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Nota di contenuto	Introduction -- Communication-Efficient Federated Learning -- Evolutionary Federated Learning.-Secure Federated Learning -- Summary and Outlook.
Sommario/riassunto	This book introduces readers to the fundamentals of and recent advances in federated learning, focusing on reducing communication costs, improving computational efficiency, and enhancing the security level. Federated learning is a distributed machine learning paradigm which enables model training on a large body of decentralized data. Its goal is to make full use of data across organizations or devices while meeting regulatory, privacy, and security requirements. The book starts with a self-contained introduction to artificial neural networks, deep learning models, supervised learning algorithms, evolutionary algorithms, and evolutionary learning. Concise information is then presented on multi-party secure computation, differential privacy, and homomorphic encryption, followed by a detailed description of

federated learning. In turn, the book addresses the latest advances in federate learning research, especially from the perspectives of communication efficiency, evolutionarylearning, and privacy preservation. The book is particularly well suited for graduate students, academic researchers, and industrial practitioners in the field of machine learning and artificial intelligence. It can also be used as a self-learning resource for readers with a science or engineering background, or as a reference text for graduate courses. .