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Nota di bibliografia	Includes bibliographical references (pages 607-638) and indexes.
Nota di contenuto	Introduction -- An Introduction to Evidence-Centered Design -- Bayesian Probability and Statistics: a review -- Basic graph theory and graphical models -- Efficient calculations -- Some Example Networks -- Explanation and Test Construction -- Parameters for Bayesian Network Models -- Learning in Models with Fixed Structure -- Critiquing and Learning Model Structure -- An Illustrative Example -- The Conceptual Assessment Framework -- The Evidence Accumulation Process -- The Biomass Measurement Model -- The Future of Bayesian Networks in Educational Assessment -- Bayesian Network Resources -- References.
Sommario/riassunto	Bayesian inference networks, a synthesis of statistics and expert systems, have advanced reasoning under uncertainty in medicine, business, and social sciences. This innovative volume is the first comprehensive treatment exploring how they can be applied to design and analyze innovative educational assessments. Part I develops Bayes nets' foundations in assessment, statistics, and graph theory, and works through the real-time updating algorithm. Part II addresses parametric forms for use with assessment, model-checking techniques,

and estimation with the EM algorithm and Markov chain Monte Carlo (MCMC). A unique feature is the volume's grounding in Evidence-Centered Design (ECD) framework for assessment design. This "design forward" approach enables designers to take full advantage of Bayes nets' modularity and ability to model complex evidentiary relationships that arise from performance in interactive, technology-rich assessments such as simulations. Part III describes ECD, situates Bayes nets as an integral component of a principled design process, and illustrates the ideas with an in-depth look at the BioMass project: An interactive, standards-based, web-delivered demonstration assessment of science inquiry in genetics. This book is both a resource for professionals interested in assessment and advanced students. Its clear exposition, worked-through numerical examples, and demonstrations from real and didactic applications provide invaluable illustrations of how to use Bayes nets in educational assessment. Exercises follow each chapter, and the online companion site provides a glossary, data sets and problem setups, and links to computational resources.
