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Autore	Lee Kong-Aik
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Altri autori (Persone)	GanWoon-Seng KuoSen M (Sen-Maw)
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Nota di contenuto	Subband Adaptive Filtering; Contents; About the authors; Preface; Acknowledgments; List of symbols; List of abbreviations; 1 Introduction to adaptive filters; 1.1 Adaptive filtering; 1.2 Adaptive transversal filters; 1.3 Performance surfaces; 1.4 Adaptive algorithms; 1.5 Spectral dynamic range and misadjustment; 1.6 Applications of adaptive filters; 1.6.1 Adaptive system identification; 1.6.2 Adaptive prediction; 1.6.3 Adaptive inverse modeling; 1.6.4 Adaptive array processing; 1.6.5 Summary of adaptive filtering applications; 1.7 Transform-domain and subband adaptive filters 1.7.1 Transform-domain adaptive filters 1.7.2 Subband adaptive filters; 1.8 Summary; References; 2 Subband decomposition and multirate systems; 2.1 Multirate systems; 2.2 Filter banks; 2.2.1 Input-output relation; 2.2.2 Perfect reconstruction filter banks; 2.2.3 Polyphase representation; 2.3 Paraunitary filter banks; 2.4 Block transforms; 2.4.1 Filter bank as a block transform; 2.5 Cosine-modulated filter banks; 2.5.1 Design example; 2.6 DFT filter banks; 2.6.1 Design example; 2.7

A note on cosine modulation; 2.8 Summary; References; 3 Second-order characterization of multirate filter banks  
3.1 Correlation-domain formulation  
3.1.1 Critical decimation; 3.2 Cross spectrum; 3.2.1 Subband spectrum; 3.3 Orthogonality at zero lag; 3.3.1 Paraunitary condition; 3.4 Case study: Subband orthogonality of cosine-modulated filter banks; 3.4.1 Correlation-domain analysis; 3.4.2 MATLAB simulations; 3.5 Summary; References; 4 Subband adaptive filters; 4.1 Subband adaptive filtering; 4.1.1 Computational reduction; 4.1.2 Spectral dynamic range; 4.2 Subband adaptive filter structures; 4.2.1 Open-loop structures; 4.2.2 Closed-loop structures; 4.3 Aliasing, band-edge effects and solutions  
4.3.1 Aliasing and band-edge effects  
4.3.2 Adaptive cross filters; 4.3.3 Multiband-structured SAF; 4.3.4 Closed-loop delayless structures; 4.4 Delayless subband adaptive filters; 4.4.1 Closed-loop configuration; 4.4.2 Open-loop configuration; 4.4.3 Weight transformation; 4.4.4 Computational requirements; 4.5 MATLAB examples; 4.5.1 Aliasing and band-edge effects; 4.5.2 Delayless alias-free SAFs; 4.6 Summary; References; 5 Critically sampled and oversampled subband structures; 5.1 Variants of critically sampled subband adaptive filters; 5.1.1 SAF with the affine projection algorithm  
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5.1.3 SAF with selective coefficient update; 5.2 Oversampled and nonuniform subband adaptive filters; 5.2.1 Oversampled subband adaptive filtering; 5.2.2 Nonuniform subband adaptive filtering; 5.3 Filter bank design; 5.3.1 Generalized DFT filter banks; 5.3.2 Single-sideband modulation filter banks; 5.3.3 Filter design criteria for DFT filter banks; 5.3.4 Quadrature mirror filter banks; 5.3.5 Pseudo-quadrature mirror filter banks; 5.3.6 Conjugate quadrature filter banks; 5.4 Case study: Proportionate subband adaptive filtering  
5.4.1 Multiband structure with proportionate adaptation

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## Sommario/riassunto

Subband adaptive filtering is rapidly becoming one of the most effective techniques for reducing computational complexity and improving the convergence rate of algorithms in adaptive signal processing applications. This book provides an introductory, yet extensive guide on the theory of various subband adaptive filtering techniques. For beginners, the authors discuss the basic principles that underlie the design and implementation of subband adaptive filters. For advanced readers, a comprehensive coverage of recent developments, such as multiband tap-weight adaptation, delayless architectures,

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