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Sommario/riassunto	This book provides an essential overview of the broad range of functional brain imaging techniques, as well as neuroscientific methods suitable for various scientific tasks in fundamental and clinical neuroscience. It also shares information on novel methods in computational neuroscience, mathematical algorithms, image processing, and applications to neuroscience. The mammalian brain is a huge and complex network that consists of billions of neural and glial cells. Decoding how information is represented and processed by this neural network requires the ability to monitor the dynamics of large numbers of neurons at high temporal and spatial resolution over a large part of the brain. Functional brain optical imaging has seen more than thirty years of intensive development. Current light-using methods provide good sensitivity to functional changes through intrinsic contrast and are rapidly exploiting the growing availability of exogenous fluorescence probes. In addition, various types of functional brain optical imaging are now being used to reveal the brain's microanatomy and physiology.