

Adaptive Filtering: Algorithms and Practical Implementation

By Paulo S. R. Diniz



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In the fourth edition of *Adaptive Filtering: Algorithms and Practical Implementation*, author Paulo S.R. Diniz presents the basic concepts of adaptive signal processing and adaptive filtering in a concise and straightforward manner. The main classes of adaptive filtering algorithms are presented in a unified framework, using clear notations that facilitate actual implementation.

The main algorithms are described in tables, which are detailed enough to allow the reader to verify the covered concepts. Many examples address problems drawn from actual applications. New material to this edition includes:

- Analytical and simulation examples in Chapters 4, 5, 6 and 10
- Appendix E, which summarizes the analysis of set-membership algorithm
- Updated problems and references

Providing a concise background on adaptive filtering, this book covers the family of LMS, affine projection, RLS and data-selective set-membership algorithms as well as nonlinear, sub-band, blind, IIR adaptive filtering, and more.

Several problems are included at the end of chapters, and some of these problems address applications. A user-friendly MATLAB package is provided where the reader can easily solve new problems and test algorithms in a quick manner. Additionally, the book provides easy access to working algorithms for practicing engineers.





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Editorial Review

From the Back Cover

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About the Author

Paulo S. R. Diniz was born in Niteroi, Brazil. He received the Electronics Engineer degree from the Universidade Federal do Rio de Janeiro (UFRJ) in 1978, the MSc degree from COPPE/UFRJ in 1981, and the PhD from Concordia University, Montreal, PQ, Canada, in 1984, all in electrical engineering. Since 1979, he has been with the undergraduate Department of Electronics and Computer Engineering at the UFRJ. He has also been with the graduate Program of Electrical Engineering at COPPE/UFRJ since 1984, where he is presently a Professor. He has also served as undergraduate course coordinator and as chairman of the graduate department. From January 1991 to July 1992, he was a visiting Research Associate in the Department of Electrical and Computer Engineering at the University of Victoria, Canada. In 2002 he served as Melchor Endowment Chair Professor in the Department of Electrical Engineering of the University of Notre Dame, USA. Hehas taught short courses at numerous institutions around the world. His teaching and research interests are in analog and digital signal processing, adaptive signal processing, digital communications, wireless communications, multirate systems, stochastic processes and electronic circuits. He has published over 250 refereed papers in some of these areas, has written two books and has received awards for best papers and technical achievements. He is also a Fellow of IEEE (for fundamental contributions to the design and implementation of fixed and adaptive filters and electrical engineering education) and has served as associate editor for the following journals: IEEE Transactions on Circuits and Systems II: Analog and Digital Signal Processing (1996 1999), IEEE Transactions on Signal Processing (1999 2002) and Circuits, Systems and Signal Processing (1998 2002). He was a distinguished lecturer of the

IEEE Circuits and Systems Society for the years 2000 to 2001 and served as distinguished lecturer of the IEEE Signal Processing Society in 2004.

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