

Workshop Proposal Form PEDSTC2018

AMIRKABIR UNIVERSITY OF TECHNOLOGY
(TEHRAN POLYTECHNIC)



Digital Control of Power Electronics using Xilinx Zynq 4-Hour Workshop

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Master of Electrical Power - Power Management (Electric Power Management) from Amir Kabir University of Technology, 2010 and Senior Researcher at Jahad Daneshgahi JDEVS branch since 2010.

Main topics: Part1:
Review of digital controllers
basics of DSP
basics of FPGA
Introducing the Zynq
Zynq in power electronics and drive applications
Zynq GPIO Controlling and PWM generation
Demo: GPIO and PWM code generation and execution on Zynq

Part 2:
How to Implement Digital Control in Logic?
What to do with the ARM A9 Cores in zynq?
Control algorithms are great contenders for Vivado HLS.
FPGA code from C :HLS(High Level Synthesis)



Description: Zynq-7000S devices feature a single-core ARM Cortex™-A9 processor mated with 28nm Artix®-7 based programmable logic, representing the lowest cost entry point to the scalable Zynq-7000 platform. Available with 6.25Gb/s transceivers and outfitted with commonly used hardened peripherals, the Zynq-7000S delivers cost-optimized system integration ideal for industrial IoT applications such as Motor control, Solar inverters, online, Offline and Grid interactive UPS, Reversible rectifiers, DC to DC converters and embedded vision.

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During this course you will gain insight into:

- What is important in digital power electronic, including numeric precision and latency in the control and the protection parts?
- Why you would use a FPGA for digital power electronic and why the Zynq in particular.
- Using the ARM cores in the Zynq to your full advantage.

Minimum and maximum expected number of participants: Min: 5 Max: 40

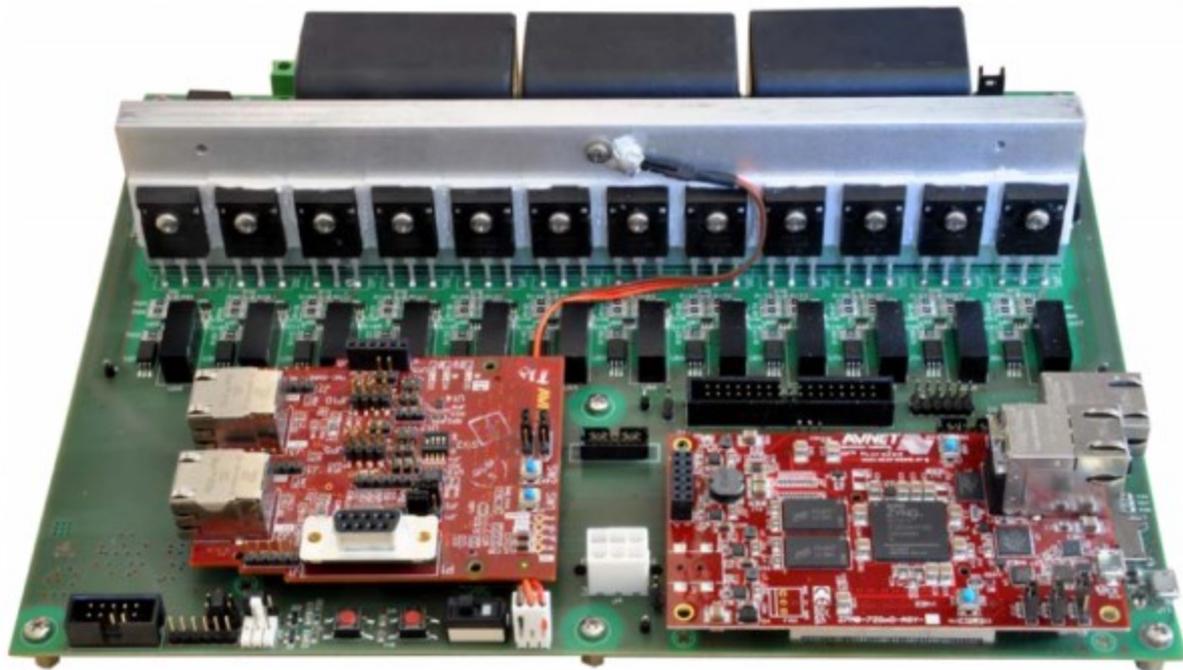
Why your topic is interesting for participants (briefly explain) :

Development of power electronic devices requires multidiscipline engineering activities. These cover the electrical and software design. Due to this design complexity rapid prototyping methods

What background participants should have (briefly explain)?

Participants should be familiar with the C programming.

Please attach your CV, maximum in 4 pages, and additional information about the topic (if it is necessary)



Xilinx/Qdesys Silicon Carbide 3-Level-Inverter Reference Platform

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🌐 www.pedstc2018.aut.ac.ir

📄 <https://t.me/PEDSTC2018>

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