

1. Record Nr.	UNINA9910488717503321
Autore	Luger George F.
Titolo	Knowing our world : an artificial intelligence perspective // George F. Luger
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2021] ©2021
ISBN	3-030-71873-5
Descrizione fisica	1 online resource (267 pages)
Disciplina	006.3
Soggetti	Artificial intelligence Artificial intelligence - Philosophy
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro -- Preface -- Why Write This Book? -- The Story -- Acknowledgments -- Contents -- Part I: In the Beginning... -- Chapter 1: Creating Computer Programs: An Epistemic Commitment -- 1.1 Introduction and Focus of Our Story -- 1.2 The Foundation for Computation -- 1.2.1 The Turing Machine -- 1.2.2 The Post Production System and Unary Subtraction -- 1.3 Computer Languages, Representations, and Search -- 1.4 In Summary -- Chapter 2: Historical Foundations -- 2.1 Mary Shelley, Frankenstein, and Prometheus -- 2.2 Early Greek Thought -- 2.3 The Later Greeks: Plato, Euclid, and Aristotle -- 2.4 Post-medieval or Modern Philosophy -- 2.5 The British Empiricists: Hobbes, Locke, and Hume -- 2.6 Bridging the Empiricist/Rationalist Chasm: Baruch Spinoza -- 2.7 Bridging the Empiricist/Rationalist Chasm: Immanuel Kant -- 2.8 American Pragmatism: Peirce, James, and Dewey -- 2.9 The Mathematical Foundations for Computation -- 2.10 The Turing Test and the Birth of AI -- 2.11 In Summary -- Chapter 3: Modern AI and How We Got Here -- 3.1 Three Success Stories in Recent AI -- 3.1.1 Deep Blue at IBM (Hsu 2002 -- Levy and Newborn 1991 -- url 3.2) -- 3.1.2 IBM's Watson (Baker 2011, Ferrucci et al. 2010, 2013, url 3.3) -- 3.1.3 Google and AlphaGo (Silver et al. 2017, url 3.4) -- 3.2 Very Early AI and the 1956 Dartmouth Summer Research Project -- 3.2.1 The Logic Theorist (Newell and Simon 1956 -- Newell et al. 1958) -- 3.2.2

Geometry Theorem Proving (Gelernter 1959 -- Gelernter and Rochester 1958) -- 3.2.3 A Program that Plays Checkers (Samuel 1959) -- 3.2.4 The Dartmouth Summer Workshop in 1956 -- 3.3 Artificial Intelligence: Attempted Definitions -- 3.4 AI: Early Years -- 3.4.1 The Neats and Scruffies -- 3.4.2 AI: Based on "Emulating Humans" or "Just Good Engineering?" -- 3.5 The Birth of Cognitive Science.

3.6 General Themes in AI Practice: The Symbolic, Connectionist, Genetic/Emergent, and Stochastic -- 3.7 In Summary -- Part II: Modern AI: Structures and Strategies for Complex Problem-Solving -- Chapter 4: Symbol-Based AI and Its Rationalist Presuppositions -- 4.1 The Rationalist Worldview: State-Space Search -- 4.1.1 Graph Theory: The Origins of the State Space -- 4.1.2 Searching the State Space -- 4.1.3 An Example of State-Space Search: The Expert System -- 4.2 Symbol-Based AI: Continuing Important Contributions -- 4.2.1 Machine Learning: Data Mining -- 4.2.2 Modeling the Physical Environment -- 4.2.3 Expertise: Wherever It Is Needed -- 4.3 Strengths and Limitations of the Symbol System Perspective -- 4.3.1 Symbol-Based Models and Abstraction -- 4.3.2 The Generalization Problem and Overlearning -- 4.3.3 Why Are There No Truly Intelligent Symbol-Based Systems? -- 4.4 In Summary -- Chapter 5: Association and Connectionist Approaches to AI -- 5.1 The Behaviorist Tradition and Implementation of Semantic Graphs -- 5.1.1 Foundations for Graphical Representations of Meaning -- 5.1.2 Semantic Networks -- 5.1.3 More Modern Uses of Association-Based Semantic Networks -- 5.2 Neural or Connectionist Networks -- 5.2.1 Early Research: McCulloch, Pitts, and Hebb -- 5.2.2 Backpropagation Networks -- 5.3 Neural Networks and Deep Learning -- 5.3.1 AlphaGo Zero and Alpha Zero -- 5.3.2 Robot Navigation: PRM-RL -- 5.3.3 Deep Learning and Video Games -- 5.3.4 Deep Learning and Natural Language Processing -- 5.4 Epistemic Issues and Association-Based Representations -- 5.4.1 Inductive Bias, Transparency, and Generalization -- 5.4.2 Neural Networks and Symbol Systems -- 5.4.3 Why Have We Not Built a Brain? -- 5.5 In Summary -- Chapter 6: Evolutionary Computation and Intelligence -- 6.1 Introduction to Evolutionary Computation -- 6.2 The Genetic Algorithm and Examples.

6.2.1 The Traveling Salesperson Problem -- 6.2.2 Genetic Programming -- 6.2.3 An Example: Kepler's Third Law of Planetary Motion -- 6.3 Artificial Life: The Emergence of Complexity -- 6.3.1 Artificial Life -- 6.3.2 Contemporary Approaches to A-Life -- Synthetic Biological Models of Evolution -- Artificial Chemistry -- Other Abstract Machines and Evolutionary Computation -- Psychological and Sociological Foundations for Life and Intelligence -- 6.4 Evolutionary Computation and Intelligence: Epistemic Issues -- 6.5 Some Summary Thoughts on Part II: Chaps. 4, 5, and 6 -- 6.5.1 Inductive Bias: The Rationalist's a priori -- 6.5.2 The Empiricist's Dilemma -- 6.6 In Summary -- Part III: Toward an Active, Pragmatic, Model-Revising Realism -- Chapter 7: A Constructivist Rapprochement and an Epistemic Stance -- 7.1 A Response to Empiricist, Rationalist, and Pragmatist AI -- 7.2 The Constructivist Rapprochement -- 7.3 Five Assumptions: A Foundation for an Epistemic Stance -- 7.4 A Foundation for a Modern Epistemology -- 7.5 In Summary -- Chapter 8: Bayesian-Based Constructivist Computational Models -- 8.1 The Derivation of a Bayesian Stance -- 8.2 Bayesian Belief Networks, Perception, and Diagnosis -- 8.3 Bayesian-Based Speech and Conversation Modeling -- 8.4 Diagnostic Reasoning in Complex Environments -- 8.5 In Summary -- Chapter 9: Toward an Active, Pragmatic, Model-Revising Realism -- 9.1 A Summary of the Project -- 9.2 Model Building Through Exploration -- 9.3 Model Revision

and Adaptation -- 9.4 What Is the Project of the AI Practitioner? -- 9.5  
Meaning, Truth, and a Foundation for a Modern Epistemology -- 9.5.1  
Neopragmatism, Kuhn, Rorty, and the Scientific Method -- 9.5.2 A  
Category Error -- 9.5.3 The Cognitive Neurosciences: Insights  
on Human Processing -- 9.5.4 On Being Human: A Modern Epistemic  
Stance -- Bibliography.  
URL References (All url references checked 16 June 2021) -- Index.

---