

Approximation Theory and Algorithms for Data Analysis

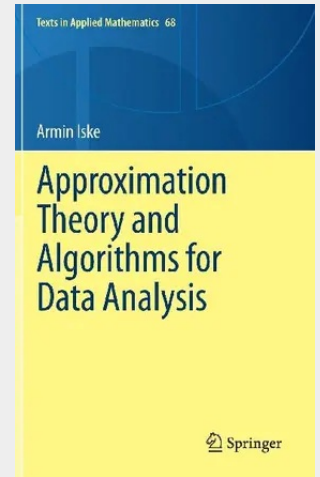
This textbook offers an accessible introduction to the theory and numerics of approximation methods, combining classical topics of approximation with recent advances in mathematical signal processing, and adopting a constructive approach, in which the development of numerical algorithms for data analysis plays an important role.

The following topics are covered:

- * least-squares approximation and regularization methods
- * interpolation by algebraic and trigonometric polynomials
- * basic results on best approximations
- * Euclidean approximation
- * Chebyshev approximation
- * asymptotic concepts: error estimates and convergence rates
- * signal approximation by Fourier and wavelet methods
- * kernel-based multivariate approximation
- * approximation methods in computerized tomography

Providing numerous supporting examples, graphical illustrations, and carefully selected exercises, this textbook is suitable for introductory courses, seminars, and distance learning programs on approximation for undergraduate students.

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