1. Record Nr. UNINA9910784637703321

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Titolo	Numerical methods for linear control systems [[electronic resource]] : design and analysis / / Biswa Nath Datta
Pubbl/distr/stampa	Amsterdam ; ; Boston, : Elsevier Academic Press, c2004
ISBN	1-281-03275-1 9786611032753 1-4356-0808-9 0-08-053788-X
Descrizione fisica	1 online resource (736 p.)
Disciplina	629.8/32
Soggetti	Control theory System analysis Linear control systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front Cover; Numerical Methods For Linear Control Systems: Design and Analysis; Copyright Page; Contents; Preface; Acknowledgments; About the Author; List of Algorithms; Notations and Symbols; CHAPTER 1. INTRODUCTION AND OVERVIEW; 1.1 Linear and Numerical Linear Algebra (Chapter 2 and Chapters 3 and 4); 1.2 System Responses (Chapter 5); 1.3 Controllability and Observability problems (Chapter 6); 1.4 Stability and Inertia (Chapter 7); 1.5 Lyapunov, Sylvester, and Algebraic Riccati Equations (Chapters 8 and 13); 1.6 Realization and Identification (Chapter 9) 2.2 Orthogonality of Vectors and Subspaces2.3 Matrices; 2.4 Some Special Matrices; 2.5 Vector and Matrix Norms; 2.6 Norm Invariant Properties Under Unitary Matrix Multiplication; 2.7 Kronecker Product, Kronecker Sum, and Vec Operation; 2.8 Chapter Notes and Further Reading; References; CHAPTER 3. SOME FUNDAMENTAL TOOLS AND CONCEPTS FROM NUMERICAL LINEAR ALGEBRA; 3.1 Introduction; 3.2 Floating Point Numbers and Errors in Computations; 3.3 Conditioning, Efficiency, Stability, and Accuracy; 3.4 LU Factorization; 3.5 Numerical Solution of the Linear System Ax=b; 3.6 The QR Factorization

3.7 Orthonormal Bases and Orthogonal Projections Using QR Factorization3.8 The Least-Squares Problem; 3.9 The Singular Value Decomposition (SVD); 3.10 Summary and Review; 3.11 Chapter Notes and Further Reading; References; CHAPTER 4. CANONICAL FORMS OBTAINED VIA ORTHOGONAL TRANSFORMATIONS; 4.1 Importance and Significance of Using Orthogonal Transformations; 4.2 Hessenberg Reduction of a Matrix; 4.3 The Real Schur Form of A: The QR Iteration Method; 4.4 Computing the Singular Value Decomposition (SVD); 4.5 The Generalized Real Schur Form: The QZ algorithm
4.6 Computing of the Eigenvectors of the Pencil A - B4.7 Summary and Review; 4.8 Chapter Notes and Further Reading; References; PART II: CONTROL SYSTEMS ANALYSIS; CHAPTER 5. LINEAR STATE-SPACE MODELS AND SOLUTIONS OF THE STATE EQUATIONS; 5.1 Introduction; 5.2 State-Space Representations of Control Systems; 5.3 Solutions of a Continuous-Time System: System Responses; 5.4 State-Space Solution of the Discrete-Time System; 5.5 Transfer Function and Frequency Response; 5.6 Some Selected Software; 5.7 Summary and Review; 5.8 Chapter Notes and Further Reading; Exercises; References
CHAPTER 6. CONTROLLABILITY, OBSERVABILITY, AND DISTANCE TO UNCONTROLLABILITY

Sommario/riassunto

Numerical Methods for Linear Control Systems Design and Analysis is an interdisciplinary textbook aimed at systematic descriptions and implementations of numerically-viable algorithms based on well-established, efficient and stable modern numerical linear techniques for mathematical problems arising in the design and analysis of linear control systems both for the first- and second-order models. MATLAB-based software is included for implementing all of the major algorithms from the book.* Unique coverage of modern mathematical concepts such as parallel computations, second-order system