

UFCF6Y-30-3 Embedded Systems Development

Practical 1 – Literature Review

Martin Serpell

Why do you need to know how to do
a proper literature review?

Why do you need to know how to do
a proper literature review?

I have only used it once in 30 years as a
developer

Why do you need to know how to do a proper literature review?

As a researcher I need to do literature reviews regularly. They let me know what work other people have already been done so that I do not waste my time re-inventing something

But, why do you need to know how to
do a proper literature review?

But, why do you need to know how to
do a proper literature review?

**20% of your final year project marks are
for your literature review**

How should you do a literature
review?

How should you do a literature review?

You should **NOT** go onto **Wikipedia!**

How should you do a literature review?

You should **NOT** go onto **Wikipedia!**

Anyone can write **anything** at **anytime** on Wikipedia and so it is **not** a **reliable source of information**

How should you do a literature review?

At a bare minimum you should use Google Scholar to search for peer reviewed conference and journal papers

Lets look and see what recent research has been done on multi-processor embedded systems

Lets see what we can find using Google Scholar



[Advanced search](#)
[Language tools](#)

[Google Scholar](#)

[scholar.google.co.uk/](#) ▼

More. My libraryMy CitationsMetricsSettingsAdvanced search. Google Scholar. Advanced Scholar Search. Articles (include patents) Case law. Federal courts

[English](#)

Social Sciences - Health & Medical
Sciences - Physics & Mathematics

[More results from google.co.uk »](#)

[About Google Scholar](#)

Google Scholar provides a simple way
to broadly search for ...

Click on Google Scholar



☐ Articles ☒ (include patents) ☐ Case law

Un-tick this

Search for multiprocessor embedded systems

Google

Scholar About 67,500 results (0.12 sec)

Articles

Case law

My library

Any time

Since 2014

Since 2013

Since 2010

Custom range...

Sort by relevance

Sort by date

☐ include patents

☒ include citations

☒ Create alert

Mapping applications to tiled **multiprocessor embedded systems**
[L Thiele](#), [I Bacivarov](#), W Haid... - ... of Concurrency to **System** ..., 2007 - [ieeexplore.ieee.org](#)
Abstract Modern **multiprocessor embedded systems** execute a large number of tasks on shared processors and handle their complex communications on shared communication networks. Traditional methods from the HW/SW codesign or general purpose computing ...
Cited by 145 Related articles All 13 versions Cite Save

Metrics for design space exploration of heterogeneous **multiprocessor embedded systems**
D Sciuto, F Salice, [L Pomante](#)... - Proceedings of the tenth ..., 2002 - [dl.acm.org](#)
Abstract This paper considers the problem of designing heterogeneous **multiprocessor embedded systems**. The focus is on a step of the design flow: the definition of innovative metrics for the analysis of the **system** specification to statically identify the most suitable ...
Cited by 43 Related articles All 11 versions Cite Save More


Energy-optimal software partitioning in heterogeneous **multiprocessor embedded systems**
M Goraczko, [J Liu](#), D Lymberopoulos, S Matic... - Proceedings of the 45th ..., 2008 - [dl.acm.org](#)
Abstract **Embedded systems** with heterogeneous processors extend the energy/timing trade-off flexibility and provide the opportunity to fine tune resource utilization for particular applications. In this paper, we present a resource model that considers the time and ...
Cited by 32 Related articles All 20 versions Cite Save More

Exploring **embedded-systems** architectures with Artemis
[AD Pimentel](#), LO Hertzbetger, P Lieve... - Computer, 2001 - [ieeexplore.ieee.org](#)
... tion, we experimented with a shared-memory **multi- processor** architecture model ... include **system**-level design and performance analysis of heterogeneous **multiprocessor systems**. ... research interests include **system**- level design methodologies, **embedded-systems** archi- tectures ...
Cited by 201 Related articles All 14 versions Web of Science: 63 Cite Save

Analysis and optimization of fault-tolerant task scheduling on **multiprocessor embedded systems**
J Huang, [JO Blech](#), [A Raabe](#), C Buckl... - ... codesign and **system** ..., 2011 - [dl.acm.org](#)


This one looks like it might be interesting

Analysis and optimization of fault-tolerant task scheduling on multiprocessor embedded systems

Full Text:  [PDF](#)

Authors: [Jia Huang](#) fortiss GmbH, Munich, Germany
[Jan Olaf Blech](#) fortiss GmbH, Munich, Germany
[Andreas Raabe](#) fortiss GmbH, Munich, Germany
[Christian Buckl](#) fortiss GmbH, Munich, Germany
[Alois Knoll](#) Technische Universität München, Munich, Germany



 2011 Article



Bibliometrics

- Downloads (6 Weeks): 6
- Downloads (12 Months): 48
- Downloads (cumulative): 239
- Citation Count: 8


Published in:






- Proceeding
CODES+ISSS '11 Proceedings of the seventh IEEE/ACM/IFIP international conference on Hardware/software codesign and system synthesis
Pages 247-256
ACM New York, NY, USA ©2011
[table of contents](#) ISBN: 978-1-4503-0715-4 doi>[10.1145/2039370.2039409](#)


Tools and Resources

 [Request Permissions](#)

 TOC Service:

 [Email](#)  [RSS](#)


 [Save to Binder](#)

 Export Formats:
[BibTeX](#) [EndNote](#) [ACM Ref](#)

Share:




Tags: [algorithms](#) [design](#)
[design optimization](#) [embedded](#)
[systems](#) [real-time and embedded](#)
[systems](#) [reliability](#) [reliability](#)
[reliability, testing, and fault-](#)
[tolerance](#)

 [Feedback](#) | Switch to [single page view](#) (no tabs)

[Abstract](#) [Authors](#) [References](#) [Cited By](#) [Index Terms](#) [Publication](#) [Reviews](#) [Comments](#) [Table of Contents](#)


Reliability is a major requirement for most safety-related systems. To meet this requirement, fault-tolerant techniques such as hardware replication and software re-execution are often utilized. In this paper, we tackle the problem of analysis and optimization of fault-tolerant task scheduling for multiprocessor embedded systems. A set of existing fault- and process-models are adopted and a Binary Tree Analysis (BTA) is proposed to compute the system-level reliability in the presence of software/hardware redundancy. The BTA is integrated into a multi-objective evolutionary algorithm via a two-step encoding to perform reliability-aware design optimization. The optimization results contain the mapping of tasks to processing elements, the exact task and message schedule and the fault-tolerance policy assignment. Based on the observation that permanent faults need to be considered together with transient faults to achieve optimal system design, we propose a virtual mapping technique to take both types of faults into account. To the best of our knowledge, this is the first

Analysis and optimization of fault-tolerant task scheduling on multiprocessor embedded systems

Full Text:  PDF

Authors: [Jia Huang](#) fortiss GmbH, Munich, Germany
[Jan Olaf Blech](#) fortiss GmbH, Munich, Germany
[Andreas Raabe](#) fortiss GmbH, Munich, Germany
[Christian Buckl](#) fortiss GmbH, Munich, Germany
[Alois Knoll](#) Technische Universität München, Munich, Germany



 2011 Article



Bibliometrics

- Downloads (6 Weeks): 6
- Downloads (12 Months): 48
- Downloads (cumulative): 239
- Citation Count: 8

Conference Paper

Published in:



· Proceeding
CODES+ISSS '11 Proceedings of the seventh IEEE/ACM/IFIP international conference on Hardware/software codesign and system synthesis
Pages 247-256
ACM New York, NY, USA ©2011
[table of contents](#) ISBN: 978-1-4503-0715-4 doi>[10.1145/2039370.2039409](#)

Tools and Resources



[Request Permissions](#)



TOC Service:



[Email](#)

[RSS](#)

[RSS](#)



[Save to Binder](#)



Export Formats:

[BibTeX](#)


[EndNote](#)

[ACM Ref](#)

Share:



Tags: [algorithms](#) [design](#) [design optimization](#) [embedded systems](#) [real-time and embedded systems](#) [reliability](#) [reliability](#) [reliability, testing, and fault-tolerance](#)

 [Feedback](#) | Switch to [single page view](#) (no tabs)

[Abstract](#) [Authors](#) [References](#) [Cited By](#) [Index Terms](#) [Publication](#) [Reviews](#) [Comments](#) [Table of Contents](#)

Reliability is a major requirement for most safety-related systems. To meet this requirement, fault-tolerant techniques such as hardware replication and software re-execution are often utilized. In this paper, we tackle the problem of analysis and optimization of fault-tolerant task scheduling for multiprocessor embedded systems. A set of existing fault- and process-models are adopted and a Binary Tree Analysis (BTA) is proposed to compute the system-level reliability in the presence of software/hardware redundancy. The BTA is integrated into a multi-objective evolutionary algorithm via a two-step encoding to perform reliability-aware design optimization. The optimization results contain the mapping of tasks to processing elements, the exact task and message schedule and the fault-tolerance policy assignment. Based on the observation that permanent faults need to be considered together with transient faults to achieve optimal system design, we propose a virtual mapping technique to take both types of faults into account. To the best of our knowledge, this is the first

Abstract

Better than Google Scholar is a
Library search

Better than Google Scholar is a Library search

1. Go onto myUWE
2. Click on the Library tab
3. Click the link 'Search for books, journals, DVDs and more'

[Home](#) / [Library](#)

Library

Library search

[Advanced search](#) | [Is my database included?](#)

Visiting the Library

Opening times, directions, information about UWE library and visiting other libraries.

Your subject

Specialist advice, research tutorials and web sites for your subject.

[Contact us](#)

Using the Library

Find, borrow, print, PCs, study space. Services for disabled users, researchers and staff.

Study skills

Advice on managing references and improving your learning, writing and research skills.

Searching for something else?


- › [Databases: by subject / A-Z](#)
- › [Dissertations](#)
- › [e-Journals: A-Z](#)
- › [Exam papers](#)
- › [Referencing guides and tools](#)
- › [TV and radio on-demand](#)
- › [UWE Research Repository](#)
- › [Search for things: A-Z](#)

Renew loans and pay fines

Log in to your library account:

Related links

- › [Book a PC or group study room](#)
- › [Library news](#)

[Ask a Librarian with 24/7 live chat](#) 

[Opening times](#) 





[Home](#) / [Library](#)

Library

Library search

[Advanced search](#) | [Is my database included?](#)

Click here

Searching for something else?

- › [Databases: by subject / A-Z](#)
- › [Dissertations](#)
- › [e-Journals: A-Z](#)
- › [Exam papers](#)
- › [Referencing guides and tools](#)
- › [TV and radio on-demand](#)
- › [UWE Research Repository](#)
- › [Search for things: A-Z](#)

Related links

- › [Book a PC or group study room](#)
- › [Library news](#)

Visiting the Library

Opening times, directions, information about UWE library and visiting other libraries.

Your subject

Specialist advice, research tutorials and web sites for your subject.

[Contact us](#)

Using the Library

Find, borrow, print, PCs, study space. Services for disabled users, researchers and staff.

Study skills

Advice on managing references and improving your learning, writing and research skills.

Renew loans and pay fines

Log in to your library account:

Ask a Librarian
with 24/7 live
chat

Opening times



Computer science

* database included in the [library search](#)

[Expand all](#) | [Hide all](#)

ACM Digital Library *	+
ANTE: Abstracts in New Technologies and Engineering	+
arXiv *	+
BoB	+
BSOL (British Standards Online) *	+
Business Source Premier *	+
Cambridge Journals Online *	+
Current Awareness Abstracts	+
EdiTLib	+
eWIC (Electronic Workshops in Computing)	+
IEEE Xplore *	+
Safari Books Online *	+
ScienceDirect *	+
TRILT (Television and Radio Index for Teaching and Learning)	+
Web of Science (formerly Web of Knowledge) *	+
Westlaw UK	+

Contains IEEE and
MIT Journal and
Conference Papers

Contains Elsevier
Journal and
Conference Papers

Lets look at IEEE Xplore

The screenshot displays the IEEE Xplore Digital Library interface. At the top, a navigation bar includes links to IEEE.org, IEEE Xplore Digital Library, IEEE Standards, IEEE Spectrum, and More Sites. On the right, it shows a Cart (0), Create Account, and Sign In options. The main header features the IEEE Xplore Digital Library logo, the University of the West of England logo, and a message stating 'Access provided by: University of the West of England' with a Sign Out link. Below the header is a blue navigation bar with buttons for BROWSE, MY SETTINGS, MY PROJECTS, WHAT CAN I ACCESS?, and RESOURCES. The main content area is titled 'Advanced Search Options' and contains a search form. The form has tabs for 'Advanced Keyword/Phrases', 'Command Search', 'Publication Quick Search', and 'Preferences'. The 'Advanced Keyword/Phrases' tab is active, showing a search area with the instruction 'ENTER KEYWORDS OR PHRASES, SELECT FIELDS, AND SELECT OPERATORS'. Below this, there is a note: 'Note: Refresh page to reflect updated preferences.' The search area includes a 'Search' dropdown menu set to 'Metadata Only', a 'Full Text & Metadata' radio button, and three search input fields. Each input field is followed by an 'in' dropdown menu set to 'Metadata Only'. There are also 'AND' dropdown menus between the input fields. At the bottom of the search area are buttons for 'Add New Line', 'Reset All', and 'SEARCH'. To the right of the search area is a 'CONTENT FILTER' section with three radio buttons: 'All Results' (selected), 'My Subscribed Content', and 'Open Access'. On the far right, there is a 'LEARN MORE ABOUT' section with links to 'Data Fields', 'Search Examples', 'Search Operators', and 'Search Guidelines'.

IEEE.org | IEEE Xplore Digital Library | IEEE Standards | IEEE Spectrum | More Sites

Cart (0) | Create Account | Sign In

IEEE Xplore®
Digital Library

UWE
BRISTOL

University of the West of England

Access provided by:
University of the West of England
» Sign Out

IEEE

BROWSE ▼ MY SETTINGS ▼ MY PROJECTS WHAT CAN I ACCESS? RESOURCES ▼

Advanced Search Options

Advanced Keyword/Phrases Command Search Publication Quick Search Preferences ?

ENTER KEYWORDS OR PHRASES, SELECT FIELDS, AND SELECT OPERATORS

Note: Refresh page to reflect updated preferences.

Search : ☒ Metadata Only ☐ Full Text & Metadata ?

in Metadata Only ▼

AND ▼ in Metadata Only ▼

AND ▼ in Metadata Only ▼

▼ CONTENT FILTER

☒ All Results
☐ My Subscribed Content
☐ Open Access

LEARN MORE ABOUT

- » Data Fields »
- » Search Examples »
- » Search Operators »
- » Search Guidelines »

BROWSE ▾

MY SETTINGS ▾

MY PROJECTS

WHAT CAN I ACCESS

Advanced Search Options

Advanced Keyword/Phrases

Command Search

Publication Quick Search

Preferences



ENTER KEYWORDS OR PHRASES, SELECT FIELDS, AND SELECT OPERATORS

Note: Refresh page to reflect updated preferences.

Search : ☒ Metadata Only ☐ Full Text & Metadata ?in 

AND ▾

in 

AND ▾

in  Add New Line

Reset All

SEARCH

LEARN MO

- » Data Field
- » Search E
- » Search O
- » Search G

▼ CONTENT FILTER

- ☒ All Results
- ☐ My Subscribed Content
- ☐ Open Access

BROWSE ▾

MY SETTINGS ▾

MY PROJECTS

WHAT CAN I ACCESS

SEARCH

Author Search ^{beta} | Advanced Search | Preferences | Search Tips | More Search Options ▾

FILTER THESE RESULTS ⓘ

Search within results:

Search

- ☒ All Results
- ☐ My Subscribed Content
- ☐ Open Access

SEARCH RESULTS

You searched for: ("**Document Title**":"Multiprocessor embedded system")

1 Results returned



Set Search Alert



Download Citations



Save to Project



Email Selected Results



Print



Export Results



Battery-aware dynamic voltage scaling in multiprocessor embedded system



Yuan Cai ; Reddy, S.M. ; Pomeranz, I. ; Al-Hashimi, B.M.
Circuits and Systems, 2005. ISCAS 2005. IEEE International Symposium on

DOI: 10.1109/ISCAS.2005.1464663

Publication Year: 2005 , Page(s): 616 - 619 Vol. 1

Cited by: Papers (7)

IEEE CONFERENCE PUBLICATIONS



Quick Abstract



PDF (120 KB)



HTML

SEARCH

Search H
using you
account.

Pub

Your

A

a

Do a similar search using the
ScienceDirect database

What terms should we use in our search?

What terms should we use in our search?

- Multiprocessor embedded system
- Multiprocessor real time system
- Any others?

Using the **Advanced Search** we can look for terms in...

- The title
- The abstract
- The whole document

Use the **Advanced Search** to
narrow in on the papers of
interest

Keep a table of statistics showing
in what database you searched,
what search terms you used and
how many papers you found.

This will make a nice **Appendix** in
your **Final Year Project**

Search Engine/Database: ERIC and ProQuest search facility (tick peer reviewed).



Phrase	Hits	Title interesting	Abstract interesting	Full Paper available	Paper interesting
ti("on-line learning") AND ti((Study OR Comparison))	53	23	13	8	8
ti("on-line teaching") AND ti((Study OR Comparison))	9	5	4	4	4
ti("on-line education") AND ti((Study OR Comparison))	4	1	1	0	
ti("on-line courses") AND ti((Study OR Comparison))	7	4	4	4	4
ti("remote learning" ") AND ti((Study OR Comparison))	0				
ti("remote teaching" ") AND ti((Study OR Comparison))	0				
ti("remote education" ") AND ti((Study OR Comparison))	0				
ti("remote courses ") AND ti((Study OR Comparison))	0				
ti("distance learning") AND ti((Study OR Comparison))	53	6	2	0	
ti("distance teaching") AND ti((Study OR Comparison))	5	0			
ti("distance education") AND ti((Study OR Comparison))	79	9	3	1	1

Filter out the papers that are not relevant by...

1. Title
2. Abstract
3. Availability
4. Finally by reading the whole paper

When you have a list of interesting papers download them and save them into a subdirectory

Cut and Paste the interesting bits from the .pdf into a Word document

Get rid of

Experimental results show the better effectiveness of the proposed procedure compared with a DVS procedure for distributed embedded systems [4] that assigned slack iteratively to the latest executed tasks (Cai et al, 2005).

Do not forget to add the citation

Remember these are not in your
own words

You will need to re-write them in
your own words

Next re-organise the text into areas that cover the same topics

These will become your document sections and sub-sections

Remember that you are telling a story so make it flow...

Finally you need to add the references section

Go to Google Scholar...



Battery-aware dynamic voltage scaling in multip



☒ Articles (include patents) ☐ Case law



Battery-aware dynamic voltage scaling in multiprocessor embedded system



Scholar

About 123 results (0.11 sec)

Articles

Case law

My library

Any time

Since 2014

Since 2013

Since 2010

Custom range...

Sort by relevance

Battery-aware dynamic voltage scaling in multiprocessor embedded system

Y Cai, SM Reddy, I Pomeranz... - Circuits and **Systems**, ..., 2005 - ieeexplore.ieee.org

Abstract—In a battery powered **system**, a primary design consideration is the battery lifetime. Profile of current drawn from a battery determines its lifetime. Recently in [4] **dynamic voltage scaling** has been applied to alter the battery load current profile in distributed **systems** to ...

Cited by 20 Related articles All 5 versions **Cite** Save More

Low power **system** scheduling and synthesis

[NK Jha](#) - Proceedings of the 2001 IEEE/ACM international ..., 2001 - dl.acm.org

... 5 T. Ishihara and H. Yasuura, **Voltage** scheduling problem for **dynamically** variable **voltage** ... and G. De Micheli, A survey of design techniques for **system**-level **dynamic** power management ... 22

J. Luo and NK Jha, **Battery-aware** static scheduling for distributed real-time **embedded** ...

Cited by 139 Related articles All 7 versions Cite Save More

Communication-aware task scheduling and **voltage** selection for total **systems** energy minimization

Click on this



Battery-aware dynamic voltage scaling in multiprocessor embedded system



Scholar

About 123 results (0.11 sec)

Articles

Case law

My library

Any time

Since 2014

Since 2013

Since 2010

Custom range...

Sort by relevance

Sort by date

☐ include patents

☒ include citations

Create alert

Battery-aware

Y Cai, SM Reddy

Abstract—In a b

Profile of current

scaling has bee

Cited by 20 Re

Low power s

M. Zhang, Proc

... S. T. Ishihara

G. De Micheli, A

J. Dubois, NK J

Cited by 139 R

Communicati

minimization

G. V. Raghav, R. M

... Related work

In [14], the auth

In [18], the auth

Cited by 79 Re

Battery awa

P Chowdhury, C

... et.al [Io, II]stu

nodes are assigne

and H. Yasuura, "Voltage scheduling problem for dynamically variable voltage ...

Cited by 23 Related articles All 3 versions Cite Save

Energy management for battery-powered embedded systems

Cite

Copy and paste a formatted citation or use one of the links to import into a bibliography manager.

MLA Cai, Yuan, et al. "Battery-aware dynamic voltage scaling in multiprocessor embedded system." *Circuits and Systems, 2005. ISCAS 2005. IEEE International Symposium on*. IEEE, 2005.

APA Cai, Y., Reddy, S. M., Pomeranz, I., & Al-Hashimi, B. M. (2005, May). Battery-aware dynamic voltage scaling in multiprocessor embedded system. In *Circuits and Systems, 2005. ISCAS 2005. IEEE International Symposium on* (pp. 616-619). IEEE.

Chicago Cai, Yuan, Sudhakar M. Reddy, Irith Pomeranz, and Bashir M. Al-Hashimi. "Battery-aware dynamic voltage scaling in multiprocessor embedded system." In *Circuits and Systems, 2005. ISCAS 2005. IEEE International Symposium on*, pp. 616-619. IEEE, 2005.

New! Save this article to my Scholar library where I can read or cite it later. [Learn more](#)

[Import into BibTeX](#) [Import into EndNote](#) [Import into RefMan](#) [Import into RefWorks](#)

☐ Remember my bibliography manager and show import links on search result pages.

Pick the one that resembles UWE Harvard

Remember

Everything that you do in this class is either directly helpful in obtaining a **good final year project mark** or is directly based on how **work is done in industry**