ELECTROVISION

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
Rajagiri School of Engineering & Technology, Kakkanad
September-December 2010, Volume 12

FROM THE H.O.D'S DESK . . .

I am glad to present before you the last edition of the year 2010 bringing you the news about the workshop " TECHNOLOGY TRENDS IN SILICON NANOELECTRONICS AND EMBEDDED SYSTEM DESIGN" conducted on 23rd, 24th and 25th November 2010. The emphasis was on the recent trends and actual challenges in Silicon Nanoelectronics, Embedded System Design and enabling technologies. Moreover to widen the horizon of our knowledge and to keep ourselves abreast in the technical arena, we had a series of seminars by the faculty members in the area of their specialization from industry & academia.

To equally upgrade the practical skills of students we had a Hobby Workshop for S4 students , short term MATLAB & PIC courses for S6 and a course on VLSI & Nanoelectronics is being planned for S8 students in January 2011.

Hope this edition will enrich your knowledge bank and will motivate you to strive ever towards knowing more and learning more. Wishing you all a MERRY XMAS and a very HAPPY & PROSPEROUS NEW YEAR.

INDEX

COURSES & WORKSHOPS

As part of the faculty development programme, Department of Electronics and Communication organized seminar series during the period Oct- Nov, 2010.

Sl. No.	Topic	Faculty Name
1	A multistage system for image enhancement	Preethi Bhaskaran
2	Digital core cell library development and maintenance	Rony Antony P
3	Introduction to Biometrics security system and fingerprint matching algorithm	Delson T R
4	Design & fabrication of thin film Fabry Perot Interferometer	Ajit Joseph
5	Analysis of Successive Interference Cancellation in CDMA system	Deepthy G S
6	Optical Tweezers	Anu Mathew
7	Design of DS-CDMA Transmitter using VHDL & FPGA	Walter Joseph
8	Intrusion detection using flow based analysis of network traffic	Jisa David
9	Heart rate detection using Doppler effect	Sunitha Wilson Gomez
10	Multirate Signal Processing	Sreeraj K P

THREE DAY WORKSHOP on

"TRENDS IN SILICON NANOELECTRONICS & EMBEDDED SYSTEM DESIGN"

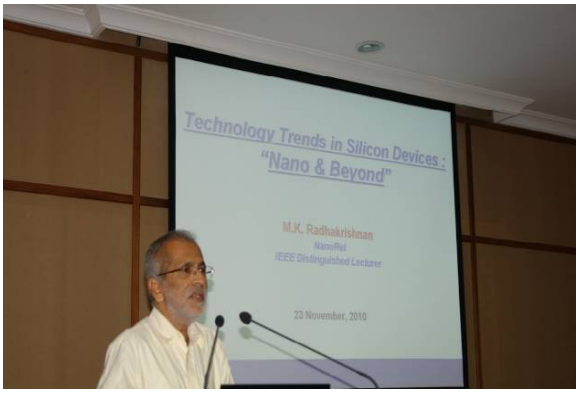
23rd, 24th, 25th November 2010

Inauguration by Ms. Binu Paulose, Sevana Electricals, Kochi

Poster Presentation Inauguration by: Rev. Fr. Jose Alex CMI, Director, RSET & Dr Sreevalsan, Pro vice Chancellor, IGNOU

The Workshop was hosted by Department of Electronics and Communications, Rajagiri School of Engineering and Technology, Kochi. The goal was to explore opportunities for interdisciplinary collaboration and to discuss a variety of challenging problems in this sphere.

The keynote address was delivered by Dr.M.K Radhakrishnan followed by a series of seminars and panel discussion. The workshop was co-ordinated by Ms.Sheebakumari.M and Mr.Anoop Thomas. The co-coordinators for poster presentation were Mr.Vinod Pangracious and Ms.Anita Kulkarni.



Pebbles, Sand dunes and Beauty of Lightning Dr. M.K.Radhakrishnan, Chief Technical Consultant, NanoRel

Panel Discussion

INTERNATIONAL CONFERENCES:

ACCEPTED PAPERS:

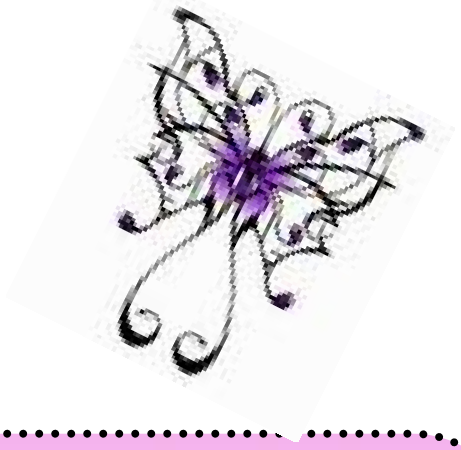
Sl. No	Topic	Organized by	Place	Date	Attended by
1	Exploration of a Distributed Approach for Simulating Spectrum in Cognitive Radio	International Conference on Communication & Signal Processing (ICCSP 2011)	NIT, Calicut	Feb 2011	Mr.Jaison Jacob (RSET), Ms.Asha Panicker(RSET), Dr.Jimson Mathew (Bristol,UK), Dr.A.P.Vinod (NTU,Singapore)
2	Analysis of Successive Interference Cancellation in CDMA systems	International Conference on Computer Science and Information Technology (COSIT 2011)	Bengaluru	Jan 2-4, 2011	Ms.Deepthy.G.S
3	Intrusion Detection using Flow based Analysis of Network Traffic	International Conference on Computer Science and Information Technology (COSIT 2011)	Bengaluru	Jan 2-4, 2011	Ms.Jisa David

PAPER PRESENTED:

1	Pre-Confirmation Neural Network for Reducing the Region of Interest in an Image for Face Detection	International Conference on Advances in Information and Communication Technologies (ICT-2010)	Kochi	Sep 2010	Ajit Joseph & Femina A

SHORT TERM COURSES FOR STUDENTS

Dec-Jan, 2010-11



MATLAB

[FOR S5 & S7 (ALL BRANCHES)]

Duration: Dec 14-20, 2010 - 30 hours

Course fee: Rs 2000/-

Certification by: IETE

Course coordinators:

Ms. Rithu James,

Ms. Harsha A,

Mr.Sreeraj K P & IETE experts

PIC16F877A MICROCONTROLLER:

[FOR S5 (ALL BRANCHES)

Duration: Dec 14-21, 2010 - 30 hours

Course fee: Rs 3000/-

Certification by: RSET

Course coordinators:

Mr. Jaison Jacob,

Ms. Tressa Michael

VLSI DESIGN & NANO TECHNOLOGY

[FOR S7 (ALL BRANCHES)]

Duration: Jan 3-11, 2011- 35 hours

Course fee: Rs 3500/-

Certification by: RSET

Course coordinators:

Mr. Vinod Pangracious

Mr. Pramod.G

Ms. Anita Harpanhalli

RRCC Activity of DEC:

A brief introduction of seven RRCC groups was given to the 3rd and 5th semester students of the ECE department at Gallery Hall. Faculty representative from each group mentioned about the various activities being conducted in each group. The seven groups are:

- **Microwave, RF & Tera Hertz** research group: Ms. Anu Mathew
- **Image Processing & Computer Vision** research group: Mr. Delson T. R.
- **Wireless Communication & Signal Processing** research group: Mr. Walter Joseph
- **VLSI & Embedded system** research group: Mr. Rooha Razmid Ahmad
- **Nano Electronics & Nano Technology** research group: Ms. Anita Kulkarni

National Level Tech fest at Rajagiri School of Engineering and Technology

Mr.Vinod Menezes, Senior Member of Technical Staff at Texas Instruments, Bengaluru inaugurated the paper presentation for 'Abhiyanthriki 2010' and delivered a very informative keynote address on 'Product Reliability' on 17th September 2010.

ACHIEVEMENTS:

- ***Aleena T Jose, Bibin Jacob, Arun Radhakrishanan, and Edwin Joy*** *(S8 students) won the second best paper in technical paper contest at the International tech fest 'graVITas-2010', 18th September 2010, VIT Chennai. Their paper "THERMAL MODELLING AND THERMAL MANAGEMENT STRATEGIES FOR 3 D INTEGRATED SYSTEMS" was also published in Souvenir of the IETE.*

- ***Febin Philip*** *(S3 ECE student) and team represented M. G. University in the Inter University G. K. Quiz Competition held at Sasthra University, Thanjavur on 23rd August, 2010.*

- ***George Johnson*** *(S5 ECE student) won the prize for Best Manager in 'Abhiyanthriki 2010' tech fest of Rajagiri School of Engineering and Technology held on 17th September 2010 and 'Excel 2010' tech fest of Model Engineering College held on 24th September 2010.*

- ***Mr. Jinoy A*** *(Technical Staff, ECE) attended a workshop on 'Maintenance of Lab Equipments held at St. Joseph's College of Engineering and Technology, Palai on 28th October 2010.*

M Tech

M Tech Electronics and Communication (with Specialization in VLSI and Embedded System)-Semester-III-Industrial Training

Sl. No	Student Name	Company	Area of Specialization	Internal Guide	Internal Co-Guide
1	Anju Suresh	EXOR India Pvt. Ltd., Kochi	FPGA based system design	Pramod G	Preethi B
2	Arathi S G				
3	Ashwin kumar J	EXOR India Pvt. Ltd., Kochi	Embedded System	Sheebakumari M	Vinay Kumar Singh
4	Rony Joseph				
5	Anu Abraham	Wipro Technologies, Infopark, Kochi	Embedded System	Sheebakumari M	Delson T R
6	Aparna Jacob				
7	Rincy K varghese	BSNL, Trivandrum	Wireless Communication	Asha Panicker	Deepthy G S
8	Anusha Elsit George				Sunitha W G
9	Elson Isaac				Walter Joseph
10	Seethu P	NeST, Technopark, Trivandrum	FPGA based system design	Anoop Thomas	Rooha R A
11	Anu Kuriyakose				
12	Nisha Thankachan				
13	Simi Charly				
14	Nimmy M Philip	KELTRON, Aroor, Aleppy	Embedded System	Jaison Jacob	Tressa Michael
15	Febida A Kareem				
16	Sabana Backer	Connectionz, Thrikkakara, Kochi	FPGA based IP core design	Pramod G	Rony Antony
17	Anuja George				
18	Ramya Menon C				

COURSES & WORKSHOPS: M.TECH

Invited talk M tech

An invited talk by ***Mr. Sambasiva Vasantham****, Director New Product Development, Cypress Semiconductor India Pvt Limited (Bengaluru) on "Advanced Memory Technologies- Volatile and non volatile Memory Technologies" was conducted on 13th September 2010 for the M. Tech Students.*

PSoC

A two day workshop on ***'PSoC (Programmable System on Chip) - An Intelligent Way to Accelerate Design'*** *was conducted for the M. Tech students on 13th and 14th September 2010.* ***Mr. B R Guttal****, Director Phlox Semiconductor Pvt Ltd Bengaluru and* ***Mr. Ramesh Doddamane,*** *Chief Executive Officer Phlox Semiconductor Bengaluru were the resource persons for the same.*

SEMINARS: M.TECH (SEMESTER I)

Channel Engineering in Nanoscale MOSFET –with Germanium in PMOS and 3rd & 5th group in NMOS

Remya Ramesh, M.Tech (Sem I)

Guide –Mr. Vinod Pangracious

As we scale into sub 45nm technology nodes, fundamental as well as practical constraints start limiting the performance of the conventional bulk Si MOSFET. In this project, the research devices options to improve device performance when conventional scaling is power – constrained.

Predictive Technology Modeling for Nanoscale CMOS Devices

Ragini Ramachandran, M. Tech (Sem I)

Guide: Anita Kulkarni

As technology is advancing, the size of all devices is decreasing and the efficiency is supposed to increase. During technology scaling of the device, about ten of the transistor parameters are critical to determine the major behavior of a MOSFET. Thereby, a study on the dependence of various physical factors on those parameters that are needed to model the transistor when the channel length goes on decreasing can be done.

Analysis of digital sine wave generator using second order IIR filter

Ginto Johnson, M. Tech (Sem I)

Guide: Prof. Jaison Jacob

When a slightly sufficient processing power is considered, it is possible to utilize another technique which makes use of an IIR filter. Here we look into the direct digital signal generator method using a second order IIR filter, and compare the present techniques utilized for the generation of sine wave.

Test data compression techniques emphasizing on code based schemes

Kasthuri E S, M. Tech (Sem I)

Guide: Dr. C Karthikeyan

Due to the emergence of new fabrication technologies and design complexities in VLSI, the number of tests and corresponding data volume increase. The different methods based on coding theory applied for lossless compression of the input side test data is presented. The analysis draws a conclusion that as the design complexity and test data volume continues to grow, the test data compression will be a major demand to reduce test time and test cost.

SEMINARS: M.TECH (SEMESTER II)

A Solution against DOS Attacks in WiMax Using Visual Cryptography

Aarathi S G, M Tech (Sem II)

Guide: Mr. Pramod G

An analysis on WiMAX security reveals the existence of two major kinds of vulnerabilities - man-in-the-middle vulnerabilities and DoS vulnerabilities. Almost all the DoS vulnerabilities in Mobile WiMAX standard are due to unauthenticated or unencrypted management messages. A technique using visual cryptography is being proposed which is used to authenticate as many management messages as possible.

Leakage Power Reduction of Logic Circuits using Sleepy stack Technique

Nisha Thankachan, M Tech (Sem-II)

Guide: Ms. Anita Kulkarni

Motivated by emerging battery-operated applications demanding intensive computation, techniques are investigated which reduce power consumption in CMOS digital circuits also maintaining computational throughput. A novel idea for ultra-low leakage CMOS circuit structure called “sleepy stack” is presented which retains logic state during sleep mode while achieving ultra-low leakage power consumption.

2D Compact Modeling of Threshold Voltage in Tri-Gate Transistors

Seethu P, M Tech (Sem-II)

Guide: Ms. Sheeba Kumari M.

In a multi gate device, channel is surrounded by several gates on multiple surfaces, resulting in suppression of offset leakage current which allows low power consumption and enhanced device performance. Here, SOI based MUGFETs are considered. One of such kind is the tri gate transistors, where channel is surrounded by three gates. There is currently a strong need for compact models of such architectures, in order to evaluate their circuit performance.

Intelligent Flying Machine (Design and Control of Quad Rotor)

Simi Charley, M Tech (Sem-II)

Guide: Mr. Vinod Pangracious

Quadrotor is one of the Rotary-wing Unmanned Mini Aerial Vehicle consisting of four independent propellers attached at each corner. A classical control approach (PID) is used to describe a design methodology to design an autonomous quadrotor named OS4. It introduces a mathematical model for simulation and control of such systems. It is a highly integrated quad rotor with on-board data processing and power supply.

Merry Christmas & Happy New Year

On desk: Prof.Asha Panicker, Mr.Sreeraj.K.P, Ms.Deepthy.G.S, Mr.Vinay Kumar Singh, Ms.Anu Mathew