INSTITUTO DE MICROELECTRÓNICA DE SEVILLA

IMSE-CNM

Digilent Workshops at IMSE-CNM

The company Digilent Inc, in collaboration with the Seville Institute of Microelectronics and the Escuela Politécnica Superior of the Universidad de Sevilla will give the following workshops in June.

– Accelerate real-time high definition video processing designs with Digilent Zybo Z7, a Zynq-7000 AP SoC Platform and Xilinx Vivado HLS.

– Hands-on experimentation using Digilent Analog Discovery 2. Complete analog & digital circuits in or out of the lab.

Accelerate real-time high definition video processing designs with Digilent Zybo Z7, a Zynq-7000 AP SoC Platform and Xilinx Vivado HLS

Goals:

– Show how to use High Level Synthesis (HLS) to configure the field programmable gate array (FPGA).

– Explain how to build the real-time video processing pipelines and Intellectual Property (IP) in the Xilinx computer aided design (CAD) tool.

– Illustrate the viability of real-time video processing in reconfigurable logic instead of software running on a general-purpose microprocessor.

Description:

The workshop aligns with Digilent's mission of providing a hands-on, project-based, open-ended approach to education. Attendees will use Digilent Zybo Z7 (a Xilinx Zynq SoC FPGA platform), PCAM (5MP camera sensor) and Xilinx Vivado HLx to implement a real-time high definition video processing application.

Examples in the workshop materials are based on both high-level programming language (C++) and hardware description language (VHDL). Trainers will demonstrate HLS design flow, IP core usage, simulation and hardware debugging. Participants will leave the workshop with instructional materials and PCAM, 5MP camera sensor so that they can easily adopt this innovative technique in their own courses and projects.

Format:

Hands-on tutorial in English.

List of topics covered:

– Explain parallelism and program execution.

– Introduce Xilinx FPGA Architecture and Vivado HLS.

– Introduce Digilent Zybo Z7 and PCAM.

– Accelerate video processing algorithm on Xilinx Vivado.

– Implement video processing design on Digilent Zybo Z7 and PCAM.

Target Audience:

The anticipated audience includes faculty members, instructors, laboratory staff, graduate students in the Electrical and Computer Engineering department. Participants need to have basic knowledge about VHDL, C/C++ and digital design.

Date & Time:

June 17, 2019 at 9.00 -14.00 (no lunch break, only coffee break).

Speaker:

Elod Gyorgy, Digilent Inc.

> ELOD GYORGY is the Engineering Manager for hardware. He has over 10 years of experience in embedded hardware design and is familiar with Xilinx FPGA architecture as well as the CAD tool. Recently, he has been designing a range of Digilent FPGA SoC platforms powered by Xilinx Zynq and creating tutorials for high level synthesis on Xilinx CAD.

Hands-on experimentation using Digilent Analog Discovery 2. Complete analog & digital circuits in or out of the lab

Goals:

– Demonstrate how active learning modules using portable compact electronic instrumentation can be integrated into undergraduate circuits and electronics courses for both ECE or non-ECE students.

– Enable participants to rapidly incorporate hands-on activities into courses of signals and systems lab, analog electronics, digital circuit design, microelectronics or electronics design.

Description:

In this workshop, we will discuss how affordable, student-owned hardware can be used to teach not only the fundamentals of analog and digital circuits, but also system design and integration. We will describe how hands-on experiments can lead to a better understanding of STEM concepts incorporated into the exercises. Examples of will be given on how these experiments can be introduced into courses outside of electrical and computer engineering. Finally, because student-owned equipment untethers students from traditional labs, the ways in which students at remote locations can engage in laboratory courses will be presented.

Take-away skill, knowledge and material: Participants will learn about the active hands-on learning pedagogy, see how others have integrated hands-on learning modules into the engineering and engineering technology courses, and labs and suggestions on ways in which the participants can adapt the pedagogical approach for their use.

Format:

Hands-on tutorial in English.

Target Audience:

The anticipated audience includes faculty members, instructors, and laboratory staff in Electrical and Computer Engineering and Engineering Technology, Mechanical Engineering and Engineering Technology, First Year Engineering Education, Engineering Physics, Physics, and middle and high school teachers in the physical sciences. Participants need to have basic knowledge about electronics and oscilloscop use. They will leave the workshop with instructional materials so that participants can easily adopt this innovative technique in their own courses.

Date & Time:

June 18, 2019 at 9.00 - 14.00 (no lunch break, only coffee break).

Speaker:

Bianca Peterlin, Digilent Inc.

> BIANCA PETERLIN is an enthusiast engineer with experience in Electronic Design. She is an active member in the Technical Support team in the Romanian office.

Both workshops are presented in a practical way, with the use of the Digilent Zybo Z7 plate in the first and Analog Discovery 2 in the second.

The workshops will be taught at the Instituto de Microelectrónica de Sevilla.

Registration is free and can be done independently in any of the two workshops. The places are limited to 24 attendees in each session.

Free registration at workshop.digilent@imse-cnm.csic.es, indicating:

– Name and surname..
– Membership.
– Name of the workshop you want to attend.
– Contact email.

Contact: Carlos J. Jiménez <cjesus@imse-cnm.csic.es>

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