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Collana	Advances in Industrial Control, , 1430-9491
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Soggetti	Computational intelligence Neural networks (Computer science) Artificial intelligence Statistical physics Computational Intelligence Mathematical Models of Cognitive Processes and Neural Networks Artificial Intelligence Applications of Nonlinear Dynamics and Chaos Theory
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Introduction -- Extend Learnable Band and Multi-channel Configuration -- Learnable Bandwidth Extension by Auto-Tunings -- Reverse Time Filtering Based ILC -- Wavelet Transform based Frequency Tuning ILC -- Learning Transient Performance with Cutoff-Frequency Phase-In -- Downsampled ILC -- Cyclic Pseudo-Downsampled ILC.
Sommario/riassunto	This book is on the iterative learning control (ILC) with focus on the design and implementation. We approach the ILC design based on the frequency domain analysis and address the ILC implementation based on the sampled data methods. This is the first book of ILC from frequency domain and sampled data methodologies. The frequency domain design methods offer ILC users insights to the convergence performance which is of practical benefits. This book presents a comprehensive framework with various methodologies to ensure the learnable bandwidth in the ILC system to be set with a balance between

learning performance and learning stability. The sampled data implementation ensures effective execution of ILC in practical dynamic systems. The presented sampled data ILC methods also ensure the balance of performance and stability of learning process. Furthermore, the presented theories and methodologies are tested with an ILC controlled robotic system. The experimental results show that the machines can work in much higher accuracy than a feedback control alone can offer. With the proposed ILC algorithms, it is possible that machines can work to their hardware design limits set by sensors and actuators. The target audience for this book includes scientists, engineers and practitioners involved in any systems with repetitive operations.