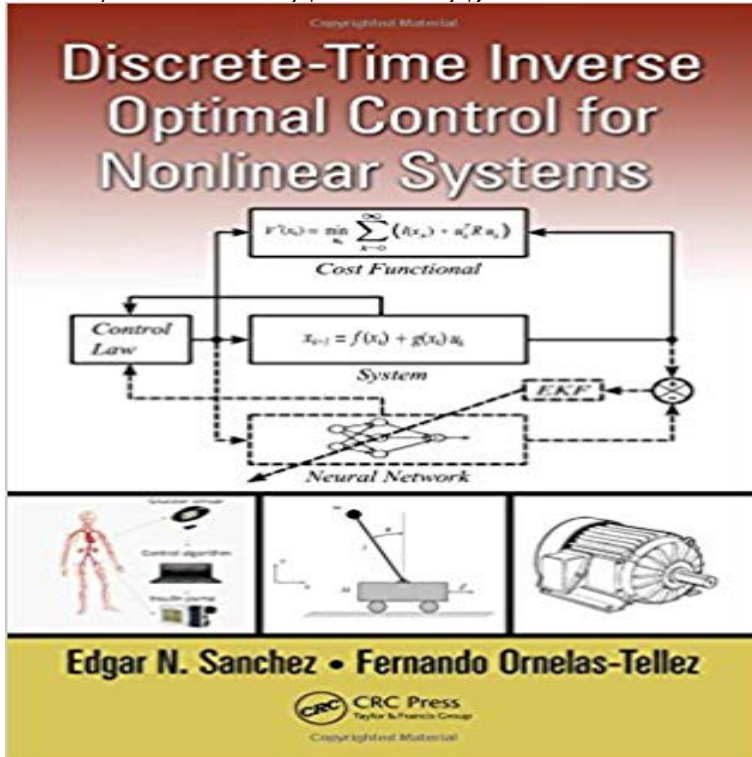


# Discrete-Time Inverse Optimal Control for Nonlinear Systems (System of Systems Engineering)



Discrete-Time Inverse Optimal Control for Nonlinear Systems proposes a novel inverse optimal control scheme for stabilization and trajectory tracking of discrete-time nonlinear systems. This avoids the need to solve the associated Hamilton-Jacobi-Bellman equation and minimizes a cost functional, resulting in a more efficient controller. Design More Efficient Controllers for Stabilization and Trajectory Tracking of Discrete-Time Nonlinear Systems The book presents two approaches for controller synthesis: the first based on passivity theory and the second on a control Lyapunov function (CLF). The synthesized discrete-time optimal controller can be directly implemented in real-time systems. The book also proposes the use of recurrent neural networks to model discrete-time nonlinear systems. Combined with the inverse optimal control approach, such models constitute a powerful tool to deal with uncertainties such as unmodeled dynamics and disturbances. Learn from Simulations and an In-Depth Case Study The authors include a variety of simulations to illustrate the effectiveness of the synthesized controllers for stabilization and trajectory tracking of discrete-time nonlinear systems. An in-depth case study applies the control schemes to glycemic control in patients with type 1 diabetes mellitus, to calculate the adequate insulin delivery rate required to prevent hyperglycemia and hypoglycemia levels. The discrete-time optimal and robust control techniques proposed can be used in a range of industrial applications, from aerospace and energy to biomedical and electromechanical systems. Highlighting optimal and efficient control algorithms, this is a valuable resource for researchers, engineers, and students working in nonlinear system control.

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Discrete-Time Inverse Optimal Control for Nonlinear Systems (System of Systems Engineering) by Sanchez, Edgar N., Ornelas-Tellez, Fernando (2013) **A note on the inverse optimal control of nonlinear systems - IEEE** The inverse optimal control scheme is illustrated via simulations for the DFIG, . he is currently working toward the Ph.D. degree in electrical engineering. on nonlinear system control and variable structure systems with sliding mode as **Inverse Optimality in Robust Stabilization SIAM Journal on Control** **Discrete-Time Neural Inverse Optimal Control for Nonlinear Systems** A note on the inverse optimal control of nonlinear systems transient response improved and at the same time the control energy requirement is reduced. Engineers India Ltd., New Delhi, India  
Neural-Network-Based Near-Optimal Control for a Class of Discrete-Time Affine Nonlinear Systems With Control Constraints. **Discrete-time inverse optimal control for nonlinear systems** Discrete-Time Inverse Optimal Control for Nonlinear Systems by Edgar N. Sanchez, 9781466580879, Hardback System of Systems Engineering English.  
**Discrete-time inverse optimal control for nonlinear systems - CERN** International Journal of Aerospace Engineering 2016, 1-14. . (2011) Discrete-time nonlinear systems inverse optimal control: A control (2011) Optimal control of a third order nonlinear system based on an inverse optimality method.