

Workshop Proposal Form PEDSTC2018

AMIRKABIR UNIVERSITY OF TECHNOLOGY
(TEHRAN POLYTECHNIC)



Electrical Drive and Grid Connected Inverter Control based on TMS320F28335 with PSIM Software 4-Hour Workshop

Lecturer Dr. Gholamreza Arab Markadeh, arab-gh@eng.sku.ac.ir, Shahrekord University

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G. R. Arab Markadeh received the B.Sc., M.S., and Ph.D. degrees in electrical engineering from Isfahan University of Technology, Iran, in 1996, 1998, and 2005, respectively. He is currently an Associate Professor in the Faculty of Engineering, Shahrekord University. His fields of research include nonlinear control, power electronics, and variable-speed drives. He is the Editor-in-chief of Journal of Dam and Hydroelectric Powerplant. He is the author or co-author of more than 50 papers in international journals, mostly with experimental results.



Dr. Arab Markadeh was the recipient of the IEEE Industrial Electronics Society IECON'04 Best Paper Presentation Award in 2004.

Mohammad Pichan received his B.S in Electronic Engineering from university of Isfahan, Isfahan, Iran, in 2010. He finished his M.S in Electrical Engineering at Amirkabir University of technology, Tehran, Iran, in 2012. He served as a Researcher at Iranian Research Institute of Electrical Engineering from 2010 to 2013, designing medium and high power converter. He finish his Ph.D at Amirkabir University of Technology and currently is a research assistant at Researcher at Iranian Research Institute of Electrical Engineering. His research interests include



rectifiers, inverters, power electronics and its applications in renewable energies.

Main topics:

- ✓ Overview of PSIM software and Simcoder
- ✓ Hardware setting with TMS320F28335
- ✓ Software setting and block diagram description
- ✓ Implementation of V/f and FOC for an Induction Motor

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Description: TMS320F28335 is a processor which is designed and optimized for electrical drive control. To facilitate programming of this processor in Code Composer Studio software, the operator should have skill of C language programming and must perform a complicated setting to use its capabilities. Its programming is not available in new versions of Matlab and should be added to Matlab. As well as for working in Matlab software the Easy-DSP hardware of Texas Instruments is mandatory, which is more expensive than traditional DSP trainer boards. PSIM software, which is used in many great universities for power electronics and electrical drives simulation, can be applicable to program the DSP TMS32F28335 in a user friendly environment and can generate the C code for using in code composer 6.0 software and load to TMS memory. IN this workshop, design and implementation of Scalar Control (V/f) and Field Oriented Control (FOC) of a three phase Induction Motor is explained and tested using an experimental trainer setup.

Why your topic is interesting for participants :

TMS320F28335 is a powerful device in control of power electronics converter and motor drives. However, the main challenge with this processor is programming especially for under graduate and graduated students with short time for digital implementation. The proposed tutorial will able the students to convert their simulation to DSP codes easily with significantly lower time spent.

What background participants should have(briefly explain)?

General background about electronics, digital implementation and PSIM simulation.

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