

Tutorial's title: RISC-V processor for embedded systems

Tutorial's type: Introductory

Summary:

The RISC-V processor is built on an open-source standard that has grown in popularity in recent years due to its ease of use, flexibility, and extensibility. Arm processors, a proprietary instruction set architecture (ISA), have traditionally dominated the embedded system processor market. In recent years, semiconductor and CAD businesses have increased their investment in the development of RISC-V processors, resulting in a CAGR of 146.2%. It is predicted that by 2025, 62.4 billion RISC-V CPU cores will be shipped.

The primary goal of this tutorial is to provide attendees with an in-depth understanding of the RISC-V processor architecture, its advantages, and its impact on the field of embedded system. This tutorial is specifically designed for engineers and graduate students who have a basic knowledge of computer architecture and would like to delve deeper into the RISC-V architecture and its applications.

A detailed outline of the presentation.

1. Introduction to RISC-V
2. Instruction Formats and Addressing Modes
3. RISC-V Assembly Language
4. RISC-V Pipelined Processor Implementation
5. RISC-V Toolchain and Ecosystem
6. Advanced Topics

A description of the proposer's lecturing expertise.



Imed Ben Dhaou: is an associate professor and docent in embedded systems for IoT. Since 2021 he has been with the department of computer science, Dar Al-Hekma University. He has authored and co-authored more than 100 journals and conference papers. Dr. Ben Dhaou received numerous awards including the Best Paper Award from the 1997 Finnish Symposium on Signal Processing, a travel grants from the Ph.D. Forum at DAC, Los Angeles in 2000, publication award from Qassim University, and Dr. Hussein Mohammed Al-Sayyed award for research. Since September 2014, Dr. Ben Dhaou has been serving as an editor to the microelectronics journal, Elsevier. He was the Guest Editor for four special issues in ISI journal. He has served as TPC chair, or TPC member for several conferences in his primary fields of expertise.

The proposed duration of the tutorial: one day.