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Vellore - 632 014, Tamil Nadu, India
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One day Workshop on
“Nonlinear Electronics and its Applications”
31st Aug 2013



Organized by
TIFAC-CORE in Automotive Infotonics
(Sponsored by Department of Science & Technology, Govt. of India)

Coordinators
Dr. K. Ganesan, Director, TIFAC-CORE & Sr. Professor, SITE.
Dr. Bharathwaj Muthuswamy, Assistant professor of Electrical Engineering,
Milwaukee School of Engineering, USA.



Background

- ✓ The study of Nonlinear systems and its applications has gained enormous interest in recent years among the researchers working in the area of Engineering, Mathematics, physics and applied science to explore the complexity of the nonlinear behavior in nature and in engineering technology.
- ✓ The discovery of deterministic chaos introduced new kinds of nonlinear electronic systems and Chua's circuit is a simple electronic circuit that exhibits classic chaos theory behavior. Many of the important features of chaotic dynamical systems can be understood by using experimental and computational methods in simple nonlinear electronic circuits.
- ✓ Understanding the nonlinear phenomenon helps to model the nonlinear systems, identify the inherent nonlinearity in the system and controls the nonlinearity to achieve the desired performance in the system behavior.
- ✓ This workshop aims at exploring the fundamental concepts of nonlinear dynamics, various nonlinear system models, nonlinear phenomenon in electronic circuits, nonlinear system realization using Field Programmable Gate Array (FPGA) and its applications in image and video processing.

Topics Covered

- ➔ Introduction to Nonlinear dynamics.
- ➔ Nonlinear Phenomenon in Electronics circuits.
- ➔ Chaotic Dynamics of the Muthuswamy Chua System.
- ➔ Nonlinear system characterization and Chaos.
 - ✓ Phase Plane Trajectories
 - ✓ Bifurcation and Chaos
- ➔ Applications in image and video processing.
 - ✓ Scrambling
 - ✓ Encryption
- ➔ Hands - on Exposure to MATLAB / Simulink based nonlinear system realization.
 - ✓ Lorenz Attractor
 - ✓ Duffing Oscillator
 - ✓ Van der pol Oscillator
 - ✓ Chua circuit
 - ✓ Logistic map

TIFAC-CORE IN AUTOMOTIVE INFOTRONICS @VIT

- ✓ State of the art advanced engineering centre for research, consultancy and manpower training in Automotive Infotonics is established at VIT University promoted by TIFAC (Technology Information Forecast and Assessment Council), under the Mission REACH program.
- ✓ Offers a full time PG program in Automotive Electronics to provide industry ready engineers.

Speakers Profile:

- **Dr. Bharathwaj Muthuswamy** is working as an Assistant Professor of Electrical Engineering, at Milwaukee School of Engineering, Milwaukee, USA for the past 4 years. He is currently working in the areas of applications of memristors and FPGA based embedded system design. He is reviewer for many international journals such as International Journal of Systems Science, International Journal of Bifurcation and Chaos, IEEE Transactions on Circuits and Systems
- **Dr. K. Murali** is working as an Associate Professor in Anna University, Chennai and a visiting professor to University of Berkeley, University of Calgary and University of Florida. He is a reviewer of IEEE Transactions on Circuits and Systems, IEEE Transactions on Consumer Electronics, etc. He has filed 18 International Patents (USA) to his credit.
- **Dr. K. Ganesan** is working as a Director, TIFAC-CORE in Automotive Infotonics, VIT University. He served for about 4 years in United Kingdom and visited about 12 countries. He has published 75 papers in International journals and conferences. He has filed 9 patents. He has set up many laboratories in collaboration with many Industries such as Freescale, Delphi, IBM, 3B Technologies, ETAS, Motorola, etc. at VIT University.
- **Mrs. D. Valli** is working as an Associate Professor in S.A Engineering College, Chennai. She is a research scholar in VIT University. Her research area is focused on Nonlinear Systems.

Participation is open to:

- Research scholars / Faculty
- Students

Registration fees: ₹ 500

- Registration charges include Lunch & Snacks. The number of participants is limited to 30 based on first come first serve.

Certificate of Participation will be issued.

Payment through DD to be drawn in favor of "TIFAC CORE, VIT University", Payable at Vellore.

Venue: Kamaraj Auditorium, 7th Floor, Technology Tower, VIT University.

Time: 31st August 2013: 09.30 - 17.30 Hours.

Format for Registration

“Nonlinear Electronics and its Applications” 31st August 2013

Name: -----

Designation: -----

Organization: -----

Address: -----

Phone: ----- Mobile-----

Fax: ----- e-mail: -----

DD Details: -----

Signature of the participant

Please complete and mail or fax us above form before 28th August 2013.

For Registration Contact:

Mrs. R. Devaki

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