

1. Record Nr.	UNINA9910782280503321
Autore	Saridis George N. <1931->
Titolo	Hierarchically intelligent machines [[electronic resource] /] / George N. Saridis
Pubbl/distr/stampa	River Edge, NJ, : World Scientific, c2001
ISBN	1-281-95643-0 9786611956431 981-281-082-X
Descrizione fisica	1 online resource (xvi, 126 p.) : ill
Disciplina	629.8
Soggetti	Artificial intelligence Intelligent control systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	ch. 1. Introduction. 1.1. Motivation. 1.2. Automation and control in modern society. 1.3. Intelligent machines-A survey. 1.4. Book organization. 1.5. Remarks. 1.6. References -- ch. 2. Machine intelligence, knowledge and precision; concepts and definitions. 2.1. Introduction. 2.2. Artificial vs. machine intelligence. 2.3. Smart systems. 2.4. Knowledge and intelligence in the machine. 2.5. Precision and complexity. 2.6. Hierarchically intelligent control. 2.7. Remarks. 2.8. References -- ch. 3. Entropy and the principle of increasing precision with decreasing intelligence (IPDI). 3.1. Uncertainty and entropy. 3.2. Entropy and thermodynamics: Boltzmann. 3.3. Entropy and information theory: Shannon. 3.4. Kolmogorov's [symbol]-entropy. 3.5. Entropy, environment and manufacturing. 3.6. The modified Jaynes' principle of maximum entropy. 3.7. The principle of increasing precision decreasing intelligence. 3.8. Remarks. 3.9. References -- ch. 4. The analytic formulation of hierarchically intelligent machines. 4.1. Introduction. 4.2. The architecture of the machine. 4.3. Definitions of the procedure. 4.4. Hierarchical modeling of the levels of the intelligent machine. 4.5. Remarks. 4.6. References -- ch. 5. Hierarchically intelligent control: the organization level. 5.1. Introduction. 5.2. The Boltzmann neutral net. 5.3. The analytic model. 5.4. Search techniques. 5.5. Remarks. 5.6. References -- ch. 6. Hierarchically intelligent

control: The coordination level. 6.1. Introduction. 6.2. The architecture of coordination. 6.3. Petri nets and petri net transducers. 6.4. The coordination structure. 6.5. Task scheduling and translation. 6.6. Performance and entropy. 6.7. Remarks. 6.8. References -- ch. 7. Hierarchically intelligent control: The execution level. 7.1. Introduction. 7.2. The theory of global entropy. 7.3. Entropy formulation of motion control. 7.4. Entropy measures of stereo vision systems. 7.5. Remarks. 7.6. References -- ch. 8. Hierarchically intelligent control: Application to robotic systems. 8.1. Introduction. 8.2. The architecture of the organization level. 8.3. The architecture of the coordination level. 8.4. The analytic model. 8.5. The architecture of the execution level. 8.6. Entropy formulation of motion control. 8.7. Entropy measure of the vision system. 8.8. Entropy measure for the sensory system. 8.9. Total entropy of the system. 8.10. Remarks. 8.11. References -- ch. 9. Intelligent manufacturing. 9.1. Introduction. 9.2. Intelligent manufacturing. 9.3. Architecture of intelligent scheduling for production. 9.4. A paradigm of automated production scheduling. 9.5. Simulation results for the assembly of a machine. 9.6. Remarks -- ch. 10. Conclusions. 10.1. Distributed intelligent machines and cooperating robots. 10.2. Future research. 10.3. Concluding remarks. 10.4. References.

Sommario/riassunto

This book presents the result of 30 years' work on the original material related to "thinking machines", a subject initiated by the author and his colleagues. It is based on the ability of the computer to represent the hierarchical procedure of task conception and execution found in human beings. It is arranged in three levels representing the structure of organizational systems: organization, coordination and execution. Hierarchically Intelligent Machines can serve as a guide to modern intelligent robots.
