Ethics Medicine And Information Technology Intelligent Machines And The Transformation Of Health Care

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Ethics of Artificial Intelligence S. Matthew Liao 2020 Should a self-driving car prioritize the lives of the passengers over the lives of pedestrians? Should we as a society develop autonomous weapon systems that are capable of identifying and attacking a target without human intervention? What happens when AIs become smarter and more capable than us? Could they have greater than human moral status? Can we prevent superintelligent AIs from harming us or causing our extinction? At a critical time in this fast-moving debate, thirty leading academics and researchers at the forefront of AI technology development come together to explore these existential questions, including Aaron James (UC Irvine), Allan Dafoe (Oxford), Andrea Loreggia (Padova), Andrew Critch (UC Berkeley), Azim Shariff (Univ. .

Clinical Decision Support Systems Eta S. Berner 2016-07-26 Building on the success of the previous editions, this fully updated book once again brings together worldwide experts to illustrate the underlying science and day-to-day use of decision support systems in clinical and educational settings. Topics discussed include: -Mathematical Foundations of Decision Support Systems -Design and Implementation Issues -Ethical and Legal Issues in Decision Support -Clinical Trials of Information Interventions -Hospital-Based Decision Support -Real World Case Studies

Ethics, Computing, and Medicine Kenneth W. Goodman 1998 Identifies and addresses the ethical issues that arise when intelligent machines are used in health professions.

The Cambridge Handbook of Information and Computer Ethics Luciano Floridi 2010-04-15 Information and Communication Technologies (ICTs) have profoundly changed many aspects of life, including the nature of entertainment, work, communication, education, healthcare, industrial production and business, social relations and conflicts. They have had a radical and widespread impact on our moral lives and hence on contemporary ethical debates. The Cambridge Handbook of Information and Computer Ethics, first published in 2010, provides an ambitious and authoritative introduction to the field, with discussions of a range of topics including privacy, ownership, freedom of speech, responsibility, technological determinism, the digital divide, cyber warfare, and online pornography. It offers an accessible and thoughtful survey of the transformations brought about by ICTs and their implications for the future of human life and society, for the evaluation of behaviour, and for the evolution of moral values and rights. It will be a valuable book for all who are interested in the ethical aspects of the information society in which we live.

Films from the Future Andrew Maynard 2018-11-15 "Deftly shows how a seemingly frivolous film genre can guide us in shaping tomorrow's world." —Seth Shostak, senior astronomer, SETI Institute Artificial intelligence, gene manipulation, cloning, and interplanetary travel are all ideas that seemed like fairy tales but a few years ago. And now their possibilities are very much here. But are we ready to handle these advances? This book, by a physicist and expert on responsible technology development, reveals how science fiction movies can help us think about and prepare for the social consequences of technologies we don't yet have, but that are coming faster than we imagine. Films from the Future looks at twelve movies that take us on a journey through the worlds of biological and genetic manipulation, human enhancement, cyber technologies, and nanotechnology. Readers will gain a broader understanding of the complex relationship between science and society. The movies mix old and new, and the familiar and unfamiliar, to provide a unique, entertaining, and ultimately transformative take on the power of emerging technologies, and the responsibilities they come with.

The Fourth Industrial Revolution Klaus Schwab 2017 Between the 18th and 19th centuries, Britain experienced massive leaps in technological, scientific, and economical advancement

Public Health Informatics and Information Systems J.A. Magnuson 2013-11-29 This revised edition covers all aspects of public health informatics and discusses the creation and management of an information technology infrastructure that is essential in linking state and local organizations in their efforts to gather data for the surveillance and prevention. Public health officials will have to understand basic principles of information resource management in order to make the appropriate technology choices that will guide the future of their organizations. Public health continues to be at the forefront of modern medicine, given the importance of implementing a population-based health approach and to addressing chronic health conditions. This book provides informatics principles and examples of practice in a public health context. In doing so, it clarifies the ways in which newer information technologies will improve individual and community health status. This book's primary purpose is to consolidate key information and promote a strategic approach to information systems and development, making it a resource for use by faculty and students of public health, as well as the practicing public health professional. Chapter highlights include: The Governmental and Legislative Context of Informatics; Assessing the Value of Information Systems; Ethics, Information Technology, and Public Health; and Privacy, Confidentiality, and Security. Review questions are featured at the end of every chapter. Aside from its use for public health professionals, the book will be used by schools of public health, clinical and public health nurses and students, schools of social work, allied health, and environmental sciences.

Guidance for Healthcare Ethics Committees D. Micah Hester 2022-01-31 "In 1992, The Joint Commission on Hospital Accreditation (The Joint Commission) began

requiring every accredited hospital to have a mechanism to handle ethical concerns within its institution. In response to this (and other cultural forces in medicine), hospitals across America have come to satisfy the requirement by constituting an institutional Healthcare Ethics Committee (HEC)1. Physicians, nurses, administrators, social workers, chaplains, community volunteers and others populate these committees. Yet by their own admission, many of these individuals, while well intentioned and personally invested, have neither training in ethics nor have the tools at their disposal to aid in their ethical considerations. Even more basically, many members of an HEC, not to mention a healthcare institution writ-large, are comfortable explaining what constitutes an ethical consideration. So, while these individuals are the people both medical professionals and patients turn to for ethical insight into the complexities of medical decision-making, they themselves recognize that they are often underprepared to handle the depth and complexity of many moral2 problems raised by health care"--

Big Data, Health Law, and Bioethics I. Glenn Cohen 2018-03-08 When data from all aspects of our lives can be relevant to our health - from our habits at the grocery store and our Google searches to our FitBit data and our medical records - can we really differentiate between big data and health big data? Will health big data be used for good, such as to improve drug safety, or ill, as in insurance discrimination? Will it disrupt health care (and the health care system) as we know it? Will it be possible to protect our health privacy? What barriers will there be to collecting and utilizing health big data? What role should law play, and what ethical concerns may arise? This timely, groundbreaking volume explores these questions and more from a variety of perspectives, examining how law promotes or discourages the use of big data in the health care sphere, and also what we can learn from other sectors.

Machine Learning and the Internet of Medical Things in Healthcare Krishna Kant Singh 2021-04-26 Machine Learning and the Internet of Medical Things in Healthcare discusses the applications and challenges of machine learning for healthcare applications. The book provides a platform for presenting machine learning-enabled healthcare techniques and offers a mathematical and conceptual background of the latest technology. It describes machine learning techniques along with the emerging platform of the Internet of Medical Things used by practitioners and researchers worldwide. The book includes deep feed forward networks, regularization, optimization algorithms, convolutional networks, sequence modeling, and practical methodology. It also presents the concepts of the Internet of Things, the set of technologies that develops traditional devices into smart devices. Finally, the book offers research perspectives, covering the convergence of machine learning and IoT. It also presents the application of these technologies in the development of healthcare frameworks. Provides an introduction to the Internet of Medical Things through the principles and applications of machine learning Explains the functions and applications of machine learning in various applications such as ultrasound imaging, biomedical signal processing, robotics, and biomechatronics Includes coverage of the evolution of healthcare applications with machine learning, including Clinical Decision Support Systems, artificial intelligence in biomedical engineering, and AI-enabled connected health informatics, supported by real-world case studies

The Oxford Handbook of Ethics of AI Markus Dirk Dubber 2020 This interdisciplinary and international handbook captures and shapes much needed reflection on normative frameworks for the production, application, and use of artificial intelligence in all spheres of individual, commercial, social, and public life.

Artificial Intelligence in Medicine David Riaño 2019-06-19 This book constitutes the refereed proceedings of the 17th Conference on Artificial Intelligence in Medicine, AIME 2019, held in Poznan, Poland, in June 2019. The 22 revised full and 31 short papers presented were carefully reviewed and selected from 134 submissions. The papers are organized in the following topical sections: deep learning; simulation; knowledge representation; probabilistic models; behavior monitoring; clustering, natural language processing, and decision support; feature selection; image processing; general machine learning; and unsupervised learning.

Rhetoric and Ethics in the Cybernetic Age Jeff Pruchnic 2013-08-15 It has become increasingly difficult to ignore the ways that the centrality of new media and technologies – from the global networking of information systems and social media to new possibilities for altering human genetics – seem to make obsolete our traditional ways of thinking about ethics and persuasive communication inherited from earlier humanist paradigms. This book argues that rather than devoting our critical energies towards critiquing humanist touchstones, we should instead examine the ways in which media and technologies have always worked as crucial cultural forces in shaping ethics and rhetoric. Pruchnic combines this historical itinerary with critical interrogations of diverse cultural and technological sites – the logic of video games and artificial intelligence, the ethics of life extension in contemporary medicine, the transition to computer-automated trading in world stock markets, the state of critical theory in the contemporary humanities – along with innovative analyses of the works of such figures as the Greek Sophists, Kenneth Burke, Martin Heidegger, Michel Foucault, Friedrich Nietzsche, and Gilles Deleuze. This book argues that our best strategies for crafting persuasive communication and producing ethical relations between individuals will be those that creatively replicate and appropriate, rather than resist, the logics of dominant forms of media and technology.

Machine Ethics Michael Anderson 2011-05-09 The new field of machine ethics is concerned with giving machines ethical principles, or a procedure for discovering a way to resolve the ethical dilemmas they might encounter, enabling them to function in an ethically responsible manner through their own ethical decision making. Developing ethics for machines, in contrast to developing ethics for human beings who use machines, is by its nature an interdisciplinary endeavor. The essays in this volume represent the first steps by philosophers and artificial intelligence researchers toward explaining why it is necessary to add an ethical dimension to machines that function autonomously, what is required in order to add this dimension, philosophical and practical challenges to the machine ethics project, various approaches that could be considered in attempting to add an ethical dimension to machines, work that has been done to date in implementing these approaches, and visions of the future of machine ethics research.

Medical Harm Virginia Ashby Sharpe 1998-02-13 A broad interdisciplinary analysis of the phenomenon of medically-induced illness and injury.

Artificial Intelligence in Healthcare Adam Bohr 2020-06-21 Artificial Intelligence (AI) in Healthcare is more than a comprehensive introduction to artificial intelligence as a tool in the generation and analysis of healthcare data. The book is split into two sections where the first section describes the current healthcare challenges and the rise of AI in this arena. The ten following chapters are written by specialists in each area, covering the whole healthcare ecosystem. First, the AI applications in drug design and drug development are presented followed by its applications in the field of cancer diagnostics, treatment and medical imaging.

Subsequently, the application of AI in medical devices and surgery are covered as well as remote patient monitoring. Finally, the book dives into the topics of security, privacy, information sharing, health insurances and legal aspects of AI in healthcare. Highlights different data techniques in healthcare data analysis, including machine learning and data mining Illustrates different applications and challenges across the design, implementation and management of intelligent systems and healthcare data networks Includes applications and case studies across all areas of AI in healthcare data

Ethics and Epidemiology Steven S. Coughlin 2021-07-02 Since its first publication in 1996, Ethics and Epidemiology has been an invaluable resource for practicing public health professionals and MPH students around the world. This third edition presents an international perspective of prominent epidemiologists, ethicists, and legal scholars to address important ethical developments in epidemiology and related public health fields from the last decade, including the rise of public health ethics and the complex inter-relations between professional ethics in epidemiology, public health ethics, and research ethics. Ethics and Epidemiology, Third Edition is organized topically and divided into four parts covering "Foundations," "Key Values and Principles," "Methods," and "Issues." New or updated chapters include ethical issues in public health practice, ethical issues in genetic epidemiology, and ethical issues in international health research and epidemiology. Now updated with timely global examples, Ethics and Epidemiology, Third Edition provides an in-depth account to the theoretical and practical moral problems confronting public health students and professionals and offers guidance for how justified moral conclusions can be reached.

The Handbook of Information and Computer Ethics Kenneth E. Himma 2008-06-09 This handbook provides an accessible overview of the most important issues in information and computer ethics. It covers: foundational issues and methodological frameworks; theoretical issues affecting property, privacy, anonymity, and security; professional issues and the information-related professions; responsibility issues and risk assessment; regulatory issues and challenges; access and equity issues. Each chapter explains and evaluates the central positions and arguments on the respective issues, and ends with a bibliography that identifies the most important supplements available on the topic.

Machine Learning in Cardiovascular Medicine Subhi J. Al'Aref 2020-11-20 Machine Learning in Cardiovascular Medicine addresses the ever-expanding applications of artificial intelligence (AI), specifically machine learning (ML), in healthcare and within cardiovascular medicine. The book focuses on emphasizing ML for biomedical applications and provides a comprehensive summary of the past and present of AI, basics of ML, and clinical applications of ML within cardiovascular medicine for predictive analytics and precision medicine. It helps readers understand how ML works along with its limitations and strengths, such that they can could harness its computational power to streamline workflow and improve patient care. It is suitable for both clinicians and engineers; providing a template for clinicians to understand areas of application of machine learning within cardiovascular research; and assist computer scientists and engineers in evaluating current and future impact of machine learning on cardiovascular medicine. Provides an overview of machine learning, both for a clinical and engineering audience Summarize recent advances in both cardiovascular medicine and artificial intelligence Discusses the advantages of using machine learning for outcomes research and image processing Addresses the ever-expanding application of this novel technology and discusses some of the unique challenges

associated with such an approach

Economy and State Nina Bandelj 2013-05-08 Should governments be involved in economic affairs? Challenging prevailing wisdom about the benefits of self-regulating markets, Nina Bandelj and Elizabeth Sowers offer a uniquely sociological perspective to emphasize that states can never be divorced from economy. From defining property rights and regulating commodification of labor to setting corporate governance standards and international exchange rules, the state continuously manages the functioning of markets and influences economic outcomes for individuals, firms and nations. The authors bring together classical interventions and cutting-edge contemporary research in economic sociology to discuss six broad areas of economy/state connection: property, money, labor, firms, national economic growth, and global economic exchange. A wealth of empirical examples and illustrations reveals that even if the nature of state influence on economy varies across contexts, it is always dependent on social forces. This accessible and engaging book will be essential reading for upper-level students of economic sociology, and those interested in the major economic dilemmas of our times. .

Gerontechnology José García-Alonso 2019-04-13 This book constitutes the thoroughly refereed post-conference proceedings of the First International Workshop on Gerotechnology, IWoG 2018, held in Cáceres, Spain on December 14, 2018, and in Évora, Portugal, on December 17, 2018. The 24 revised full papers along with 8 short papers presented were carefully reviewed and selected from 71 submissions.The papers are organized in topical sections on knowledge management for health: context, cognition, behavior and user modeling; technologies to increase the quality of life of the elderly population; Internet of Things (IoT); smarts technologies and algorithms for health; monitoring and management of chronic and non-chronic diseases;solutions for active aging, social integration and self-care; health interventions to support caregivers of elderly people; public health initiatives.

Information Technology and Moral Philosophy Jeroen van den Hoven 2009-11-23 This book gives an in-depth philosophical analysis of moral problems to which information technology gives rise, for example, problems related to privacy, intellectual property, responsibility, friendship, and trust, with contributions from many of the best-known philosophers writing in the area.

Robot Ethics 2. 0 Keith Abney 2017 The robot population is rising on Earth and other planets. (Mars is inhabited entirely by robots.) As robots slip into more domains of human life--from the operating room to the bedroom--they take on our morally important tasks and decisions, as well as create new risks from psychological to physical. This makes it all the more urgent to study their ethical, legal, and policy impacts. To help the robotics industry and broader society, we need to not only press ahead on a wide range of issues, but also identify new ones emerging as quickly as the field is evolving. For instance, where military robots had received much attention in the past (and are still controversial today), this volume looks toward autonomous cars here as an important case study that cuts across diverse issues, from liability to psychology to trust and more. And because robotics feeds into and is fed by AI, the Internet of Things, and other cognate fields, robot ethics must also reach into those domains, too. Expanding these discussions also means listening to new voices; robot ethics is no longer the concern of a handful of scholars. Experts from different academic disciplines and geographical areas are now playing vital roles in shaping ethical, legal, and policy discussions worldwide. So, for a more complete study, the editors of this volume look beyond the usual suspects for the

latest thinking. Many of the views as represented in this cutting-edge volume are provocative--but also what we need to push forward in unfamiliar territory.

The SAGE Handbook of Health Care Ethics Ruth Chadwick 2011-02-07 The SAGE Handbook of Healthcare Ethics is an influential collection of work by leading scholars on the fundamental and emerging themes which define healthcare ethics. This authoritative Handbook brings together experts with backgrounds in philosophy, sociology, law, public policy and the health professions and reflects the increasing impact of globalization and the dynamic advances in the fields of bioscience and genetics, which keep ethics at the centre of debates about the future direction of healthcare. Combining international and interdisciplinary perspectives, the Handbook provides a cutting-edge account of debates in five key areas: Health Care Ethics in an Era of Globalization Beginning and End of Life Vulnerable Populations Research Ethics and Technologies Public Health and Human Rights

The Ethical Algorithm Michael Kearns 2019-10-04 Over the course of a generation, algorithms have gone from mathematical abstractions to powerful mediators of daily life. Algorithms have made our lives more efficient, more entertaining, and, sometimes, better informed. At the same time, complex algorithms are increasingly violating the basic rights of individual citizens. Allegedly anonymized datasets routinely leak our most sensitive personal information; statistical models for everything from mortgages to college admissions reflect racial and gender bias. Meanwhile, users manipulate algorithms to "game" search engines, spam filters, online reviewing services, and navigation apps. Understanding and improving the science behind the algorithms that run our lives is rapidly becoming one of the most pressing issues of this century. Traditional fixes, such as laws, regulations and watchdog groups, have proven woefully inadequate. Reporting from the cutting edge of scientific research, The Ethical Algorithm offers a new approach: a set of principled solutions based on the emerging and exciting science of socially aware algorithm design. Michael Kearns and Aaron Roth explain how we can better embed human principles into machine code - without halting the advance of data-driven scientific exploration. Weaving together innovative research with stories of citizens, scientists, and activists on the front lines, The Ethical Algorithm offers a compelling vision for a future, one in which we can better protect humans from the unintended impacts of algorithms while continuing to inspire wondrous advances in technology.

The Ethics of Information Technologies Keith W Miller 2020-08-14 This volume collects key influential papers that have animated the debate about information computer ethics over the past three decades, covering issues such as privacy, online trust, anonymity, values sensitive design, machine ethics, professional conduct and moral responsibility of software developers. These previously published articles have set the tone of the discussion and bringing them together here in one volume provides lecturers and students with a one-stop resource with which to navigate the debate.

Machine Ethics and Robot Ethics Wendell Wallach 2020-09-10 Once the stuff of science fiction, recent progress in artificial intelligence, robotics, and machine learning means that these rapidly advancing technologies are finally coming into widespread use within everyday life. Such rapid development in these areas also brings with it a host of social, political and legal issues, as well as a rise in public concern and academic interest in the ethical challenges these new technologies pose. This volume is a collection of scholarly work from leading figures in the development of both robot ethics and machine ethics; it includes essays of historical significance which have become foundational for research in these two new areas of study, as well as important recent articles. The research articles selected focus on the control and governance of computational systems; the exploration of ethical and moral theories using software and robots as laboratories or simulations; inquiry into the necessary requirements for moral agency and the basis and boundaries of rights; and questions of how best to design systems that are both useful and morally sound. Collectively the articles ask what the practical ethical and legal issues, arising from the development of robots, will be over the next twenty years and how best to address these future considerations.

Deep Learning for Coders with fastai and PyTorch Jeremy Howard 2020-06-29 Deep learning is often viewed as the exclusive domain of math PhDs and big tech companies. But as this hands-on guide demonstrates, programmers comfortable with Python can achieve impressive results in deep learning with little math background, small amounts of data, and minimal code. How? With fastai, the first library to provide a consistent interface to the most frequently used deep learning applications. Authors Jeremy Howard and Sylvain Gugger, the creators of fastai, show you how to train a model on a wide range of tasks using fastai and PyTorch. You'll also dive progressively further into deep learning theory to gain a complete understanding of the algorithms behind the scenes. Train models in computer vision, natural language processing, tabular data, and collaborative filtering Learn the latest deep learning techniques that matter most in practice Improve accuracy, speed, and reliability by understanding how deep learning models work Discover how to turn your models into web applications Implement deep learning algorithms from scratch Consider the ethical implications of your work Gain insight from the foreword by PyTorch cofounder, Soumith Chintala

Machine Medical Ethics Simon Peter van Rysewyk 2016-09-17 The essays in this book, written by researchers from both humanities and science, describe various theoretical and experimental approaches to adding medical ethics to a machine, what design features are necessary in order to achieve this, philosophical and practical questions concerning justice, rights, decision-making and responsibility in medical contexts, and accurately modeling essential physician-machine-patient relationships. In medical settings, machines are in close proximity with human beings: with patients who are in vulnerable states of health, who have disabilities of various kinds, with the very young or very old and with medical professionals. Machines in these contexts are undertaking important medical tasks that require emotional sensitivity, knowledge of medical codes, human dignity and privacy. As machine technology advances, ethical concerns become more urgent: should medical machines be programmed to follow a code of medical ethics? What theory or theories should constrain medical machine conduct? What design features are required? Should machines share responsibility with humans for the ethical consequences of medical actions? How ought clinical relationships involving machines to be modeled? Is a capacity for empathy and emotion detection necessary? What about consciousness? This collection is the first book that addresses these 21st-century concerns.

Ethics, Medicine, and Information Technology

Machine Law, Ethics, and Morality in the Age of Artificial Intelligence Thompson, Steven John 2021-03-18 Machines and computers are becoming increasingly sophisticated and self-sustaining. As we integrate such technologies into our daily lives, questions concerning moral integrity and best practices arise. A changing world requires renegotiating our current set of standards. Without best practices to guide interaction and use with these complex machines, interaction with

them will turn disastrous. Machine Law, Ethics, and Morality in the Age of Artificial Intelligence is a collection of innovative research that presents holistic and transdisciplinary approaches to the field of machine ethics and morality and offers up-to-date and state-of-the-art perspectives on the advancement of definitions, terms, policies, philosophies, and relevant determinants related to human-machine ethics. The book encompasses theory and practice sections for each topical component of important areas of human-machine ethics both in existence today and prospective for the future. While highlighting a broad range of topics including facial recognition, health and medicine, and privacy and security, this book is ideally designed for ethicists, philosophers, scientists, lawyers, politicians, government lawmakers, researchers, academicians, and students. It is of special interest to decision- and policy-makers concerned with the identification and adoption of human-machine ethics initiatives, leading to needed policy adoption and reform for human-machine entities, their technologies, and their societal and legal obligations.

Machine Medical Ethics Simon Peter van Rysewyk 2014-09-05 The essays in this book, written by researchers from both humanities and science, describe various theoretical and experimental approaches to adding medical ethics to a machine, what design features are necessary in order to achieve this, philosophical and practical questions concerning justice, rights, decision-making and responsibility in medical contexts, and accurately modeling essential physician-machine-patient relationships. In medical settings, machines are in close proximity with human beings: with patients who are in vulnerable states of health, who have disabilities of various kinds, with the very young or very old and with medical professionals. Machines in these contexts are undertaking important medical tasks that require emotional sensitivity, knowledge of medical codes, human dignity and privacy. As machine technology advances, ethical concerns become more urgent: should medical machines be programmed to follow a code of medical ethics? What theory or theories should constrain medical machine conduct? What design features are required? Should machines share responsibility with humans for the ethical consequences of medical actions? How ought clinical relationships involving machines to be modeled? Is a capacity for empathy and emotion detection necessary? What about consciousness? This collection is the first book that addresses these 21st-century concerns.

Biomedical Informatics Edward H. Shortliffe 2021-05-31 This 5th edition of this essential textbook continues to meet the growing demand of practitioners, researchers, educators, and students for a comprehensive introduction to key topics in biomedical informatics and the underlying scientific issues that sit at the intersection of biomedical science, patient care, public health and information technology (IT). Emphasizing the conceptual basis of the field rather than technical details, it provides the tools for study required for readers to comprehend, assess, and utilize biomedical informatics and health IT. It focuses on practical examples, a guide to additional literature, chapter summaries and a comprehensive glossary with concise definitions of recurring terms for self-study or classroom use. Biomedical Informatics: Computer Applications in Health Care and Biomedicine reflects the remarkable changes in both computing and health care that continue to occur and the exploding interest in the role that IT must play in care coordination and the melding of genomics with innovations in clinical practice and treatment. New and heavily revised chapters have been introduced on human-computer interaction, mHealth, personal health informatics and precision medicine, while the structure of the other chapters has

undergone extensive revisions to reflect the developments in the area. The organization and philosophy remain unchanged, focusing on the science of information and knowledge management, and the role of computers and communications in modern biomedical research, health and health care.

Artificial Intelligence for a Better Future Bernd Carsten Stahl 2021-03-17 This open access book proposes a novel approach to Artificial Intelligence (AI) ethics. AI offers many advantages: better and faster medical diagnoses, improved business processes and efficiency, and the automation of boring work. But undesirable and ethically problematic consequences are possible too: biases and discrimination, breaches of privacy and security, and societal distortions such as unemployment, economic exploitation and weakened democratic processes. There is even a prospect, ultimately, of super-intelligent machines replacing humans. The key question, then, is: how can we benefit from AI while addressing its ethical problems? This book presents an innovative answer to the question by presenting a different perspective on AI and its ethical consequences. Instead of looking at individual AI techniques, applications or ethical issues, we can understand AI as a system of ecosystems, consisting of numerous interdependent technologies, applications and stakeholders. Developing this idea, the book explores how AI ecosystems can be shaped to foster human flourishing. Drawing on rich empirical insights and detailed conceptual analysis, it suggests practical measures to ensure that AI is used to make the world a better place.

Total Exposure Health Kirk A. Phillips 2020-05-15 This book provides a comprehensive overview of the concept of "Total Exposure Health" and presents details on subject areas which make up the framework. It provides in-depth coverage of the science and technology supporting exposure and risk assessment. This includes advances in toxicology and the "-omics" as well as new techniques for exposure assessment. The book concludes with a discussion on bioethics implications, including ethical considerations related to genetic testing. ⬝ Discusses advances in exposure monitoring Presents a systems biology approach to human exposures Examines how overall well-being translates to worker productivity Considers the link between work-related risk factors and health conditions Covers the study of genomics in precision medicine and exposure science Explores bioethics in genomic studies Aimed at the exposure professionals (industrial hygienists, toxicologists, public health, environmental engineers), geneticists, molecular biologists, engineers and managers in the health and safety industry as well as professionals in the public administration field.

Ethics and governance of artificial intelligence for health 2021-06-28 This WHO Guidance document discusses ethical and governance issues as they arise in the use of artificial intelligence (AI) for health. It contains a set of principles, recommendations, and checklists for selected end-users. The target audience is Ministries of Health, AI developers, health care workers, and industry.

The Mathematical Corporation Josh Sullivan 2017-06-06 The most powerful weapon in business today is the alliance between the mathematical smarts of machines and the imaginative human intellect of great leaders. Together they make the mathematical corporation, the business model of the future. We are at a once-in-a-decade breaking point similar to the quality revolution of the 1980s and the dawn of the internet age in the 1990s: leaders must transform how they run their organizations, or competitors will bring them crashing to earth--often overnight. Mathematical corporations--the organizations that will master the future--will outcompete high-flying rivals by merging the best of human ingenuity with machine intelligence. While smart

machines are weapon number one for organizations, leaders are still the drivers of breakthroughs. Only they can ask crucial questions to capitalize on business opportunities newly discovered in oceans of data. This dynamic combination will make possible the fulfillment of missions that once seemed out of reach, even impossible to attain. Josh Sullivan and Angela Zutavern's extraordinary examples include the entrepreneur who upended preventive health care, the oceanographer who transformed fisheries management, and the pharmaceutical company that used algorithm-driven optimization to boost vaccine yields. Together they offer a profoundly optimistic vision for a dazzling new phase in business, and a playbook for how smart companies can manage the essential combination of human and machine.

Ethics, Medicine, and Information Technology Kenneth W. Goodman 2016-01-14 Information technology is transforming the practices of medicine, nursing, and biomedical research. Computers can now render diagnoses and prognoses more accurately than humans. The concepts of privacy and confidentiality are evolving as data moves from paper to silicon to clouds. Big data promises financial wealth, as well as riches of information and benefits to science and public health. Online access and mobile apps provide patients with an unprecedented connection to their health and health records. This transformation is as unsettling as it is exhilarating. This unique new book is essential for anyone who uses computers in health care, biomedical research or public health, and cares about the ethical issues that arise in their work. With chapters spanning issues from professionalism and quality to mobile health and bioinformatics, it establishes what will become the 'core curriculum' in ethics and health informatics, a growing field which encourages truly inter- and multidisciplinary inquiry.

AI Narratives Stephen Cave 2020-02-28 This book is the first to examine the history of imaginative thinking about intelligent machines. As real Artificial Intelligence (AI) begins to touch on all aspects of our lives, this long narrative history shapes how the technology is developed, deployed and regulated. It is therefore a crucial social and ethical issue. Part I of this book provides a historical overview from ancient Greece to the start of modernity. These chapters explore the revealing pre-history of key concerns of contemporary AI discourse, from the nature of mind and creativity to issues of power and rights, from the tension between fascination and ambivalence to investigations into artificial voices and technophobia.

Part II focuses on the twentieth and twenty-first-centuries in which a greater density of narratives emerge alongside rapid developments in AI technology. These chapters reveal not only how AI narratives have consistently been entangled with the emergence of real robotics and AI, but also how they offer a rich source of insight into how we might live with these revolutionary machines. Through their close textual engagements, these chapters explore the relationship between imaginative narratives and contemporary debates about AI's social, ethical and philosophical consequences, including questions of dehumanization, automation, anthropomorphisation, cybernetics, cyberpunk, immortality, slavery, and governance. The contributions, from leading humanities and social science scholars, show that narratives about AI offer a crucial epistemic site for exploring contemporary debates about these powerful new technologies.

Technology, Policy, Law, and Ethics Regarding U.S. Acquisition and Use of Cyberattack Capabilities National Research Council 2009-11-27 The United States is increasingly dependent on information and information technology for both civilian and military purposes, as are many other nations. Although there is a substantial literature on the potential impact of a cyberattack on the societal infrastructure of the United States, little has been written about the use of cyberattack as an instrument of U.S. policy. Cyberattacks--actions intended to damage adversary computer systems or networks--can be used for a variety of military purposes. But they also have application to certain missions of the intelligence community, such as covert action. They may be useful for certain domestic law enforcement purposes, and some analysts believe that they might be useful for certain private sector entities who are themselves under cyberattack. This report considers all of these applications from an integrated perspective that ties together technology, policy, legal, and ethical issues. Focusing on the use of cyberattack as an instrument of U.S. national policy, Technology, Policy, Law and Ethics Regarding U.S. Acquisition and Use of Cyberattack Capabilities explores important characteristics of cyberattack. It describes the current international and domestic legal structure as it might apply to cyberattack, and considers analogies to other domains of conflict to develop relevant insights. Of special interest to the military, intelligence, law enforcement, and homeland security communities, this report is also an essential point of departure for nongovernmental researchers interested in this rarely discussed topic.