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Nota di contenuto	Minds and Machines: Connectionism and Psychological Modeling; Contents; List of Figures; List of Tables; 1 The Kids in the Hall; 1.1 Synthetic vs. Analytic Traditions; 2 Advantages and Disadvantages of

Modeling; 2.1 What is a Model?; 2.2 Advantages and Disadvantages of Models; 3 Models of Data; 3.1 An Example of a Model of Data; 3.2 Properties of Models of Data; 4 Mathematical Models; 4.1 An Example of a Mathematical Model; 4.2 Mathematical Models vs. Models of Data; 5 Computer Simulations; 5.1 A Sample Computer Simulation; 5.2 Connectionist Models; 5.3 Properties of Computer Simulations 6 First Steps Toward Synthetic Psychology 6.1 Introduction; 6.2 Building a Thoughtless Walker; 6.3 Step 1: Synthesis; 6.4 Step 2: Emergence; 6.5 Step 3: Analysis; 6.6 Issues Concerning Synthetic Psychology; 7 Uphill Analysis, Downhill Synthesis?; 7.1 Introduction; 7.2 From Homeostats to Tortoises; 7.3 Vehicles; 7.4 Synthesis and Emergence: Some Modern Examples; 7.5 The Law of Uphill Analysis and Downhill Synthesis; 8 Connectionism as Synthetic Psychology; 8.1 Introduction; 8.2 Beyond Sensory Reflexes; 8.3 Connectionism, Synthesis, and Representation; 8.4 Summary and Conclusions 9 Building Associations 9.1 From Associationism to Connectionism; 9.2 Building an Associative Memory; 9.3 Beyond the Limitations of Hebb Learning; 9.4 Associative Memory and Synthetic Psychology; 10 Making Decisions; 10.1 The Limits of Linearity; 10.2 A Fundamental Nonlinearity; 10.3 Building a Perceptron: A Nonlinear Associative Memory; 10.4 The Psychology of Perceptrons; 10.5 The Need for Layers; 11 Sequences of Decisions; 11.1 The Logic of Layers; 11.2 Training Multilayered Networks; 11.3 A Simple Case Study: Exclusive Or; 11.4 A Second Case Study: Classifying Musical Chords 11.5 A Third Case Study: From Connectionism to Selectionism 12 From Synthesis to Analysis; 12.1 Representing Musical Chords in a PDP Network; 12.2 Interpreting the Internal Structure of Value Unit Networks; 12.3 Network Interpretation and Synthetic Psychology; 13 From Here to Synthetic Psychology; References; Name Index; Subject Index

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## Sommario/riassunto

Minds and Machines: Connectionism and Psychological Modeling examines different kinds of models and investigates some of the basic properties of connectionism in the context of synthetic psychology, including detailed accounts of how the internal structure of connectionist networks can be interpreted. Introduces connectionist models as tools that are both synthetic and representational and which can be used as the basis for conducting synthetic psychology. Includes distinctively varied account of modeling, historical overview of the synthetic approach, and unique

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