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Coupled with machine learning, the use of signal-processing techniques for big data analysis, Internet of things, smart cities, security, and bioinformatics applications has witnessed explosive growth. This has been made possible by fast algorithms on data, speech, image, and video processing with advanced GPU technology. This book presents (i) an up-to-date tutorial and overview on learning technologies such as random forests, sparsity, and low-rank matrix estimation and (ii) cutting-edge visual/signal-processing techniques, including face recognition, Kalman filtering, and multirate DSP. It discusses the applications that make use of deep learning, convolutional neural networks, random forests, etc. The applications include super-resolution imaging, fringe projection profilometry, human activity detection/capture, gesture recognition, spoken language processing, cooperative networks, bioinformatics, DNA, and healthcare.

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