1. Record Nr. UNINA9910682598303321

Autore	Martinez-Guerra Rafael
Titolo	An Approach to Multi-agent Systems as a Generalized Multi-synchronization Problem / / by Rafael Martínez-Guerra, Juan Pablo Flores-Flores
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2023
ISBN	3-031-22669-0
Edizione	[1st ed. 2023.]
Descrizione fisica	1 online resource (222 pages)
Collana	Understanding Complex Systems, , 1860-0840
Disciplina	629.8 006.30285436
Soggetti	System theory Stochastic processes Automatic control Differential equations Complex Systems Stochastic Systems and Control Control and Systems Theory Differential Equations
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	An Overview of Chaos Synchronization -- Synchronization of Non-identical Systems -- State Estimation and Synchronization -- Generalized Multi-Synchronization and Multi-Agent Systems -- Multi-Synchronization in Heterogeneous Networks -- Synchronization for PDE-based Systems -- Synchronization and Fractional-order Systems.
Sommario/riassunto	This book addresses the problem of multi-agent systems, considering that it can be interpreted as a generalized multi-synchronization problem. From manufacturing tasks, through encryption and communication algorithms, to high-precision experiments, the simultaneous cooperation between multiple systems or agents is essential to successfully carrying out different modern activities, both in academy and industry. For example, the coordination of multiple assembler robots in manufacturing lines. These agents need to

synchronize. The first two chapters of the book describe the synchronization of dynamical systems, paying special attention to the synchronization of non-identical systems. Following, the third chapter presents an interesting application of the synchronization phenomenon for state estimation. Subsequently, the authors fully address the multi-agent problem interpreted as multi-synchronization. The final chapters introduce the reader to a more complex problem, the synchronization of systems governed by partial differential equations, both of integer and fractional order. The book aimed at graduates, postgraduate students and researchers closely related to the area of automatic control. Previous knowledge of linear algebra, classical and fractional calculus is requested, as well as some fundamental notions of graph theory.