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Nota di contenuto	Cover page; Half-Title page; Title page; Copyright page; Contents; Preface; List of Figures; List of Tables; 1: Scheduling in Energy Autonomous Objects; 1.1. Introduction; 1.2. Modeling and terminology; 1.2.1. System model; 1.2.1.1. Job model; 1.2.1.2. Energy production model; 1.2.1.3. Energy storage model; 1.2.2. Types of starvation; 1.2.3. Terminology; 1.3. Weaknesses of classical schedulers; 1.3.1. Scheduling by EDF; 1.3.2. ASAP strategy; 1.3.3. ALAP strategy; 1.4. Fundamental properties; 1.5. Concepts related to energy; 1.5.1. Processor demand; 1.5.2. Energy demand; 1.6. ED-H scheduling 1.6.1. Informal description1.6.2. Rules of ED-H; 1.6.3. Optimality analysis; 1.6.4. Clairvoyance analysis; 1.6.5. Schedulability test; 1.7. Conclusion; 1.8. Bibliography; 2: Probabilistic Scheduling; 2.1. Introduction; 2.2. Notations and definitions; 2.3. Modeling a probabilistic real-time system; 2.4. Imposed properties; 2.5. Worst-case probabilistic models; 2.5.1. Real-time systems with probabilistic arrivals; 2.5.2. Comparison of the two models; 2.6. Probabilistic real-time scheduling; 2.7. Probabilistic schedulability analysis; 2.8. Classification of the main existing results 2.9. Bibliography3: Control and Scheduling Joint Design; 3.1. Control objectives and models; 3.1.1. Closed loop control; 3.1.2. Control and temporal parameters; 3.2. Scheduling of control loops; 3.2.1.

Robustness and relaxation of hard real-time constraints; 3.3. Continuous approach: regulated scheduling; 3.3.1. Architecture, sensors and actuators; 3.3.2. Sensors; 3.3.3. Actuators; 3.3.4. Control laws; 3.4. Discrete approach: scheduling under the (m,k)-firm constraint; 3.4.1. (m,k)-firm model; 3.4.2. Scheduling under the (m,k)-firm constraint; 3.4.3. Regulated (m,k)-firm scheduling
3.5. Case study: regulated scheduling of a video decoder3.6. Conclusion; 3.7. Bibliography; 4: Synchronous Approach and Scheduling; 4.1. Introduction; 4.2. Classification; 4.2.1. Synchronous languages; 4.2.2. Related languages; 4.3. Synchronous languages; 4.3.1. SIGNAL; 4.3.2. LUSTRE; 4.3.3. ESTEREL; 4.4. Scheduling with synchronous languages; 4.5. Synchronous languages extended to perform scheduling; 4.5.1. LUSTRE; 4.5.2. PRELUDE; 4.5.3. SYNDEX; 4.5.4. TAXYS; 4.5.5. PSIC, Embedded Code and Network Code; 4.6. Conclusion; 4.7. Bibliography
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6: Scheduling in Networks

Sommario/riassunto

"This book is a comprehensive text for the design of safety critical, hard real-time embedded systems. It offers a splendid example for the balanced, integrated treatment of systems and software engineering, helping readers tackle the hardest problems of advanced real-time system design, such as determinism, compositionality, timing and fault management. This book is an essential reading for advanced undergraduates and graduate students in a wide range of disciplines impacted by embedded computing and software. Its conceptual clarity, the style of explanations and the examples make the abstr