1.	Record Nr.	UNINA9910817806703321
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	Titolo	Optimization algorithms on matrix manifolds / / P.-A. Absil, R. Mahony, R. Sepulchre
	Pubbl/distr/stampa	Princeton, : Princeton University Press, 2008
	ISBN	1-282-15823-6
		9786612158230
		1-4008-3024-9
	Edizione	[Course Book]
	Descrizione fisica	1 online resource (240 p.)
	Classificazione	SK 915
	Altri autori (Persone)	MahonyR <1967-> (Robert)
		SepulchreR <1967-> (Rodolphe)
	Disciplina	518.1
	Soggetti	Mathematical optimization
		Matrices
		Algorithms
	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. [201]-220) and index.
	Nota di contenuto	Frontmatter -- Contents -- List of Algorithms -- Foreword -- Notation Conventions -- Chapter One. Introduction -- Chapter Two. Motivation and Applications -- Chapter Three. Matrix Manifolds: First-Order Geometry -- Chapter Four. Line-Search Algorithms On Manifolds -- Chapter Five. Matrix Manifolds: Second-Order Geometry -- Chapter Six. Newton's Method -- Chapter Seven. Trust-Region Methods -- Chapter Eight. A Constellation Of Superlinear Algorithms -- A. Elements Of Linear Algebra, Topology, And Calculus -- Bibliography -- Index
	Sommario/riassunto	Many problems in the sciences and engineering can be rephrased as optimization problems on matrix search spaces endowed with a so-called manifold structure. This book shows how to exploit the special structure of such problems to develop efficient numerical algorithms. It places careful emphasis on both the numerical formulation of the algorithm and its differential geometric abstraction--illustrating how good algorithms draw equally from the insights of differential geometry, optimization, and numerical analysis. Two more theoretical chapters provide readers with the background in differential geometry

necessary to algorithmic development. In the other chapters, several well-known optimization methods such as steepest descent and conjugate gradients are generalized to abstract manifolds. The book provides a generic development of each of these methods, building upon the material of the geometric chapters. It then guides readers through the calculations that turn these geometrically formulated methods into concrete numerical algorithms. The state-of-the-art algorithms given as examples are competitive with the best existing algorithms for a selection of eigenspace problems in numerical linear algebra. Optimization Algorithms on Matrix Manifolds offers techniques with broad applications in linear algebra, signal processing, data mining, computer vision, and statistical analysis. It can serve as a graduate-level textbook and will be of interest to applied mathematicians, engineers, and computer scientists.