



# Intel® Embedded University Program Workshop Introduction

Embedded Design Resources

Intelligent Systems Group  
Intel Corporation

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# Intel® Embedded Design Center (Intel® EDC)

Intel® Embedded

Go to Intel.com | United States (English) | Search

Hardware & Software | Applications & Reference Designs | Design & Support | Community | Hot Topics

Embedded Home | Login | Register

WELCOME TO INTEL® EMBEDDED DESIGN CENTER

Intel® Intelligent Systems Alliance

Empowering a new world of embedded innovation. [Learn more](#)

DEVELOPERS

Technologies and tools for software and hardware developers

Hardware >

- Intel® Xeon® Processors
- Intel® Core™ Processors
- Intel® Atom™ Processors
- Previous Generations

Software >

- Boot Loader Technology
- Intel® Embedded Graphics Drivers (IEGD)
- Intel® Embedded Media and Graphics Driver (Intel® EMGD)
- Software Stack

Technology >

- Intel® Active Management Technology for Embedded Systems
- Intel® vPro™ Technology
- Packet Processing on Intel® Architecture
- Signal Processing on Intel® Architecture
- Thermal and Power Management
- More >

Step-by-Step Design Guide >

Migrating to Intel® Architecture >

Videos, White Papers & Training >

CONTACT INTEL

Questions? We're here to help. Support options >

Design assistance >

Have an Intel representative contact you about your embedded project needs.

Live support

[Chat Now](#)

Chat in English M-F, 24 hours  
Available in Simplified Chinese  
M-F: 9 AM - 5 PM Beijing Time

OPT-IN FOR INTEL EMBEDDED EMAIL UPDATES

<http://edc.intel.com>




# Migrating to Intel® Architecture

## MIGRATING TO INTEL® ARCHITECTURE


### From ARM\* >

Technical resources simplify converting software and hardware from ARM\* to Intel® architecture




### From PowerPC\* >

Online resources aid the migration of embedded applications from PowerPC\* to Intel® architecture




### From MIPS\* >

Online tools and best practices help developers transition their designs from MIPS\* to Intel® architecture




### From SPARC\* >

Technical guidance to ease the migration of servers and blades from SPARC\* to Intel® architecture



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## RESOURCES

### Video Library >



Video: Introduction to Intel® Architecture    
Overview of Intel® processors, including system initialization, with available development tools

More:

Video: Intel® Value in Embedded    
Video: Migrating to Intel® Architecture - Training Overview    
Video: Endianness  

### New to Intel® Architecture >

#### Intel® Architecture: Right for Embedded?


Selecting a processor and chipset for an embedded design has always involved a comprehensive evaluation, requiring you to balance your processing needs against power issues, space limitations and thermal constraints.

Resources:

Intel® Architecture Software Considerations: Firmware and BIOS  
White Paper: Introduction to Intel® Architecture, The Basics  
White Paper: Understanding Endianness  
White Paper: Porting to Intel® Architecture  
Discussion Forum: New to Intel® Architecture

## FIND IT FAST

Search For Embedded ▾



Get an edge on designing devices for the connected world.

Find insights and resources that can help you build tomorrow's products.

[Learn more >](#)

## COMMUNITY INSIGHTS

[http://www.intel.com/p/en\\_US/embedded/designcenter/migration?iid=4671](http://www.intel.com/p/en_US/embedded/designcenter/migration?iid=4671)

# Register and Login

The screenshot shows the Intel Embedded Design Center website. A modal window titled "REGISTER" is centered on the screen. The modal contains the following text: "The Intel® Embedded Design Center provides qualified developers with direct access to Intel technical content, tools, design support and community resources in a comprehensive online format. If you have Intel® Software Network or Intel® Business Link accounts, your Intel® EDC account allows you to login once and move seamlessly between each site (see [FAQ](#) for details)."

Below this text, there are two columns of user benefits:

- Privileged User**  
Receive Basic User benefits, plus access to locked assets including:
  - Intel confidential design documents
  - Intel confidential training
  - Online design support
  - Test tool loan program
- Basic User**
  - Community collaboration
  - Discount codes
  - Special offers

At the bottom of the modal, there are two buttons: "Privileged Registration" and "Basic Registration".

In the background, the website header includes the Intel logo, "Intel® Embedded", and navigation links: "Hardware & Software", "Applications & Reference Designs", "Design & Support", "Community", and "Hot Topics". A search bar is also present. On the right side of the header, there are links for "login" and "Register". A blue arrow points from the word "Register" in the text to the "Register" link in the header.

The main content area of the website is partially visible, showing sections for "WELCOME TO INTEL Smart Manager", "DEVELOPERS", and "Hardware >", "Software >", "Technology >" with various product and technology links.

[http://www.intel.com/p/en\\_US/embedded/login](http://www.intel.com/p/en_US/embedded/login)

# Intel® Embedded University Program

## Intel® Embedded University Program

Educating the Engineers of Tomorrow



[Intel® Embedded](#) > [Design & Support](#) > [Online Training](#) > Intel® Embedded University Program

The Intel® Embedded University Program (IEUP) increases the presence of Intel® Architecture in classrooms and research labs worldwide, including partnerships with academia, to:

- Enhance the presence of Intel® Embedded-based systems curriculum
- Enable technology leaders of tomorrow an understanding of embedded systems
- Provide a solid foundation for designing and developing new technologies

This program supports universities around the world in curriculum development, student contests, and research. It also holds an annual research and education summit giving professors opportunities to interact with peers, Intel architects and engineers.

### ACADEMIC OFFERINGS

#### Competitions >

Empowering today's students to become tomorrow's innovation leaders.



#### Research >

Merging science and technology experts together for embedded development and its applications.



#### Embedded Summit >

Interact with world renowned researchers and Intel architects.



#### Curriculum >

Discover how Intel enhances higher-learning worldwide, creating course and lab content.




### CONTACT INTEL



Questions?  
We're here to help.  
[Support options >](#)

#### Design assistance >

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### FIND IT FAST

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# Intel® Embedded Equipment and Curriculum Support

Overview	Hardware Platforms	Curriculum Exchange
The curriculum exchange program enables professors to share Intel® Atom™ content for their embedded systems courses.		
University	Professor	Courses
University of California Berkeley (UC Berkeley)	Dr. Edward Lee and Dr. Sanjit Seshia	EECS 149 Introduction to Embedded Systems
Georgia Institute of Technology (Georgia Tech)	Dr. Ada Gavorlinska	CS 4210/6210 Advanced Operating Systems
	Dr. Hsien-Hsin S. Lee	ECE 3055 Computer Architecture and OS
University of Massachusetts Amherst (UMASS Amherst)	Dr. Tilman Wolf	ECE 415 and ECE 416 - Senior Design Project I and II
University of California Los Angeles (UCLA)	Dr. Bill Kaiser and Dr. Peter Reiher	CS 199 Secure SW Design for Embedded Systems
		EE 180D Embedded Systems Design
		EE 202C Networked Embedded System Design
University of California San Diego (UCSD)	Dr. Ryan Kastner	CSE 145 Embedded Systems Design
		CSE 237D Design Automation and Prototyping for Embedded Systems
Intel Corporation	Lori Matassa and Max Domeika	Book: Break Away with Intel® Atom™ Processors: Architecture Migration Activities <b>new!</b> Book: Break Away with Intel® Atom™ Processors: A Guide to Architecture Migration
University of Michigan (U-M)	Brian Noble, Mark Brehob, Prabla Dutta	EECS 498 Cloud Computing for the Commute
		EECS 473 Advanced Embedded Systems
Arizona State University (ASU)	Dr. Robert Dick	EECS 598 Embedded Systems Design and Synthesis
	Dr. Yang Hann Lee	CSE 438/598 Embedded Systems Programming
University of Colorado - Boulder (CU)	Dr. Sandeep Gupta	CSE 494/598 Mobile Computing
	Dr. Sam Siewert	ECEN 5623 Real-Time Embedded Systems

# Industry Education

The screenshot shows the Intel Industry Education website. At the top is the Intel logo and navigation links: For Business, For Home, Products, Support, About Intel, IT Center, Developer Center, Partners, Technology, Communities, and United States (English). The main header reads 'Industry Education' with the tagline 'Timely, essential education on the latest technologies for technical professionals'. A background image shows a man smiling in front of computer monitors.

On the left, a sidebar menu lists: Intel Press Books, Intel Technology Journal, Recommended Reading, Technical Articles, eBook Lab, Search Industry Education, Login, and Register. The 'Register' link is circled in orange, and a blue arrow points to it with the word 'Register' in blue text below.

The main content area features a 'WELCOME' section with a book cover for 'SCREEN FUTURE' by Brian David Johnson. The text reads: 'The website for Developers. Access educational resources you need to help you stay sharp in your job as a Developer. Accelerate your development process and explore the latest topics on computer system design, programming, network design and IT best practices. Gain access to the latest insights for developers on Intel® products and related technology industry developments by **registering** at this website. Once registered, access to all content is available without logging in.'

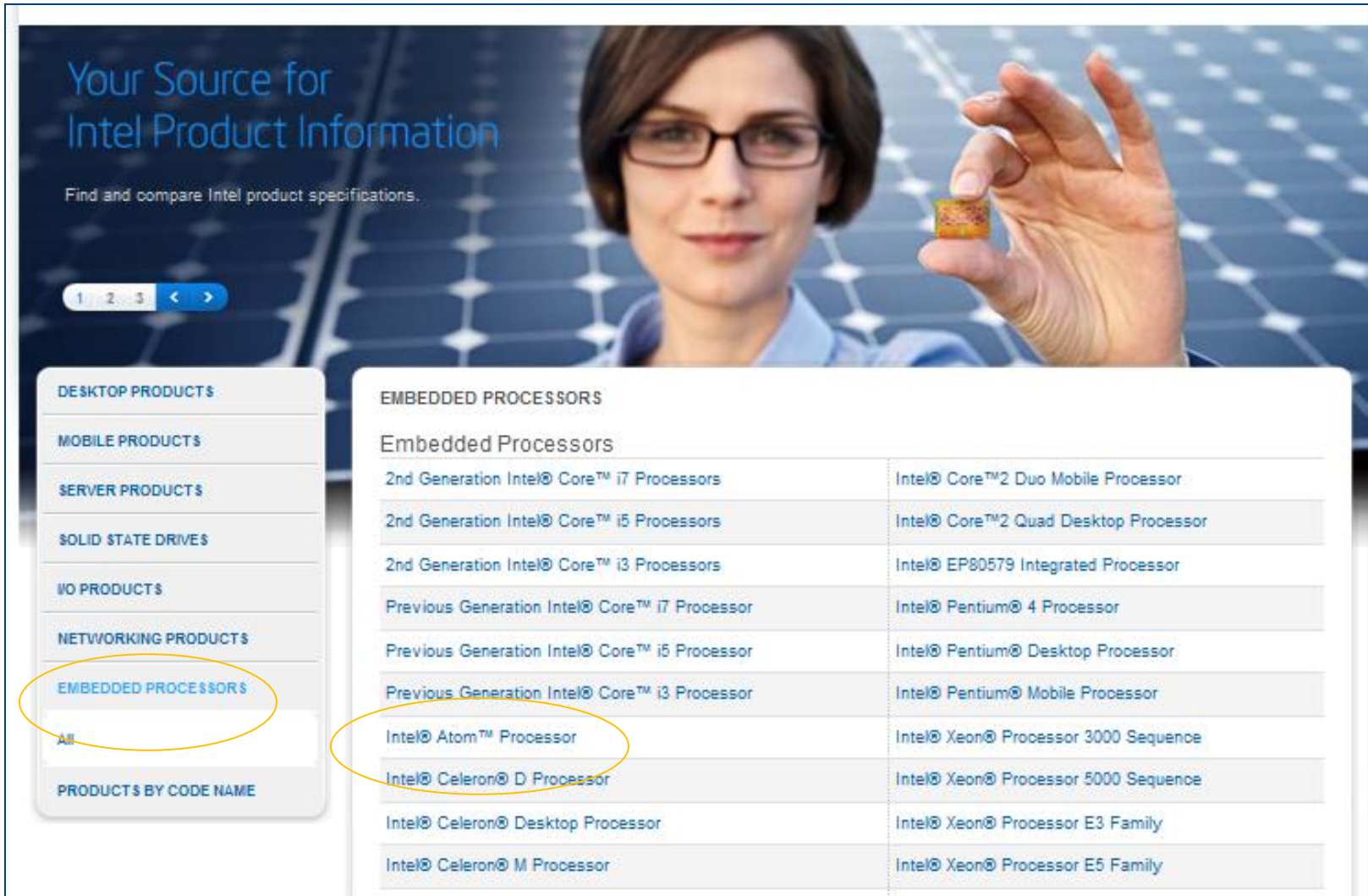
On the right, there is a 'SEARCH INDUSTRY EDUCATION' search bar and a 'FEATURED INSIGHTS' section listing: Programming: Automatic Vectorization, Branching: Solving performance problems due to branch mispredictions, and Solving the Problem of Power Consumption in Servers.

<http://noggin.intel.com>





# Intel Product Information



The image shows a screenshot of the Intel Product Information website. At the top, a woman holds a small chip. Below her, the text reads "Your Source for Intel Product Information" and "Find and compare Intel product specifications." A navigation bar has tabs for "1", "2", and "3", with "1" selected. On the left, a sidebar lists product categories: "DESKTOP PRODUCTS", "MOBILE PRODUCTS", "SERVER PRODUCTS", "SOLID STATE DRIVES", "I/O PRODUCTS", "NETWORKING PRODUCTS", "EMBEDDED PROCESSORS" (circled in orange), and "PRODUCTS BY CODE NAME". The main content area is titled "EMBEDDED PROCESSORS" and "Embedded Processors". It contains a table of processors, with "Intel® Atom™ Processor" and "Intel® Celeron® D Processor" circled in orange.

Your Source for  
Intel Product Information

Find and compare Intel product specifications.

1 2 3 < >

DESKTOP PRODUCTS

MOBILE PRODUCTS

SERVER PRODUCTS

SOLID STATE DRIVES

I/O PRODUCTS

NETWORKING PRODUCTS

EMBEDDED PROCESSORS

PRODUCTS BY CODE NAME

EMBEDDED PROCESSORS

Embedded Processors

2nd Generation Intel® Core™ i7 Processors	Intel® Core™2 Duo Mobile Processor
2nd Generation Intel® Core™ i5 Processors	Intel® Core™2 Quad Desktop Processor
2nd Generation Intel® Core™ i3 Processors	Intel® EP80579 Integrated Processor
Previous Generation Intel® Core™ i7 Processor	Intel® Pentium® 4 Processor
Previous Generation Intel® Core™ i5 Processor	Intel® Pentium® Desktop Processor
Previous Generation Intel® Core™ i3 Processor	Intel® Pentium® Mobile Processor
Intel® Atom™ Processor	Intel® Xeon® Processor 3000 Sequence
Intel® Celeron® D Processor	Intel® Xeon® Processor 5000 Sequence
Intel® Celeron® Desktop Processor	Intel® Xeon® Processor E3 Family
Intel® Celeron® M Processor	Intel® Xeon® Processor E5 Family

<http://ark.intel.com>

# Books for Intel® Atom™ Processor Embedded Software Design

Break Away with Intel® Atom™ Processors

*A Guide to Architecture Migration*

[http://www.intel.com/intelpress/sum\\_ms2a.htm](http://www.intel.com/intelpress/sum_ms2a.htm)

Break Away with Intel Atom Processors

*Architecture Migration Activities*

[http://www.intel.com/intelpress/sum\\_ms2wb.htm](http://www.intel.com/intelpress/sum_ms2wb.htm)

Energy Aware Computing

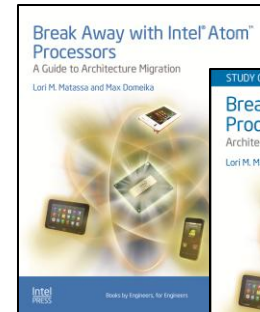
[http://www.intel.com/intelpress/sum\\_tmip.htm](http://www.intel.com/intelpress/sum_tmip.htm)

Modern Embedded Computing

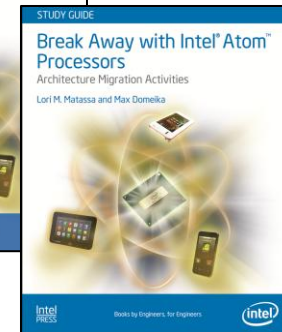
*Designing Connected, Pervasive, Media-Rich Systems*

Intel® Atom™ Processors based “Embedded  
System Theory and Development

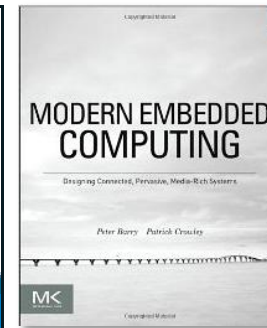
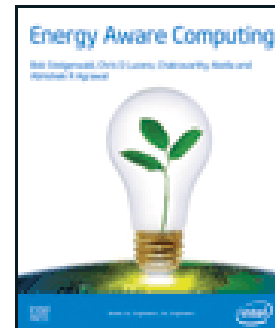
*“The Reference Book”*



*“The Study Guide”*



Companion  
to the  
reference  
book



# Study Guide Overview

## Break Away with Intel® Atom™ Processors: Architecture Migration Activities

- **Purpose of the book:**
  - Provides activities to exercise and reinforce the learning from the reference book.
  - Applicable for independent study and academic coursework.
- **Target audience:**
  - Undergraduate engineering students and experienced software developers.
- **Activities:**
  - Over 270 exercises using a variety of question formats
  - 18 Labs ranging from research to programming and debugging

# How To Use The Study Guide

## Break Away with Intel® Atom™ Processors: Architecture Migration Activities

### Read the reference book first:

- Work through the study guide material after reading the companion chapter from the reference book to reinforce the concepts learned before moving on to the next chapter.

### Register the study guide at the book's Web Site:

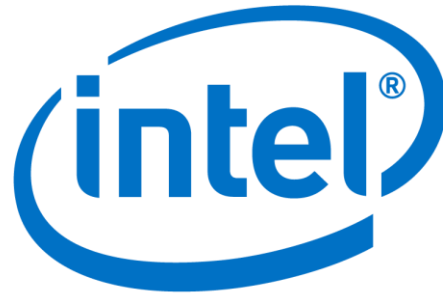
- Download electronic content (book PDF, slides..)
- Assignments can be based on the content and modified for curriculum. Example: Assign Lab 9.1, but advise students to modify the lab for a different outcome.

### Permission for use of copyright material:

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# Questions?



**Intelligent Systems**