1. Record Nr. UNINA9910809961003321

Autore	Wescott Tim
Titolo	Applied control theory for embedded systems / / by Tim Wescott
Pubbl/distr/stampa	Burlington, MA, : Newnes, c2006
ISBN	9786611052133 9781281052131 1281052132 9780080475899 0080475892
Edizione	[1st edition]
Descrizione fisica	1 online resource (321 pages)
Collana	Embedded technology series
Disciplina	629.8/9
Soggetti	Embedded computer systems - Design and construction Digital control systems - Design and construction
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 (p. 295-296) and index.
Nota di contenuto	front cover; copyright; table of contents; front matter; Preface; What's on the CD-ROM?; body; 1 The Basics; 1.1 Control Systems; 1.2 Anatomy of a Control System; 1.3 Closed Loop Control; 1.4 Controllers; 1.5 About This Book; 2 Z Transforms; 2.1 Signals and Systems; 2.2 Difference Equations; 2.3 The Z Transform; 2.4 The Inverse Z Transform; 2.5 Some Z Transform Properties; 2.6 Transfer Functions; 2.7 Stability in the Z Domain; 2.8 Frequency Response; 2.9 Conclusion; 3 Performance; 3.1 Tracking; 3.2 Frequency Response; 3.3 Disturbance Rejection; 3.4 Conclusion; 4 Block Diagrams 4.1 The Language of Blocks4.2 Analyzing Systems with Block Diagrams; 4.3 Conclusion; 5 Analysis; 5.1 Root Locus; 5.2 Bode Plots; 5.3 Nyquist Plots; 5.4 Conclusion; 6 Design; 6.1 Controllers, Filters and Compensators; 6.2 Compensation Topologies; 6.3 Types of Compensators; 6.4 Design Flow; 6.5 Conclusion; 7 Sampling Theory; 7.1 Sampling; 7.2 Aliasing; 7.3 Reconstruction; 7.4 Orthogonal Signals and Power; 7.5 Random Noise; 7.6 Nonideal Sampling; 7.7 The Laplace Transform; 7.8 z Domain Models; 7.9 Conclusion; 8 Nonlinear Systems; 8.1 Characteristics of Nonlinear Systems; 8.2 Some Nonlinearities 8.3 Linear Approximation8.4 Nonlinear Compensators; 8.5 Conclusion;

	9 Measuring Frequency Response; 9.1 Overview; 9.2 Measuring in Isolation; 9.3 In-Loop Measurement; 9.4 Real-World Issues; 9.5 Software; 9.6 Other Methods; 10 Software Implications; 10.1 Data Types; 10.2 Quantization; 10.3 Overflow; 10.4 Resource Issues; 10.5 Implementation Examples; 10.6 Conclusion; 11 Afterword; 11.1 Tools; 11.2 Bibliography; back matter; About the Author; Index; CD-ROM License Agreement
Sommario/riassunto	Many embedded engineers and programmers who need to implement basic process or motion control as part of a product design do not have formal training or experience in control system theory. Although some projects require advanced and very sophisticated control systems expertise, the majority of embedded control problems can be solved without resorting to heavy math and complicated control theory. However, existing texts on the subject are highly mathematical and theoretical and do not offer practical examples for embedded designers. This book is different;it presents mathematical background wi