming language in data science, to illustrate algorithm implementation and data manipulation.

Moreover, Kelleher's emphasis on the ethical implications of data science reflects a growing awareness within the community about responsible AI development. This dimension is increasingly important as organizations grapple with bias, privacy, and transparency in their data-driven decisions.

Impact and Relevance in the Data Science Community

The influence of John Kelleher extends beyond academia into the broader data science community. His books have been adopted by numerous universities worldwide, and his research has informed best practices in machine learning and data analysis. The clarity and structure of his educational materials make them popular among self-learners, bootcamp participants, and professionals seeking to upskill.

Comparison with Other Data Science Educators

When compared to other prominent data science authors such as Hadley Wickham, Wes McKinney, or Aurélien Géron, John Kelleher's work stands out for its holistic approach. While Wickham and McKinney focus heavily on specific tools like R and Python libraries, respectively, Kelleher's texts cover the entire data science lifecycle. Similarly, Aurélien Géron's books delve deeply into machine learning with a practical focus, but Kelleher balances this with more extensive theoretical grounding.

This comprehensive scope makes "Data Science" by John Kelleher a valuable resource for those seeking to build a solid foundation before specializing. It is especially suitable for academic settings where breadth of knowledge is prioritized.

Strengths and Limitations of John Kelleher's Data Science Approach

Every educational resource has its strengths and potential drawbacks, and John Kelleher's contributions are no exception.

Strengths

- **Clarity and accessibility:** His writing style simplifies complex ideas without diluting their substance.
- **Comprehensive content:** Covers a wide range of essential data science topics.
- **Balanced theory and practice:** Integrates conceptual understanding with hands-on examples.
- **Ethical considerations:** Addresses the social impact of data science, which is often overlooked.

Limitations

- **Less focus on cutting-edge tools:** The material may not always include the latest software libraries or frameworks.
- **Academic orientation:** Some practitioners may find the approach too theoretical for immediate application in fast-paced industry environments.

These points highlight that while John Kelleher's materials are excellent for foundational learning, supplementing them with current industry resources can provide a more rounded skill set.

Future Directions and Continuing Influence

As data science continues to evolve with advancements in AI, deep learning, and big data analytics, educators like John Kelleher play a crucial role in shaping the next generation of data professionals. His commitment to updating educational content and incorporating emerging trends ensures that learners remain well-equipped to meet future challenges.

Additionally, the increasing emphasis on ethical AI and transparent data science practices aligns closely with Kelleher's focus areas, reinforcing the ongoing relevance of his work.

In summary, the name data science john kelleher is synonymous with quality education in the field. His contributions have established a benchmark for comprehensive, accessible, and ethically mindful data science instruction that continues to benefit students, educators, and professionals alike.

[Data Science John Kelleher](#)

data science john kelleher: *Data Science* John D. Kelleher, Brendan Tierney, 2018-04-13 A concise introduction to the emerging field of data science, explaining its evolution, relation to machine learning, current uses, data infrastructure issues, and ethical challenges. The goal of data science is to improve decision making through the analysis of data. Today data science determines the ads we see online, the books and movies that are recommended to us online, which emails are filtered into our spam folders, and even how much we pay for health insurance. This volume in the MIT Press Essential Knowledge series offers a concise introduction to the emerging field of data science, explaining its evolution, current uses, data infrastructure issues, and ethical challenges. It has never been easier for organizations to gather, store, and process data. Use of data science is driven by the rise of big data and social media, the development of high-performance computing, and the emergence of such powerful methods for data analysis and modeling as deep learning. Data science encompasses a set of principles, problem definitions, algorithms, and processes for extracting non-obvious and useful patterns from large datasets. It is closely related to the fields of data mining and machine learning, but broader in scope. This book offers a brief history of the field, introduces fundamental data concepts, and describes the stages in a data science project. It considers data infrastructure and the challenges posed by integrating data from multiple sources, introduces the basics of machine learning, and discusses how to link machine learning expertise with real-world problems. The book also reviews ethical and legal issues, developments in data regulation, and computational approaches to preserving privacy. Finally, it considers the future

impact of data science and offers principles for success in data science projects.

data science john kelleher: Deep Learning John D. Kelleher, 2019

data science john kelleher: Fundamentals of Machine Learning for Predictive Data Analytics John D. Kelleher, Brian Mac Namee, Aoife D'Arcy, 2015-07-31 A comprehensive introduction to the most important machine learning approaches used in predictive data analytics, covering both theoretical concepts and practical applications. Machine learning is often used to build predictive models by extracting patterns from large datasets. These models are used in predictive data analytics applications including price prediction, risk assessment, predicting customer behavior, and document classification. This introductory textbook offers a detailed and focused treatment of the most important machine learning approaches used in predictive data analytics, covering both theoretical concepts and practical applications. Technical and mathematical material is augmented with explanatory worked examples, and case studies illustrate the application of these models in the broader business context. After discussing the trajectory from data to insight to decision, the book describes four approaches to machine learning: information-based learning, similarity-based learning, probability-based learning, and error-based learning. Each of these approaches is introduced by a nontechnical explanation of the underlying concept, followed by mathematical models and algorithms illustrated by detailed worked examples. Finally, the book considers techniques for evaluating prediction models and offers two case studies that describe specific data analytics projects through each phase of development, from formulating the business problem to implementation of the analytics solution. The book, informed by the authors' many years of teaching machine learning, and working on predictive data analytics projects, is suitable for use by undergraduates in computer science, engineering, mathematics, or statistics; by graduate students in disciplines with applications for predictive data analytics; and as a reference for professionals.

data science john kelleher: Real World AI Ethics for Data Scientists Nachshon (Sean) Goltz, Tracey Dowdeswell, 2023-04-13 In the midst of the fourth industrial revolution, big data is weighed in gold, placing enormous power in the hands of data scientists – the modern AI alchemists. But great power comes with greater responsibility. This book seeks to shape, in a practical, diverse, and inclusive way, the ethical compass of those entrusted with big data. Being practical, this book provides seven real-world case studies dealing with big data abuse. These cases span a range of topics from the statistical manipulation of research in the Cornell food lab through the Facebook user data abuse done by Cambridge Analytica to the abuse of farm animals by AI in a chapter co-authored by renowned philosophers Peter Singer and Yip Fai Tse. Diverse and inclusive, given the global nature of this revolution, this book provides case-by-case commentary on the cases by scholars representing non-Western ethical approaches (Buddhist, Jewish, Indigenous, and African) as well as Western approaches (consequentialism, deontology, and virtue). We hope this book will be a lighthouse for those debating ethical dilemmas in this challenging and ever-evolving field.

data science john kelleher: Data Science in Practice Tom Alby, 2023-09-22 Data Science in Practice is the ideal introduction to data science. With or without math skills, here, you get the all-round view that you need for your projects. This book describes how to properly question data, in order to unearth the treasure that data can be. You will get to know the relevant analysis methods, and will be introduced to the programming language R, which is ideally suited for data analysis. Associated tools like notebooks that make data science programming easily accessible are included in this introduction. Because technology alone is not enough, this book also deals with problems in project implementation, illuminates various fields of application, and does not forget to address ethical aspects. Data Science in Practice includes many examples, notes on errors, decision-making aids, and other practical tips. This book is ideal as a complementary text for university students, and is a useful learning tool for those moving into more data-related roles. Key Features: Success factors and tools for all project phases Includes application examples for various subject areas Introduces many aspects of Data Science, from requirements analysis to data acquisition and visualization

data science john kelleher: An Introduction to Data Science: Everything About AI, ML

and Big Data Rudra Tiwari, 2022-09-18 First Edition of this book is predominantly envisioned for students who want to redefine the way they think about artificial intelligence (AI) and Data Science. Therefore the book, which is organized as a assortment of essentially self-contained articles, comprises both general strategic considerations and some detailed sector-specific material. It shares visions into what it means to work with AI and how to do it more proficiently; how to use AI in detailed industries such as investment or insurance; how AI interrelates with other technologies such as blockchain. Rudra Tiwari

data science john kelleher: *Interpreting Technology* Wessel Reijers, Alberto Romele, Mark Coeckelbergh, 2021-05-21 Paul Ricœur has been one of the most influential and intellectually challenging philosophers of the last century, and his work has contributed to a vast array of fields: studies of language, of history, of ethics and politics. However, he has up until recently only had a minor impact on the philosophy of technology. *Interpreting Technology* aims to put Ricœur's work at the centre of contemporary philosophical thinking concerning technology. It investigates his project of critical hermeneutics for rethinking established theories of technology, the growing ethical and political impacts of technologies on the modern lifeworld, and ways of analysing global sociotechnical systems such as the Internet. Ricœur's philosophy allows us to approach questions such as: how could narrative theory enhance our understanding of technological mediation? How can our technical practices be informed by the ethical aim of living the good life, with and for others, in just institutions? And how does the emerging global media landscape shape our sense of self, and our understanding of history? These questions are more timely than ever, considering the enormous impact technologies have on daily life in the 21st century: on how we shape ourselves with health apps, how we engage with one-another through social media, and how we act politically through digital platforms.

data science john kelleher: Food Fabio Parasecoli, 2019-05-28 A consumer's guide to the food system, from local to global: our part as citizens in the interconnected networks, institutions, and organizations that enable our food choices. Everybody eats. We may even consider ourselves experts on the topic, or at least Instagram experts. But are we aware that the shrimp in our freezer may be farmed and frozen in Vietnam, the grapes in our fruit bowl shipped from Chile, and the coffee in our coffee maker grown in Nicaragua, roasted in Germany, and distributed in Canada? Whether we know it or not, every time we shop for food, cook, and eat, we connect ourselves to complex supply networks, institutions, and organizations that enable our food choices. Even locavores may not know the whole story of the produce they buy at the farmers market. In this volume in the MIT Press Essential Knowledge series, food writer and scholar Fabio Parasecoli offers a consumer's guide to the food system, from local to global. Parasecoli describes a system made up of open-ended, shifting, and unstable networks rather than well-defined chains; considers healthy food and the contradictory advice about it consumers receive; discusses food waste and the implications for sustainability; explores food technologies (and "culinary luddism"); and examines hunger and food insecurity in both developing and developed countries. Parasecoli reminds us that we are not only consumers but also citizens, and as citizens we have more power to improve the food system than we do by our individual food choices.

data science john kelleher: Sexual Consent Milena Popova, 2019-05-07 An introduction to issues of sexual consent, covering key strands of feminist thought, how sexual consent is negotiated in practice, the influence of popular culture, and more. The #MeToo movement has focused public attention on the issue of sexual consent. People of all genders, from all walks of life, have stepped forward to tell their stories of sexual harassment and violation. In a predictable backlash, others have taken to mass media to inquire plaintively if "flirting" is now forbidden. This volume in the MIT Press Essential Knowledge series offers a nuanced introduction to sexual consent by a writer who is both a scholar and an activist on this issue. It has become clear from discussions of the recent high-profile cases of Harvey Weinstein, Bill Cosby, and others that there is no clear agreement over what constitutes consent or non-consent and how they are expressed and perceived in sexual situations. This book presents key strands of feminist thought on the subject of sexual consent from

across academic and activist communities and covers the history of research on consent in such fields as psychology and feminist legal studies. It discusses how sexual consent is negotiated in practice, from “No means no” to “Yes means yes,” and describes what factors might limit individual agency in such negotiations. It examines how popular culture, including pornography, romance fiction, and sex advice manuals, shapes our ideas of consent; explores the communities at the forefront of consent activism; and considers what meaningful social change in this area might look like. Going beyond the conventional cisgender, heterosexual norm, the book lists additional resources for those seeking to improve their practice of consent, survivors of sexual violence, and readers who want to understand contemporary debates on this issue in more depth.

data science john kelleher: Recycling Finn Arne Jørgensen, 2019-11-12 An overview of recycling as an activity and a process, following different materials through the waste stream. Is there a point to recycling? Is recycling even good for the environment? In this volume in the MIT Press Essential Knowledge series, Finn Arne Jørgensen answers (drumroll, please): it depends. From a technical point of view, recycling is a series of processes—collecting, sorting, processing, manufacturing. Recycling also has a cultural component; at its core, recycling is about transformation and value, turning material waste into something useful—plastic bags into patio furniture, plastic bottles into T-shirts. Jørgensen offers an accessible and engaging overview of recycling as an activity and as a process at the intersection of the material and the ideological. Jørgensen follows a series of materials as they move back and forth between producer and consumer, continually transforming in form and value, in a never-ceasing journey toward becoming waste. He considers organic waste and cultural contamination; the history of recyclable writing surfaces from papyrus to newsprint; discarded clothing as it moves from the the Global North to the Global South; the shifting fate of glass bottles; the efficiency of aluminum recycling; the many types of plastic and the difficulties of informed consumer choice; e-waste and technological obsolescence; and industrial waste. Finally, re-asking the question posed by John Tierney in an infamous 1996 New York Times article, “is recycling garbage?” Jørgensen argues that recycling is necessary—as both symbolic action and physical activity that has a tangible effect on the real world.

data science john kelleher: Fake Photos Hany Farid, 2019-09-10 A concise and accessible guide to techniques for detecting doctored and fake images in photographs and digital media. Stalin, Mao, Hitler, Mussolini, and other dictators routinely doctored photographs so that the images aligned with their messages. They erased people who were there, added people who were not, and manipulated backgrounds. They knew if they changed the visual record, they could change history. Once, altering images required hours in the darkroom; today, it can be done with a keyboard and mouse. Because photographs are so easily faked, fake photos are everywhere—supermarket tabloids, fashion magazines, political ads, and social media. How can we tell if an image is real or false? In this volume in the MIT Press Essential Knowledge series, Hany Farid offers a concise and accessible guide to techniques for detecting doctored and fake images in photographs and digital media. Farid, an expert in photo forensics, has spent two decades developing techniques for authenticating digital images. These techniques model the entire image-creation process in order to find the digital disruption introduced by manipulation of the image. Each section of the book describes a different technique for analyzing an image, beginning with those requiring minimal technical expertise and advancing to those at intermediate and higher levels. There are techniques for, among other things, reverse image searches, metadata analysis, finding image imperfections introduced by JPEG compression, image cloning, tracing pixel patterns, and detecting images that are computer generated. In each section, Farid describes the techniques, explains when they should be applied, and offers examples of image analysis.

data science john kelleher: Continuous Architecture in Practice Eoin Woods, Murat Erder, Pierre Pureur, 2021-05-26 Update Your Architectural Practices for New Challenges, Environments, and Stakeholder Expectations I am continuously delighted and inspired by the work of these authors. Their first book laid the groundwork for understanding how to evolve the architecture of a software-intensive system, and this latest one builds on it in some wonderfully actionable ways.

--Grady Booch, Chief Scientist for Software Engineering, IBM Research Authors Murat Erder, Pierre Pureur, and Eoin Woods have taken their extensive software architecture experience and applied it to the practical aspects of software architecture in real-world environments. *Continuous Architecture in Practice* provides hands-on advice for leveraging the continuous architecture approach in real-world environments and illuminates architecture's changing role in the age of Agile, DevOps, and cloud platforms. This guide will help technologists update their architecture practice for new software challenges. As part of the Vaughn Vernon Signature Series, this title was hand-selected for the practical, delivery-oriented knowledge that architects and software engineers can quickly apply. It includes in-depth guidance for addressing today's key quality attributes and cross-cutting concerns such as security, performance, scalability, resilience, data, and emerging technologies. Each key technique is demonstrated through a start-to-finish case study reflecting the authors' deep experience with complex software environments. Key topics include: Creating sustainable, coherent systems that meet functional requirements and the quality attributes stakeholders care about Understanding team-based software architecture and architecture as a flow of decisions Understanding crucial issues of data management, integration, and change, and the impact of varied data technologies on architecture Architecting for security, including continuous threat modeling and mitigation Architecting for scalability and resilience, including scaling microservices and serverless environments Using architecture to improve performance in continuous delivery environments Using architecture to apply emerging technologies successfully Register your book for convenient access to downloads, updates, and/or corrections as they become available. See inside book for details.

data science john kelleher: *Spaceflight* Michael J. Neufeld, 2018-10-16 A concise history of spaceflight, from military rocketry through Sputnik, Apollo, robots in space, space culture, and human spaceflight today. Spaceflight is one of the greatest human achievements of the twentieth century. The Soviets launched Sputnik, the first satellite, in 1957; less than twelve years later, the American Apollo astronauts landed on the Moon. In this volume of the MIT Press Essential Knowledge series, Michael Neufeld offers a concise history of spaceflight, mapping the full spectrum of activities that humans have developed in space. Neufeld explains that "the space program" should not be equated only with human spaceflight. Since the 1960s, unmanned military and commercial spacecraft have been orbiting near the Earth, and robotic deep-space explorers have sent back stunning images of faraway planets. Neufeld begins with the origins of space ideas and the discovery that rocketry could be used for spaceflight. He then discusses the Soviet-U.S. Cold War space race and reminds us that NASA resisted adding female astronauts even after the Soviets sent the first female cosmonaut into orbit. He analyzes the two rationales for the Apollo program: prestige and scientific discovery (this last something of an afterthought). He describes the internationalization and privatization of human spaceflight after the Cold War, the cultural influence of space science fiction, including *Star Trek* and *Star Wars*, space tourism for the ultra-rich, and the popular desire to go into space. Whether we become a multiplanet species, as some predict, or continue to call Earth home, this book offers a useful primer.

data science john kelleher: *School Choice* David R. Garcia, 2018-09-18 An accessible guide to the major issues and arguments surrounding school choice. The issues and arguments surrounding school choice are sometimes hijacked to make political points about government control, democratic ideals, the public good, and privatization. In this volume in the MIT Press Essential Knowledge series, David Garcia avoids partisan arguments to offer an accessible, objective, and comprehensive guide to school choice. He first outlines the different types of school choice, including home schooling, private schools, freedom-of-choice plans, magnet schools, charter schools, vouchers, and education savings accounts. Two themes emerge as particularly resonant in the American school choice debate: the long history of school desegregation, and debates over the roles and responsibilities of government. Is education a public good, for the collective benefit of society, or a private good, to benefit the individual? Garcia describes and evaluates the major arguments supporting school choice policies: the elimination of government bureaucracies, the introduction of

competition into education through market forces, the promotion of parental choice, and the casting of school choice as a civil right. He examines the research on the effects of school choice and summarizes general trends. Finally, he considers how school choice policies are likely to evolve. He notes that the Trump administration's Secretary of Education, Betsy DeVos, is an advocate for school choice, and that the administration's budget allocations signal a deliberate shift from long-standing federal policies that provide supplemental funding for low-income schools. Instead, new policies provide incentives for low-income families to leave public schools altogether through choice. This book will be an essential resource for participating in the debates that are sure to follow.

data science john kelleher: GPS Paul E. Ceruzzi, 2018-11-06 A concise history of GPS, from its military origins to its commercial applications and ubiquity in everyday life. GPS is ubiquitous in everyday life. GPS mapping is standard equipment in many new cars and geolocation services are embedded in smart phones. GPS makes Uber and Lyft possible; driverless cars won't be able to drive without it. In this volume in the MIT Press Essential Knowledge series, Paul Ceruzzi offers a concise history of GPS, explaining how a once-obscure space technology became an invisible piece of our infrastructure, as essential to modern life as electric power or clean water. GPS relays precise time and positioning information from orbiting satellites to receivers on the ground, at sea, and in the air. It operates worldwide, and its basic signals are free, although private companies can commodify the data provided. Ceruzzi recounts the origins of GPS and its predecessor technologies, including early aircraft navigation systems and satellites. He describes the invention of GPS as a space technology in the post-Apollo, pre-Space Shuttle years and its first military and commercial uses. Ceruzzi explains how the convergence of three major technological developments—the microprocessor, the Internet, and cellular telephony—enabled the development and application of GPS technology. Recognizing the importance of satellite positioning systems in a shifting geopolitical landscape—and perhaps doubting U.S. assurances of perpetual GPS availability—other countries are now building or have already developed their own systems, and Ceruzzi reports on these efforts in the European Union, Russia, India, China, and Japan.

data science john kelleher: Extremism J. M. Berger, 2018-08-28 This compulsively readable introduction to extremism explains how these ideologies are constructed and how they escalate, offering both historical and contemporary examples In this volume in the MIT Press Essential Knowledge series, J. M. Berger offers a nuanced introduction to the extremist movements threatening to destabilize civil societies around the globe. He explains what extremism is, how extremist ideologies are constructed, and why extremism can escalate into violence. Berger shows that although the ideological content of extremist movements varies widely, there are common structural elements. Berger describes the evolution of identity movements and individual and group radicalization, offering case studies and examples such as: • The destruction of Carthage by the Romans—often called “the first genocide” • The apocalyptic jihadism of Al Qaeda • America's new “alt-right” • The anti-Semitic conspiracy tract *The Protocols of the Elders of Zion* Berger, an expert on extremist movements and terrorism, explains that extremism arises from a perception of “us versus them,” intensified by the conviction that the success of “us” is inseparable from hostile acts against “them.” Extremism differs from ordinary unpleasantness—run-of-the-mill hatred and racism—by its sweeping rationalization of an insistence on violence. If we understand its causes and the common elements of its movements, Berger says, we will be more effective in countering it.

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skin and from sensors in muscles, tendons, and joints. The challenge for technology is to reproduce in a virtual world some of the sensations associated with physical interactions with the environment. Jones maps the building blocks of the tactile system, the receptors in the skin and the skin itself, and how information is processed at this interface with the external world. She describes haptic perception, the processing of haptic information in the brain; haptic illusions, or distorted perceptions of objects and the body itself; tactile and haptic displays, from braille to robotic systems; tactile compensation for other sensory impairments; surface haptics, which creates virtual haptic effects on physical surfaces such as touch screens; and the development of robotic and prosthetic hands that mimic the properties of human hands.

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risk-based approach as a sui generis implementation of a specific regulation model 'known as meta regulation, this book provides a recollection of the policy developments that led to the adoption of the risk-based approach in light of regulation theory and debates. It also discusses a number of salient issues pertaining to the risk-based approach, such as its rationale, scope, and meaning; the role for regulators; and its potential and limits. The book also looks at the way it has been undertaken in major statutes with a focus on key provisions, such as data protection impact assessments or accountability. Finally, the book devotes considerable attention to the notion of risk. It explains key terms such as risk assessment and management. It discusses in-depth the role of harms in data protection, the meaning of a data protection risk, and the difference between risks and harms. It also critically analyses prevalent data protection risk management methodologies and explains the most important caveats for managing data protection risks.

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