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Collana	Intelligent Systems, Control and Automation: Science and Engineering, , 2213-8986 ; ; 90
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Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Chapter 1. Life and Human Society: The Five Fundamental Elements -- Chapter 2. Energy I: General Issues -- Chapter 3. Energy II: Thermodynamics -- Chapter 4. Information I: Communication, Transmission, and Information Theory -- Chapter 5. Information II: Science, Technology, and Systems -- Chapter 6. Feedback and Control I: History and Classical Methodologies -- Chapter 7. Feedback and Control II: Modern Methodologies -- Chapter 8. Adaptation, Complexity, and Complex Adaptive Systems -- Chapter 9. Self-Organization -- Chapter 10. Energy in Life and Society -- Chapter 11.

Information in Life and Society -- Chapter 12. Feedback Control in Life and Society -- Chapter 13.Adaptation and Self-Organization in Life and Society.

Sommario/riassunto

This unique book offers a comprehensive and integrated introduction to the five fundamental elements of life and society: energy, information, feedback, adaptation, and self-organization. It is divided into two parts. Part I is concerned with energy (definition, history, energy types, energy sources, environmental impact); thermodynamics (laws, entropy definitions, energy, branches of thermodynamics, entropy interpretations, arrow of time); information (communication and transmission, modulation–demodulation, coding–decoding, information theory, information technology, information science, information systems); feedback control (history, classical methodologies, modern methodologies); adaptation (definition, mechanisms, measurement, complex adaptive systems, complexity, emergence); and self-organization (definitions/opinions, self-organized criticality, cybernetics, self-organization in complex adaptive systems, examples in nature). In turn, Part II studies the roles, impacts, and applications of the five above-mentioned elements in life and society, namely energy (biochemical energy pathways, energy flows through food chains, evolution of energy resources, energy and economy); information (information in biology, biocomputation, information technology in office automation, power generation/distribution, manufacturing, business, transportation), feedback (temperature, water, sugar and hydrogen ion regulation, autocatalysis, biological modeling, control of hard/technological and soft/managerial systems), adaptation and self-organization (ecosystems, climate change, stock market, knowledge management, man-made self-organized controllers, traffic lights control).