

REAL-TIME SYSTEMS SCHEDULING

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Real-time systems are used in a wide range of applications, including control, sensing, multimedia, etc. Scheduling is a central problem for these computing/communication systems since it is responsible for software execution in a timely manner.

This book can serve as a textbook for courses on the topic in bachelor's degrees and in more advanced master's degree programs. It also provides a reference for computer scientists and engineers involved in the design or the development of Cyber-Physical Systems which require up-to-date real-time scheduling solutions.



V1 – Fundamentals

This book is of interest as a general course on scheduling in real-time systems. It addresses foundations as well as the latest advances and findings in real-time scheduling, giving comprehensive references to important papers, but the chapters are short and not overloaded with confusing details. Coverage includes scheduling

approaches for mono-core, multi-core as well as energy-constrained platforms, scheduling of tasks with resource requirements and advances in computing Worst Case Execution Times.

Contents

1. Introduction to Real-time Scheduling, Emmanuel Grolleau.
2. Uniprocessor Architecture Solutions, Laurent George and Jean-François Hermant.
3. Multiprocessor Architecture Solutions, Joël Goossens and Pascal Richard.
4. Synchronizations: Shared Resource Access Protocols, Serge Midonnet and Frédéric Fauberteau.
5. Estimation of Execution Time and Delays, Claire Maiza, Pascal Raymond and Christine Rochange.
6. Optimization of Energy Consumption, Cécile Belleudy.

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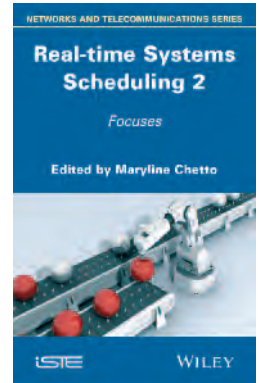
V2 – Focuses

This book brings together knowledge on specific topics and discusses the recent advances for some of them. It addresses foundations as well as the latest advances and findings in real-time scheduling, giving comprehensive references to important papers, but the chapters are short and not overloaded with confusing details. Coverage includes scheduling approaches for networks and for energy autonomous systems. Other sophisticated issues, such as feedback control scheduling and probabilistic scheduling, are also addressed.

Contents

1. Scheduling in Energy Autonomous Objects, Maryline Chetto.
2. Probabilistic Scheduling, Liliana Cucu-Grosjean, Adriana Gogonel and Dorin Maxim.
3. Control and Scheduling Joint Design, Daniel Simon, Ye-Qiong Song and Olivier Sename.
4. Synchronous Approach and Scheduling, Yves Sorel and Dumitru Potop-Butucaru.
5. Inductive Approaches for Packet Scheduling in Communication Networks, Malika Bourenane and Abdelhamid Mellouk.
6. Scheduling in Networks, Ye-Qiong Song.
7. Focus on Avionics Networks, Jean-Luc Scharbarg and Christian Fraboul.

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