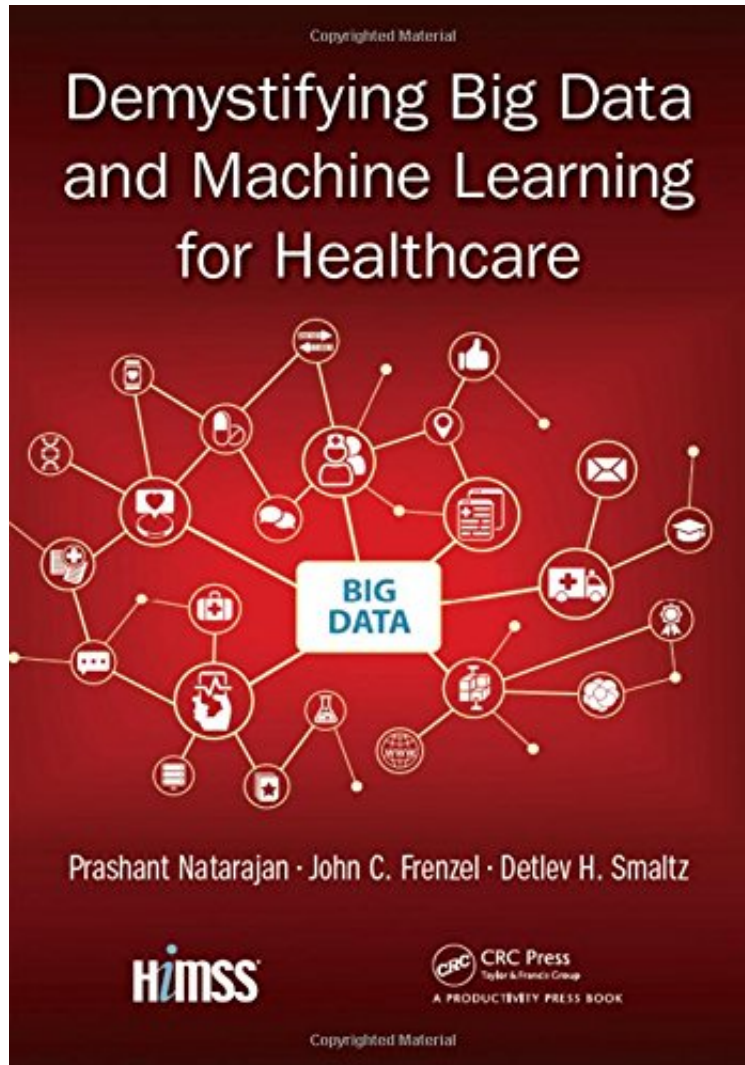


# Demystifying Big Data and Machine Learning for Healthcare (Himss Book)

Prashant Natarajan, John C. Frenzel, Detlev H. Smaltz  
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#227703 in Books CRC Press 2017-01-27Original language:English 10.00 x 7.25 x 1.00l, #File Name: 1138032638210 pagesCRC Press | File size: 40.Mb

**Prashant Natarajan, John C. Frenzel, Detlev H. Smaltz : Demystifying Big Data and Machine Learning for Healthcare (Himss Book)** before purchasing it in order to gage whether or not it would be worth my time, and all praised Demystifying Big Data and Machine Learning for Healthcare (Himss Book):

1 of 1 people found the following review helpful. I enjoyed the book and I am confident it will help ...By SriThis is what exactly the doctor ordered for advanced analytics sphere. Without such lucidly written books, advanced analytics in healthcare is at risk from issues related to hype. I enjoyed the book and I am confident it will help me in my work with Analytics1.0/3.0 strategy in my career.1 of 1 people found the following review helpful. I am very happy to have

been able to read it. By Javier Samir Rey: As an engineer in machine learning, this book seems to me that it addresses in a spectacular way all the dimensions to take into account in the construction of analytical solutions in health, there are many things that I have thought intuitively, but this book has allowed me to confirm some of my hypothesis, I am very happy to have been able to read it, it has been very useful in my work and in my passion to improve in the area of health, a great congratulation to all those who made possible its creation and publication. 1 of 1 people found the following review helpful. Final thoughts on *Demystifying Big Data* by Eric Brown: Great primer for those of us who are new to the world of big data in the healthcare domain. I was curious as to how these powerful tools apply in a clinical setting and how they can impact research to improve individual patient treatment methods and outcomes. The book goes over how tools such as Hadoop and GPU chips are used, outlines concepts such as neural networks, and highlights the use of software delivery methods such as Agile are used to implement big data solutions. The case studies were especially interesting as they highlighted across payer and provider.

Healthcare transformation requires us to continually look at new and better ways to manage insights; both within and outside the organization today. Increasingly, the ability to glean and operationalize new insights efficiently as a byproduct of an organization's day-to-day operations is becoming vital to hospitals and health systems ability to survive and prosper. One of the long-standing challenges in healthcare informatics has been the ability to deal with the sheer variety and volume of disparate healthcare data and the increasing need to derive veracity and value out of it. *Demystifying Big Data and Machine Learning for Healthcare* investigates how healthcare organizations can leverage this tapestry of big data to discover new business value, use cases, and knowledge as well as how big data can be woven into pre-existing business intelligence and analytics efforts. This book focuses on teaching you how to:

- Develop skills needed to identify and demolish big-data myths
- Become an expert in separating hype from reality
- Understand the V's that matter in healthcare and why
- Harmonize the 4 C's across little and big data
- Choose data fidelity over data quality
- Learn how to apply the NRF Framework
- Master applied machine learning for healthcare
- Conduct a guided tour of learning algorithms
- Recognize and be prepared for the future of artificial intelligence in healthcare via best practices, feedback loops, and contextually intelligent agents (CIAs)

The variety of data in healthcare spans multiple business workflows, formats (structured, un-, and semi-structured), integration at point of care/need, and integration with existing knowledge. In order to deal with these realities, the authors propose new approaches to creating a knowledge-driven learning organization-based on new and existing strategies, methods and technologies. This book will address the long-standing challenges in healthcare informatics and provide pragmatic recommendations on how to deal with them.

"Data is quickly emerging as the greatest asset of the healthcare industry. The trend in our industry is to drive many decisions supported by data. The authors have done a great job putting together the issues, challenges and benefits of adopting a long view of Big Data. It is a walk of maturity with the real gold nuggets coming in Analytics 3.0 and beyond. This will not be solved with a product or purchased off the shelf. Big Data needs to be part of the DNA of an organization. Thanks to the authors for putting this together for us." Chris Belmont, MBA Vice President and Chief Information Officer MD Anderson Cancer Center

"Intelligent decisions are best made with data that gives us rich context and a fuller view of all parameters and possibilities. However, how do we not drown in all this data? How do we generate? How do we stay afloat, swim, and surfharnessing the tremendous power of this valuable resource? The authors attempt successfully to separate myth from reality with regard to the potential for big data and machine learning in healthcare. Great read!" Rasu B. Shrestha, MD, MBA Chief Innovation Officer, UPMC Executive Vice President, UPMC Enterprises

"This book is a must-read for any provider of healthcare services interested in practical recommendations and best practices about leveraging big data in its many ways and formats. The authors draw on their extensive practical experience to separate myths from realities and provide useful insights into the handling of the related challenges through the usage of real-world case studies." Prof. Dr. Diego Kuonen CEO and CAO, Statoo Consulting, Switzerland Professor of Data Science, University of Geneva, Switzerland

"Big data has become so ubiquitous a term that its use conveys very little of value, particularly in healthcare. For those who want to actually understand this exciting area in meaningful way and how in turn it can add considerable value to their organization's success, I would strongly recommend this book." Jonathan Sheldon, PhD Global Vice President, Healthcare Oracle Health Sciences

"As the leader of analytics at a large national IDN of primarily community hospitals, our "small data" analytic needs alone can seem overwhelming at times. At the same time, we are seeing the greater value of advanced analytics and beginning to realize the promise of machine learning predictive algorithms. We are admittedly just beginning our journey into true "big-data" use cases, and I found this book to be an extremely useful overview of big-data and machine-learning analytic techniques and applications in healthcare. The book is written in an engaging format with simple definitions and descriptions leading to real-world applications. I recommend this book for healthcare leaders interested in a book that cuts through the hype of big data and effectively compiles the vast landscape of big-data analytic topics and terminologies into a single, practical volume." Nick T. Scartz Corporate Chief Analytics Officer, Adventist Health System

"Payers not the least of which are Medicare and

Medicaidare demanding better value. Stuck with one foot in the past, policy makers think we might cut our way out of spiraling health costs. At the same time, Congress and the Administration are aggressively moving to at-risk, value-based models. Reimbursement economics has never been quite so precarious. It is into this environment the authors insert important new insights, with key takeaways and action steps. Big data and machine learning are transforming how real-world evidence is collected and leveraged to enable data-driven transparency, collaboration, and improved patient outcomes. Written for a broad audience of healthcare stakeholders, this "first of its kind" book offers illuminating strategies, concepts, and best practices. The authors write in remarkably jargon-free language that makes this book an engaging and thought-provoking read for non-technical and technical readers alike. Highly recommended for those seeking not just to stay afloat, but to operationalize strategies and succeed in the new world of value-based care." Joel White President, Council for Affordable Health Coverage Co-author, Facts and Figures on Government Finance "This is the book that finally brings together in one volume the definitions and tools to understand big data, AI, and machine learning for the busy clinician, hospital administrator, or policy maker without requiring them to go back to school and take a graduate-level course curriculum to learn." Oscar Streeter, Jr., MD, FACRO Chief Medical Scientific Officer, CA Division of American Cancer Society Radiation Oncologist, The Center for Thermal Oncology "The discipline of managing and analyzing big data continues to evolve at a rapid pace. The authors do a solid job of recognizing this growing complexity and offering an accessible introduction to the discipline in its increasing breadth. Presented is a discussion of both the art and science of big data; including the different sub-classes of big-data management and analysis, approaches to solve each challenge, and how these challenges map to healthcare problems of importance. Highly recommended for healthcare leaders interested in data-intensive advances for care delivery." Zeeshan Syed, MD, PhD Director, Clinical Inference and Algorithms Program, Stanford Health Care Clinical Associate Professor, Stanford University School of Medicine "It's my belief that the next dimension of clinical research and precision medicine will be built off the ability to not only access the vast amounts of data available but to be able to identify and quickly assess the valuable insights buried within. This book does a great job providing the perspective needed in practical terms to understand how far we've come and where we are in the access to and use of big data. It's a must read for those from health-care providers to data scientists looking to understand the tremendous potential and practical applications that machine learning and advanced analytics can and will bring. We have truly come to a point where health care has exceeded the capabilities of an individual person and must be augmented with machines that allow us to understand and apply health care appropriately. I strongly recommend this book to those who plan to be part of the analytically driven health-care environment." Matt Gross Chief Solutions Officer, Duke Clinical Research Institute Former Director of the Health and Life Sciences Global Practice, SAS "A comprehensive, timely, and truly invigorating book about machine learning, artificial intelligence, and big data in health care. These are topics that are shaping research and the practice of medicine today. The authors show us the promise and potential pitfalls of this important topic and how this information will shape our future. Enjoyable and understandable you will not need an MD or degree in computer science to gain a deep understanding of the future of big data and AI in healthcare. The handy "Common Uses in Healthcare" sections in Chapter 7 drive home the saliency of the topics. A must read for health-care providers and patients alike." Phillip J. Beron, MD Assistant Professor, Department of Radiation Oncology David Geffen School of Medicine at UCLA "This is a deep dive into Big Data and Machine Learning for healthcare, yet these complex and challenging topics are made clear and comprehensible in this engaging exposition. It is a must-read for those who wish to understand these dominant forces that are rapidly reshaping medicine and to learn how best to apply them to their own healthcare enterprise." Pratik Mukherjee, MD, PhD Professor, UCSF School of Medicine "Learning algorithms are as essential for extracting information from big data as a transmission is for a car to leverage the horsepower created by an engine. These algorithms have the potential for revolutionizing the healthcare industry by identifying new patterns and information in data, continuously adjusting themselves to changes, automating many aspects of big-data analysis, and operationalizing information extracted from big data. This book demystifies machine learning algorithms by providing a solid overview of the state of the art and by presenting the relationship of big data and machine learning algorithms. The authors describe how machine learning can be used in the healthcare industry to support physicians' decisions, to improve the quality of care, and to detect new trends in healthcare data. This book is a must-read for healthcare professionals who are entering the new world of big-data analysis." Michael Sassin, Dr. techn. Director of Software Development, GBU Architecture Oracle "The future of healthcare will be built on the back of data. Organizations that don't acknowledge and prepare for this are going to be left behind. This book serves as the perfect foundation for organizations that want to make sure they're prepared for that data-driven future. What makes this book particularly excellent is that it does a great job acknowledging past experiences and infrastructure, providing practical applications of what can be done today, and then looks to the future of where big data and machine learning are headed. The cherry on top are the case studies where they show how the concepts are working in actual healthcare situations." John Lynn (@techguy) Founder of HealthcareScene.com "Global healthcare challenges and trends such as aging populations, increasing costs, patient engagement, ubiquitous devices and sensors, personalized medicine, changing reimbursement and economic models demand a new approach to informatics. This approaching tsunami of data, including clinical,

financial, genomic, wearable, and device- and patient-generated data will overwhelm any clinician, patient, or researcher, as well as any traditional decision-making system. Machine learning and AI are going to be critical components of these new models, and this book will serve as a solid foundation for anyone attempting to rise to this challenge." Steve Jepsen Vice President, Healthcare Integration Services Global HealthSuite Lab Lead Healthcare Transformation Services, Philips

Prashant Natarajan Iyer is Product Director of Healthcare Solutions at Oracle in the Health Sciences Global Business Unit. He has portfolio responsibility for precision medicine, population health, translational research, and convergence products. He is passionate about helping healthcare organizations maximize their technology investments to improve patient care, provider satisfaction, personal wellness, and health policy. Prior to joining Oracle in 2008, Prashant contributed in progressive career roles as product manager, emerging technologies specialist, and consultant at Healthways, McKesson, Siemens, and eCredit.com. Prashant received his master's degree in technical communications and linguistics from Auburn University (2005) and his undergraduate degree in chemical engineering from Mangalore University (1999). He is also a Stanford Certified Project Manager. Prashant is author or contributing author of three books on healthcare informatics, including this one. Others are *Multi-Disciplinary Approach to Head and Neck Cancer* (2017) and *Implementing BI in your Healthcare Organization* (2012). Prashant is Industry Advisor for Data Science and AI at UCSF/Center for Imaging of Neurodegenerative Disease in the San Francisco VA Center. He volunteers on the Board of Advisors for the Council for Affordable Health Coverage, Washington DC, and is currently serving as Co-Chair of HIMSS North America's Innovation Committee. Prashant lives in Livermore, CA, with his wife, Vishnu; daughter, Shivani; and Australian Cattle Dog, Simba.

John Frenzel, MD, is the Chief Medical Informatics Officer at MD Anderson Cancer Center and a Professor in the Department of Anesthesiology and Perioperative Medicine. He received his medical degree from Baylor College of Medicine and completed his fellowship training in Cardiovascular and Thoracic Anesthesia at the Mayo Clinic in Rochester, Minnesota. In 2001, he received a Master's Degree in Informatics from the University of Texas Health Science Center Houston, School of Information Science. Dr. Frenzel has been active in applied Informatics throughout his career at MD Anderson. In addition to several clinical leadership roles, in 2010 he was asked to lead the development and installation of MD Anderson's third-generation Clinical Data Warehouse, which sought to bring together all institutional clinical and genomic data. In 2012, he was asked to help lead the Institution's effort to install the Epic EHR and integrate clinical data back into the institutional warehouse. John has published on various topics pertaining to clinical informatics. He is currently focused on the use of Time-Driven Activity-Based Costing (TDABC) to drive hospital revenue process optimization and labor costing efforts in preparation for bundled payments in oncology care. He is Board certified in both Anesthesiology and Informatics. John lives in Houston, Texas.

Herb Smaltz is the Founder, President, and CEO of CIO Consult, LLC, a strategic IT consulting firm. Prior to founding CIO Consult, Herb founded Health Care DataWorks, a healthcare business intelligence software company that earned the distinction of being a Gartner "Cool Vendor" prior to being acquired in 2015. Prior to his consulting and entrepreneurial career, Herb served as the CIO of the Ohio State University Wexner Medical Center, a \$1.7B, six-hospital academic medical center comprising more than 1100 beds and over 13,000 FTEs. Herb has over 25 years of experience in healthcare management, with all but four of those years as CIO/CKO at various sized organizations including a 20-bed community hospital, a 300-bed tertiary referral medical center, an 1100-bed tertiary referral medical center, a five-state region, a seven-country international region; and at the corporate headquarters of a \$6.2B globally distributed integrated delivery system. Herb is a Fellow of the Healthcare Information Management Systems Society (FHIMSS) and has served on the HIMSS Board of Directors from 2002–2005 and as the HIMSS 2004–2005 BOD Vice Chair. In addition, he is a Fellow in the American College of Healthcare Executives (FACHE). His recent publications include *Information Systems for Healthcare Management*, 8th Edition, with Gerald Glandon and Donna Slovensky; *The Healthcare Information Technology Planning Fieldbook*, with George "Buddy" Hickman; *The Executives' Guide to Electronic Health Records*, with Eta S. Berner; and *The CEO-CIO Partnership: Harnessing the Value of Information Technology in Healthcare*, Smaltz, D., Glaser, J., Skinner, R., and Cunningham, T., III, eds.