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Nota di contenuto	Part 1_ Prologue -- Chapter 1. Intelligent Adaptive Fuzzy Control -- Chapter 2. Some Contemporary Stochastic Algorithms: A Glimps -- Chpater 3. Fuzzy Controller Design-I: Stochastic Algorithm Based Approac -- Part II_Lyapunov Strategy Based Design Methodologie -- Chapter 4. Fuzzy Controller Design-II: Lyapunov Strategy Based Adaptive Approac -- Chapter 5. Fuzzy Controller Design-III: Hybrid Adaptive Approache -- Part III_H Strategy Based Design Methodologies -- Chapter 6. Fuzzy Controller Design-IV: H Strategy Based Robust Approac -- Chapter 7. Fuzzy Controller Design-V:

Robust Hybrid Adaptive Approaches -- Part IV _Applications -- Chapter 8. Experimental Study-I: Temperature Control of an Air Heater System with Transportation Delay -- Chapter 9. Experimental Study-II: Vision Based Control of Robot Manipulators -- Chapter 10. Experimental Study-III: Vision Based Navigation of Mobile Robots -- Part V_Epilogue -- Chapter 11. Emerging Areas in Intelligent Fuzzy Control and Future Research Scopes.

Sommario/riassunto

This book discusses systematic designs of stable adaptive fuzzy logic controllers employing hybridizations of Lyapunov strategy-based approaches/H theory-based approaches and contemporary stochastic optimization techniques. The text demonstrates how candidate stochastic optimization techniques like Particle swarm optimization (PSO), harmony search (HS) algorithms, covariance matrix adaptation (CMA) etc. can be utilized in conjunction with the Lyapunov theory/H theory to develop such hybrid control strategies. The goal of developing a series of such hybridization processes is to combine the strengths of both Lyapunov theory/Htheory-based local search methods and stochastic optimization-based global search methods, so as to attain superior control algorithms that can simultaneously achieve desired asymptotic performance and provide improved transient responses. The book also demonstrates how these intelligent adaptive control algorithms can be effectively utilized in real-life applications such as in temperature control for air heater systems with transportation delay, vision-based navigation of mobile robots, intelligent control of robot manipulators etc.