Record Nr. UNINA9910807704103321 **Titolo** Zonotopes: from guaranteed state-estimation to control / / Vu Tuan Hieu Le [and four others]; series editor, Francis Castanie Pubbl/distr/stampa London, [England]; Hoboken, New Jersey:,: John Wiley and Sons, Incorporation, , 2013 ©2013 **ISBN** 1-118-76159-6 1-118-76158-8 1-118-76154-5 Descrizione fisica 1 online resource (168 p.) Collana Automation-control and industrial engineering series LeVu Tuan Hieu Altri autori (Persone) CastanieFrancis Disciplina 629.8 Soggetti Automatic control Estimation theory Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Description based upon print version of record. Includes bibliographical references and index. Nota di bibliografia Nota di contenuto Cover: Title page: Contents: Notations: Acronyms: Introduction: Chapter 1. Uncertainty Representation Based on Set Theory; 1.1. Basic set definitions: advantages and weaknesses; 1.1.1. Interval set; 1.1.2. Ellipsoidal set; 1.1.3. Polyhedral set; 1.1.4. Zonotopic set; 1.2. Main properties of zonotopes; Chapter 2. Several Approaches on Zonotopic Guaranteed Set-Membership Estimation; 2.1. Context; 2.2. Problem formulation; 2.2.1. Singular Value Decomposition-based method 35: 2.2.2. Optimization-based methods: Chapter 3. Zonotopic Guaranteed State Estimation Based on P-Radius Minimization 3.1. Single-Output systems approach3.2. Multi-Output systems approaches; 3.2.1. General formulation; 3.2.2. Extensions of the Single-Output systems methodology; 3.2.3. Dedicated approach for Multi-Output systems; Chapter 4. Tube Model Predictive Control Based on Zonotopic Set-Membership Estimation; 4.1. Context; 4.2. Problem formulation; 4.3. Tube-based output feedback Model Predictive Control design; 4.4. Application on the magnetic levitation system; 4.4.1.

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Sommario/riassunto

This title focuses on two significant problems in the field of automatic control, in particular state estimation and robust Model Predictive Control under input and state constraints, bounded disturbances and measurement noises. The authors build upon previous results concerning zonotopic set-membership state estimation and output feedback tube-based Model Predictive Control. Various existing zonotopic set-membership estimation methods are investigated and their advantages and drawbacks are discussed, making this book suitable both for researchers working in automatic control and industrial pa