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Autore	Luo Xin <1963->
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Nota di contenuto	Chapter 1. Introduction -- Chapter 2. A Novel Model Predictive Control Scheme Based on an Improved Newton Algorithm -- Chapter 3. A Novel Recurrent Neural Network for Robot Control -- Chapter 4. A Projected Zeroing Neural Network Model for the Motion Generation and Control -- Chapter 5. A Regularization Ensemble Based on Levenberg–Marquardt Algorithm for Robot Calibration -- Chapter 6. Novel Evolutionary Computing Algorithms for Robot Calibration -- Chapter 7. A Highly Accurate Calibrator Based on a Novel Variable Step-Size Levenberg-Marquardt Algorithm -- Chapter 8. Conclusion and Future Work.
Sommario/riassunto	This book mainly shows readers how to calibrate and control robots. In this regard, it proposes three control schemes: an error-summation enhanced Newton algorithm for model predictive control; RNN for solving perturbed time-varying underdetermined linear systems; and a new joint-drift-free scheme aided with projected ZNN, which can effectively improve robot control accuracy. Moreover, the book develops four advanced algorithms for robot calibration – Levenberg-Marquarelt with diversified regularizations; improved covariance matrix adaptive evolution strategy; quadratic interpolated beetle antennae search algorithm; and a novel variable step-size Levenberg-Marquardt algorithm – which can effectively enhance robot positioning accuracy. In addition, it is exceedingly difficult for experts in other fields to

conduct robot arm calibration studies without calibration data. Thus, this book provides a publicly available dataset to assist researchers from other fields in conducting calibration experiments and validating their ideas. The book also discusses six regularization schemes based on its robot error models, i.e., L1, L2, dropout, elastic, log, and swish. Robots' positioning accuracy is significantly improved after calibration. Using the control and calibration methods developed here, readers will be ready to conduct their own research and experiments.