1. Record Nr. UNINA9910484715603321

Autore	Saremi Shahrzad
Titolo	Optimisation Algorithms for Hand Posture Estimation / / by Shahrzad Saremi, Seyedali Mirjalili
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2020
ISBN	981-13-9757-0
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (XV, 205 p. 108 illus., 99 illus. in color.)
Collana	Algorithms for Intelligent Systems, , 2524-7573
Disciplina	006.3
Soggetti	Computational intelligence Computer simulation Mathematical optimization Computational Intelligence Computer Modelling Optimization
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction to Hand Posture Estimation -- Literature Review of Hand Posture Estimation Techniques and Optimisation Algorithms -- A New 3D Hand Model, Hand Shape Optimization, and Evolutionary Population Dynamics for PSO and MOPSO -- Evaluating PSO and MOPSO equipped with Evolutionary Population Dynamics -- Hand shape optimisation for geometry-based models using EPD-based Particle Swarm Optimization -- Hand recovery for geometry-based models using EPD-based Particle Swarm Optimization -- Hand model estimation considering two objectives using EPD-based Multi-Objective Particle Swarm Optimization -- Conclusion.
Sommario/riassunto	This book reviews the literature on hand posture estimation using generative methods, identifying the current gaps, such as sensitivity to hand shapes, sensitivity to a good initial posture, difficult hand posture recovery in cases of loss in tracking, and lack of addressing multiple objectives to maximize accuracy and minimize computational cost. To fill these gaps, it proposes a new 3D hand model that combines the best features of the current 3D hand models in the literature. It also discusses the development of a hand shape optimization technique. To

find the global optimum for the single-objective problem formulated, it improves and applies particle swarm optimization (PSO), one of the most highly regarded optimization algorithms and one that is used successfully in both science and industry. After formulating the problem, multi-objective particle swarm optimization (MOPSO) is employed to estimate the Pareto optimal front as the solution for this bi-objective problem. The book alsodemonstrates the effectiveness of the improved PSO in hand posture recovery in cases of tracking loss. Lastly, the book examines the formulation of hand posture estimation as a bi-objective problem for the first time. The case studies included feature 50 hand postures extracted from five standard datasets, and were used to benchmark the proposed 3D hand model, hand shape optimization, and hand posture recovery.