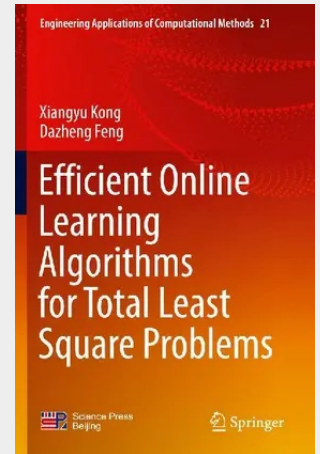


Efficient Online Learning Algorithms for Total Least Square Problems

This book reports the developments of the Total Least Square (TLS) algorithms for parameter estimation and adaptive filtering. Specifically, it introduces the authors' latest achievements in the past 20 years, including the recursive TLS algorithms, the approximate inverse power iteration TLS algorithm, the neural based MCA algorithm, the neural based SVD algorithm, the neural based TLS algorithm, the TLS algorithms under non-Gaussian noises, performance analysis methods of TLS algorithms, etc. In order to faster the understanding and mastering of the new methods provided in this book for readers, before presenting each new method in each chapter, a specialized section is provided to review the closely related several basis models. Throughout the book, large of procedure of new methods are provided, and all new algorithms or methods proposed by us are tested and verified by numerical simulations or actual engineering applications. Readers will find illustrative demonstration examples on a range of industrial processes to study. Readers will find out the present deficiency and recent developments of the TLS parameter estimation fields, and learn from the the authors' latest achievements or new methods around the practical industrial needs. In my opinion, this book can be assimilated by advanced undergraduates and graduate students, as well as statisticians, because of the new tools in data analysis, applied mathematics experts, because of the novel theories and techniques that we propose, engineers, above all for the applications in control, system identification, computer vision, and signal processing.

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