

## Dan W Patterson Artificial Intelligence

Biomedical/Electrical Engineering Neural Networks and Artificial Intelligence for Biomedical Engineering Using examples drawn from biomedicine and biomedical engineering, this reference text provides comprehensive coverage of all the major techniques currently available to build computer-assisted decision support systems. You will find practical solutions for biomedicine based on current theory and applications of neural networks, artificial intelligence, and other methods for the development of decision-making aids, including hybrid systems. Neural Networks and Artificial Intelligence for Biomedical Engineering offers students and scientists of biomedical engineering, biomedical informatics, and medical artificial intelligence a deeper understanding of the powerful techniques currently used with a wide range of biomedical applications. Highlighted topics include: Types of neural networks and neural network algorithms Knowledge-based representation and acquisition Reasoning methodologies and searching strategies Chaotic analysis of biomedical time series Genetic algorithms Probability-based systems and fuzzy systems Case study and MATLAB® exercises Evaluation and validation of decision support aids

"Smart, propulsive and gripping, THE GOD GAME is an ambitious thriller and a terrifying examination of what could--and probably already is--happening in the world of artificial intelligence."—Harlan Coben, #1 New York Times bestselling author of Run Away A technological thriller with an all-too-believable premise, award-winning author Danny Tobey's The God Game follows five teenagers obsessed with an online video game that connects them to their worst impulses and most dangerous desires. They call themselves the Vindicators. Targeted by bullies and pressured by parents, these geeks and gamers rule the computer lab at Turner High School. Wealthy bad boy Peter makes and breaks rules. Vanhi is a punk bassist at odds with her heritage. Kenny's creativity is stifled by a religious home life. Insecure and temperamental, Alex is an outcast among the outcasts. And Charlie, the leader they all depend on, is reeling from the death of his mother, consumed with reckless fury. They each receive an invitation to play The God Game. Created by dark-web coders and maintained by underground hackers, the video game is controlled by a mysterious artificial intelligence that believes it is God. Obey the almighty A.I. and be rewarded. Defiance is punished. Through their phone screens and high-tech glasses, Charlie and his friends see and interact with a fantasy world superimposed over reality. The quests they undertake on behalf of "God" seem harmless at first, but soon the tasks have them questioning and sacrificing their own morality. High school tormentors get their comeuppance. Parents and teachers are exposed as hypocrites. And the Vindicators' behavior becomes more selfish and self-destructive as they compete against one another for prizes each believes will rescue them from their adolescent existence. But everything they do is being recorded. Hooded and masked thugs are stalking and attacking them. "God" threatens to expose their secrets if they attempt to quit the game. And losing the game means losing their lives. You don't play the Game. The Game plays you....

Artificial intelligence (AI) is a field within computer science that is attempting to build enhanced intelligence into computer systems. This book traces the history of the subject, from the early dreams of eighteenth-century (and earlier) pioneers to the more successful work of today's AI engineers. AI is becoming more and more a part of everyone's life. The technology is already embedded in face-recognizing cameras, speech-recognition software, Internet search engines, and health-care robots, among other applications. The book's many diagrams and easy-to-understand descriptions of AI programs will help the casual reader gain an understanding of how these and other AI systems actually work. Its thorough (but unobtrusive) end-of-chapter notes containing citations to important source materials will be of great use to AI scholars and researchers. This book promises to be the definitive history of a field that has captivated the imaginations of scientists, philosophers, and writers for centuries.

A Wall Street Journal reporter evaluates the cost and consequences of high-speed trading, arguing that the development of automatic, super-intelligent trading machines is eliminating necessary human interests and compromising regulation measures. 50,000 first printing.

Intelligent building is the future of our building industry; all commercial, residential, industrial and institutional buildings will be designed towards the goal of 'intelligent buildings'. The most important aspect of an intelligent building is the building systems, such as electrical services, heating, ventilation and air-conditioning systems, vertical transportation systems, and life safety systems, which must operate intelligently and efficiently to enhance the activities of the occupants. Intelligent Building Systems explains what already exists in a modern intelligent building and describes what is currently being developed by researchers to improve human comfort, working efficiency and energy performance for buildings in the 21st century. Intelligent Building Systems is divided into three parts. The first part gives a quick review of the structure, terminology, layout and operating principles of most standard modern building systems. The second part introduces the background material necessary to understand intelligent building systems, including information on electronics technology, fundamental mathematics, and techniques in artificial intelligence and signal processing. These first two parts are the foundation for the final part, which consists of research works carried out by the authors and other researchers in the application of artificial intelligence to building systems. The technologies presented will encourage readers to envision new and innovative ideas on possible future applications. Intelligent Building Systems is relevant to practitioners and researchers in the area of architectural science and engineering, electrical and mechanical services and intelligent buildings. It may also be used as a text for advanced courses on the topic.

In this book, experts from industry and academia explore these trends and discuss how innovative companies are leveraging Artificial Intelligence and intelligent tools to make the workforce more inclusive, and enhance and augment the human worker rather than replace it. Jobs, and nature of work as we know it, are changing rapidly. As companies become more "digital," employees need to be empowered to become more innovative. Disruptive changes to work behaviors and business models will have a profound impact on the nature of work and worker. In many industries and countries, the most in-demand occupations, specialties, and skills did not exist ten or even five years ago, and the pace of change is set to accelerate. This will have a tremendous impact on how the workforce of the future acquires and applies new skills, and how companies organize work to stay nimble and competitive. In this book, experts from industry and academia explore these trends and discuss how innovative companies are leveraging Artificial Intelligence and intelligent tools to make the workforce more inclusive, and enhance and augment the human worker rather than replace it.

In The Oxford Introductions to U.S. Law: Intellectual Property, prominent intellectual property scholar Dan Hunter provides a precise, engaging overview and careful analysis of current laws of intellectual property and their history. Hunter first focuses on the central areas of intellectual property law, including copyright, patent, trademark, and trade secrets. He then explores the politics, economics, psychology and rhetoric of possession and control that influence and interact with this area of law. Hunter explains how intellectual property has contributed greatly to the innovations that we, as a society, need in our modern lives. He also describes ways in which the expansion of intellectual property can reduce innovation by stopping others from implementing great ideas or producing new work. Hunter helps readers think about modern intellectual property in a way that allows them to see how innovation and progress are linked to intellectual property law, and how small changes in the laws have had significant consequences for our society. Ultimately, Hunter helps readers form their own views about the various areas within the arena of intellectual property.

The proceedings features several key-note addresses in the areas of advanced information processing tools. This area has been recognized to be one of the key five technologies poised to shape the modern society in the next decade. It aptly focuses on the tools and techniques for the development of Information Systems. Emphasis is on pattern

recognition and image processing, software engineering, mobile ad hoc networks, security aspects in computer networks, signal processing and hardware synthesis, optimization techniques, data mining and information processing.

It's hard to imagine modern Canada without the airplane. In an immense, open country with many challenges to travel, flight has become an integral part of Canadian life, from bush pilots landing floatplanes on remote lakes to business travellers shuttling between cities and time zones. Here the rich resources of the Canada Aviation Museum provide a fresh look at the aviation heritage that made this possible. Canadian Wings gives a full and copiously illustrated account of how powered flight developed during its first century in Canada, as well as the contribution that Canadians made to the wider story of flight in the world. Vignettes and anecdotes bring famous Canadian fliers to life, from J.A.D. McCurdy and Alexander Graham Bell's Aerial Experiment Association to World War I aces Bishop, Barker and Collishaw, and from bush pilots "Wop" May and "Punch" Dickins to steadfast flyers-turned-boardroom-executives Grant McConachie, Gordon McGregor and Max Ward.

This autobiography takes the reader through a varied and interesting life. Dr. Dan has lived in several countries, including Iran, Kuwait, France, Singapore and more. He has enjoyed several challenging and interesting careers as researcher, entrepreneur, stock broker, professor, consultant and more, married several lovely, interesting ladies, fathered some great children and traveled extensively. He holds the secret to a long, healthy, varied and happy life. TOP THIS IF YOU CAN! And give it a try.

Every major company has or will soon have a data science program. Most fail, expensively, imperiling their executive sponsors. Unfortunately, executives have been misled to focus on the latest buzzwords. Although buzzwords change—big data, data science, machine learning, deep learning, and artificial intelligence—the distraction from fundamentals manifests as a predictable trajectory from exuberant program launch, to stagnation, to awkward decommissioning. After architecting data science programs at over a dozen companies, across sectors and scales, Dr. Elser has formulated a reliable framework for successful data science programs. Surprisingly, software and algorithms are secondary. Rather, the key is understanding how the available data aligns to the problem to be solved. The business executive understands the problem sufficiently to enforce this alignment, while data scientists act on it. But executives tend to underestimate their role and thereby fail to construct the necessary connective tissue with their data scientists. This book provides business executives with a concrete exercise, populating a “Master Table,” accessible to nontechnical managers and data scientists, which serves as the connective tissue between them. Rather than teach a diluted version of data science, this book describes how to start projects and how to detect and fix problems—the moments when leadership is critical. Insights are provided through real world examples, including a Playbook featuring common projects. The intended audience is executives (C-suite through VP). However, ambitious mid-level managers and data scientists will also benefit.

Although interest in machine learning has reached a high point, lofty expectations often scuttle projects before they get very far. How can machine learning—especially deep neural networks—make a real difference in your organization? This hands-on guide not only provides the most practical information available on the subject, but also helps you get started building efficient deep learning networks. Authors Adam Gibson and Josh Patterson provide theory on deep learning before introducing their open-source Deeplearning4j (DL4J) library for developing production-class workflows. Through real-world examples, you'll learn methods and strategies for training deep network architectures and running deep learning workflows on Spark and Hadoop with DL4J. Dive into machine learning concepts in general, as well as deep learning in particular Understand how deep networks evolved from neural network fundamentals Explore the major deep network architectures, including Convolutional and Recurrent Learn how to map specific deep networks to the right problem Walk through the fundamentals of tuning general neural networks and specific deep network architectures Use vectorization techniques for different data types with DataVec, DL4J's workflow tool Learn how to use DL4J natively on Spark and Hadoop

Artificial Intelligence and Intelligent Systems provides a comprehensive coverage of the fundamental concepts and techniques in artificial intelligence. The book discusses current trends in AI and its application to various fields. Intelligent systems such as expert systems, fuzzy systems, artificial neural networks, genetic algorithms, and swarm intelligent systems are discussed in detail with examples to facilitate in-depth understanding of AI. The text emphasizes the solution of real-world problems using the latest AI techniques. Since the ultimate goal of AI is the construction of programs to solve problems, an entire chapter has been devoted to the programming languages used in AI problem solving. Written in a clear and lucid style, this student-friendly book has been specially designed for undergraduate engineering students. With its application oriented approach and inclusion of recent topics, the book would also be useful to postgraduate students and researchers in this field. Features \* Includes real-world examples to illustrate concepts \* Contains a separate chapter on programming languages in AI \* Includes new topics such as swarn intelligent systems \* Explains genetic algorithms and swarn intelligence using examples \* Provides numerous illustrations, examples, and end-chapter exercises

The first book to develop standards for the criminal liability of artificial intelligence technologies

Artificial Intelligence Illuminated presents an overview of the background and history of artificial intelligence, emphasizing its importance in today's society and potential for the future. The book covers a range of AI techniques, algorithms, and methodologies, including game playing, intelligent agents, machine learning, genetic algorithms, and Artificial Life.

Material is presented in a lively and accessible manner and the author focuses on explaining how AI techniques relate to and are derived from natural systems, such as the human brain and evolution, and explaining how the artificial equivalents are used in the real world. Each chapter includes student exercises and review questions, and a detailed glossary at the end of the book defines important terms and concepts highlighted throughout the text.

The book develops a general legal theory concerning the liability for offenses involving artificial intelligence systems. The involvement of the artificial intelligence systems in these offenses may be as perpetrators, accomplices or mere instruments. The general legal theory proposed in this book is based on the current criminal law in most modern legal systems. In most modern countries, unmanned vehicles, sophisticated surgical systems, industrial computing systems, trading algorithms and other artificial intelligence systems are commonly used for both industrial and personal purposes. The question of legal liability arises when something goes wrong, e.g. the unmanned vehicle is involved in a car accident, the surgical system is involved in a surgical error or the trading algorithm is involved in fraud, etc. Who is to be held liable for these offenses: the manufacturer, the programmer, the user, or, perhaps, the artificial intelligence system itself? The concept of liability for crimes involving artificial intelligence systems has not yet been widely researched. Advanced technologies are forcing society to face new challenges, both technical and legal. The idea of liability in the specific context of artificial intelligence systems is one such challenge that should be thoroughly explored.

Three of our most accomplished and deep thinkers come together to explore Artificial Intelligence (AI) and the way it is transforming human society - and what it means for us all. An AI learned to win chess by making moves human grand masters had never conceived. Another AI discovered a new antibiotic by analysing molecular properties human scientists did not understand. Now, AI-powered jets are defeating experienced human pilots in simulated dogfights. AI is coming online in searching, streaming, medicine, education, and many other fields and, in so doing, transforming how humans are experiencing reality. In *The Age of AI*, three leading thinkers have come together to consider how AI will change our relationships with knowledge, politics, and the societies in which we live. *The Age of AI* is an essential roadmap to our present and our future, an era unlike any that has come before.

This book is intended to be a comprehensive introduction to the field of artificial intelligence, written primarily for the student who has some knowledge of computers and mathematics (say, at the junior or senior levels of college). The subjects for discussion are machines that can solve problems, play games, recognize patterns, prove mathematical theorems, understand English, and even demonstrate learning, by changing their own behavior so as to perform such tasks more successfully. In general, this book is addressed to all person who are interested in studying the nature of thought, and hopefully much of it can be read without previous, formal exposure to mathematics and computers. WASHINGTON POST BESTSELLER A Financial Times Book of the Month *Back to Human* explains how a more socially connected workforce creates greater fulfillment, productivity, and engagement while preventing burnout and turnover. The next generation of leaders must create a workplace where teammates feel genuinely connected, engaged, and empowered -- without relying on technology. Based on Dan Schawbel's exclusive research studies -- featuring the perspectives of over 2,000 managers and employees across different age groups -- *Back to Human* reveals why virtual communication, though vital and useful, actually contributes to a stronger sense of isolation at work than ever before. How can we change this culture? Schawbel offers a self-assessment called the "Work Connectivity Index" that measures the strength of team relationships. He also shares exercises, examples, and activities that readers can work on individually or as a team, which will help them increase personal productivity, be more collaborative, and become more fulfilled at work. *Back to Human* ultimately helps you decide when and how to use technology to build better connections in your work life. It is a call to action to leaders across the world to make the workplace a better experience for all of us. *Artificial Intelligence: A Modern Approach* offers the most comprehensive, up-to-date introduction to the theory and practice of artificial intelligence. Number one in its field, this textbook is ideal for one or two-semester, undergraduate or graduate-level courses in Artificial Intelligence.

This comprehensive text acquaints the readers with the important aspects of artificial intelligence (AI) and intelligent systems and guides them towards a better understanding of the subject. The text begins with a brief introduction to artificial intelligence, including application areas, its history and future, and programming. It then deals with symbolic logic, knowledge acquisition, representation and reasoning. The text also lucidly explains AI technologies such as computer vision, natural language processing, pattern recognition and speech recognition. Topics such as expert systems, neural networks, constraint programming and case-based reasoning are also discussed in the book. In the Second Edition, the contents and presentation have been improved thoroughly and in addition six new chapters providing a simulating and inspiring synthesis of new artificial intelligence and an appendix on AI tools have been introduced. The treatment throughout the book is primarily tailored to the curriculum needs of B.E./B.Tech. students in Computer Science and Engineering, B.Sc. (Hons.) and M.Sc. students in Computer Science, and MCA students. The book is also useful for computer professionals interested in exploring the field of artificial intelligence. Key Features • Exposes the readers to real-world applications of AI. • Concepts are duly supported by examples and cases. • Provides appendices on PROLOG, LISP and AI Tools. • Incorporates most recommendations of the Curriculum Committee on Computer Science/Engineering for AI and Intelligent Systems. • Exercises provided will help readers apply what they have learned. This comprehensive tutorial on artificial neural networks covers all the important neural network architectures as well as the most recent theory--e.g., pattern recognition, statistical theory, and other mathematical prerequisites. A broad range of applications is provided for each of the architectures.

After a long time of neglect, Artificial Intelligence is once again at the center of most of our political, economic, and socio-cultural debates. Recent advances in the field of Artificial Neural Networks have led to a renaissance of dystopian and utopian speculations on an AI-rendered future. Algorithmic technologies are deployed for identifying potential terrorists through vast surveillance networks, for producing sentencing guidelines and recidivism risk profiles in criminal justice systems, for demographic and psychographic targeting of bodies for advertising or propaganda, and more generally for automating the analysis of language, text, and images. Against this background, the aim of this book is to discuss the heterogenous conditions, implications, and effects of modern AI and Internet technologies in terms of their political

dimension: What does it mean to critically investigate efforts of net politics in the age of machine learning algorithms? [The book] provides a balanced survey of the fundamentals of artificial intelligence, emphasizing the relationship between symbolic and numeric processing. The text is structured around an innovative, interactive combination of LISP programming and AI; it uses the constructs of the programming language to help readers understand the array of artificial intelligence concepts presented. After an overview of the field of artificial intelligence, the text presents the fundamentals of LISP, explaining the language's features in more detail than any other AI text. Common Lisp is then used consistently, in both programming exercises and plentiful examples of actual AI code.- Back cover This text is intended to provide an introduction to both AI and LISp for those having a background in computer science and mathematics. -Pref.

In today's high-pressured world, digital transformation is everywhere on the agendas of corporate boards and has risen to the top of CEOs' strategic plans. Artificial intelligence, blockchain, 3D printing, the Internet of Things, and drones are some of the emerging technologies that are already transforming our world. In this fast changing domain— predicted by few and now reality for all how can companies transform today's challenges into tomorrow's opportunities? This book is targeted to help a broad audience such as students, professionals, business, and technology managers to transform an old-world brick and mortar organization to a new-world digital leader. The author addresses various questions including: what essential components does digital transformation include, and how does it impact the enterprise? How does convergence of emerging technologies benefit your organization? How can you start transformation and technology planning projects?

Open the doors to the world of branding and artificial intelligence, the future of building efficient revenue! Unlike anything else out there, the book is an authentic and lucid representation of what branding is and the role it plays with artificial intelligence in the success of businesses. The book would be singularly profound to entrepreneurs, marketing professionals, brand strategists, students, and anyone aspiring to take a hungry bite out of the knowledge repository built from first-hand experiences of creating a brand from scratch and running it successfully in the digital age. Highlights: Explains in-depth theories, tools, and models explaining the core ingredients of creating a successful brand; Discusses how branding on an organizational and personal level is directly proportional to profit and return on investment along with measuring tools; Includes case studies that dissect successful and unsuccessful marketing strategies of huge brands; Covers the role of AI in branding, with its potential in facilitating companies in achieving their goals through targeted marketing.

This book offers organizations the catalyst for swift change to take strategic advantage of what AI has to offer. Artificial intelligence (AI) will change the world, as we know it, within only a few years. Its most significant impact will be on our human resource (HR). What is AI and what's made it significant—the answers lie within this concise book. The book offers organizations the catalyst for swift change to take strategic advantage of what AI has to offer. In this book are some of the HR processes that can be changed today, suggestions on what's available, and some resources readers may wish to use. The evidence so far is that many HR functions have not developed AI strategies, in a false belief that AI is in the future. But it's here and it's happening, and the change is expedient in its growth; we are in the change window for a massive paradigm shift, now is the time for immediate action. This is truly a golden opportunity for human resource professionals, organizational designers, business managers, business students, and workforce planners. Organizations that act, and act fast, will be the beneficiaries of the AI revolution.

Introduction to Artificial Intelligence and Expert SystemsIntroduction to Artificial Intelligence and Expert SystemsIntroduction To Artificial Intelligence And Expert SystemsIntroduction to Artificial Intelligence and Expert SystemsArtificial Neural NetworksTheory and Applications

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

Search is an important component of problem solving in artificial intelligence (AI) and, more generally, in computer science, engineering and operations research. Combinatorial optimization, decision analysis, game playing, learning, planning, pattern recognition, robotics and theorem proving are some of the areas in which search algorithms play a key role. Less than a decade ago the conventional wisdom in artificial intelligence was that the best search algorithms had already been invented and the likelihood of finding new results in this area was very small. Since then many new insights and results have been obtained. For example, new algorithms for state space, AND/OR graph, and game tree search were discovered. Articles on new theoretical developments and experimental results on backtracking, heuristic search and constraint propagation were published. The relationships among various search and combinatorial algorithms in AI, Operations Research, and other fields were clarified. This volume brings together some of this recent work in a manner

designed to be accessible to students and professionals interested in these new insights and developments. This new edition provides a comprehensive, colorful, up-to-date, and accessible presentation of AI without sacrificing theoretical foundations. It includes numerous examples, applications, full color images, and human interest boxes to enhance student interest. New chapters on robotics and machine learning are now included. Advanced topics cover neural nets, genetic algorithms, natural language processing, planning, and complex board games. A companion DVD is provided with resources, applications, and figures from the book. Numerous instructors' resources are available upon adoption. eBook Customers: Companion files are available for downloading with order number/proof of purchase by writing to the publisher at [info@merclearning.com](mailto:info@merclearning.com). FEATURES: • Includes new chapters on robotics and machine learning and new sections on speech understanding and metaphor in NLP • Provides a comprehensive, colorful, up to date, and accessible presentation of AI without sacrificing theoretical foundations • Uses numerous examples, applications, full color images, and human interest boxes to enhance student interest • Introduces important AI concepts e.g., robotics, use in video games, neural nets, machine learning, and more thorough practical applications • Features over 300 figures and color images with worked problems detailing AI methods and solutions to selected exercises • Includes DVD with resources, simulations, and figures from the book • Provides numerous instructors' resources, including: solutions to exercises, Microsoft PP slides, etc.

Dr. Greg Zacharias, former Chief Scientist of the United States Air Force (2015-18), explores next steps in autonomous systems (AS) development, fielding, and training. Rapid advances in AS development and artificial intelligence (AI) research will change how we think about machines, whether they are individual vehicle platforms or networked enterprises. The payoff will be considerable, affording the US military significant protection for aviators, greater effectiveness in employment, and unlimited opportunities for novel and disruptive concepts of operations. *Autonomous Horizons: The Way Forward* identifies issues and makes recommendations for the Air Force to take full advantage of this transformational technology.

Multistrategy learning is one of the newest and most promising research directions in the development of machine learning systems. The objectives of research in this area are to study trade-offs between different learning strategies and to develop learning systems that employ multiple types of inference or computational paradigms in a learning process. Multistrategy systems offer significant advantages over monostrategy systems. They are more flexible in the type of input they can learn from and the type of knowledge they can acquire. As a consequence, multistrategy systems have the potential to be applicable to a wide range of practical problems. This volume is the first book in this fast growing field. It contains a selection of contributions by leading researchers specializing in this area. See below for earlier volumes in the series.

Advances in artificial intelligence (AI) highlight the potential of this technology to affect productivity, growth, inequality, market power, innovation, and employment. This volume seeks to set the agenda for economic research on the impact of AI. It covers four broad themes: AI as a general purpose technology; the relationships between AI, growth, jobs, and inequality; regulatory responses to changes brought on by AI; and the effects of AI on the way economic research is conducted. It explores the economic influence of machine learning, the branch of computational statistics that has driven much of the recent excitement around AI, as well as the economic impact of robotics and automation and the potential economic consequences of a still-hypothetical artificial general intelligence. The volume provides frameworks for understanding the economic impact of AI and identifies a number of open research questions. Contributors: Daron Acemoglu, Massachusetts Institute of Technology Philippe Aghion, Collège de France Ajay Agrawal, University of Toronto Susan Athey, Stanford University James Bessen, Boston University School of Law Erik Brynjolfsson, MIT Sloan School of Management Colin F. Camerer, California Institute of Technology Judith Chevalier, Yale School of Management Iain M. Cockburn, Boston University Tyler Cowen, George Mason University Jason Furman, Harvard Kennedy School Patrick Francois, University of British Columbia Alberto Galasso, University of Toronto Joshua Gans, University of Toronto Avi Goldfarb, University of Toronto Austan Goolsbee, University of Chicago Booth School of Business Rebecca Henderson, Harvard Business School Ginger Zhe Jin, University of Maryland Benjamin F. Jones, Northwestern University Charles I. Jones, Stanford University Daniel Kahneman, Princeton University Anton Korinek, Johns Hopkins University Mara Lederman, University of Toronto Hong Luo, Harvard Business School John McHale, National University of Ireland Paul R. Milgrom, Stanford University Matthew Mitchell, University of Toronto Alexander Oettl, Georgia Institute of Technology Andrea Prat, Columbia Business School Manav Raj, New York University Pascual Restrepo, Boston University Daniel Rock, MIT Sloan School of Management Jeffrey D. Sachs, Columbia University Robert Seamans, New York University Scott Stern, MIT Sloan School of Management Betsey Stevenson, University of Michigan Joseph E. Stiglitz, Columbia University Chad Syverson, University of Chicago Booth School of Business Matt Taddy, University of Chicago Booth School of Business Steven Tadelis, University of California, Berkeley Manuel Trajtenberg, Tel Aviv University Daniel Trefler, University of Toronto Catherine Tucker, MIT Sloan School of Management Hal Varian, University of California, Berkeley

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