

1. Record Nr.	UNINA9910728782203321
Titolo	Patch Clamp Technique
Pubbl/distr/stampa	MyJoVE Corporation
Lingua di pubblicazione	Inglese
Formato	Videoregistrazione
Livello bibliografico	Monografia
2. Record Nr.	UNINA9910299843803321
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Titolo	Dynamic Memory Management for Embedded Systems // by David Atienza Alonso, Stylianos Mamagkakis, Christophe Poucet, Miguel Peón-Quirós, Alexandros Bartzas, Francky Catthoor, Dimitrios Soudris
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2015
ISBN	3-319-10572-8
Edizione	[1st ed. 2015.]
Descrizione fisica	1 online resource (251 p.)
Disciplina	004.1 620 621.381 621.3815
Soggetti	Electronic circuits Microprocessors Electronics Microelectronics Circuits and Systems Processor Architectures Electronics and Microelectronics, Instrumentation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- Analysis and Characterization of Dynamic Multimedia

Applications -- Profiling and Analysis of Dynamic Applications --
Dynamic Memory Management Optimization for Multimedia
Applications -- Systematic Placement of Dynamic Objects across
Heterogeneous Memory Hierarchies.

Sommario/riassunto

This book provides a systematic and unified methodology, including basic principles and reusable processes, for dynamic memory management (DMM) in embedded systems. The authors describe in detail how to design and optimize the use of dynamic memory in modern, multimedia and network applications, targeting the latest generation of portable embedded systems, such as smartphones. Coverage includes a variety of design and optimization topics in electronic design automation of DMM, from high-level software optimization to microarchitecture-level hardware support. The authors describe the design of multi-layer dynamic data structures for the final memory hierarchy layers of the target portable embedded systems and how to create a low-fragmentation, cost-efficient, dynamic memory management subsystem out of configurable components for the particular memory allocation and de-allocation patterns for each type of application. The design methodology described in this book is based on propagating constraints among design decisions from multiple abstraction levels (both hardware and software) and customizing DMM according to application-specific data access and storage behaviors.

- Provides a systematic and reusable methodology for DMM to address concerns ranging from software design to hardware-based memory management and system optimization;
- Describes in detail which optimization is the best candidate in DMM for each type of portable embedded system;
- Includes extensive examples with code excerpts, demonstrating application to multiple application domains related to multimedia and networking;
- Uses real industrial case studies to demonstrate the presented methodology.
