2015

UDGHOSH

A Voice of Electronics and Communication Engineering Department

RAJKUMAR GOEL INSTITUTE OF TECHNOLOGY

DEPARTMENT EVENTS

1. STC ON VLSI

Five Days Short Term Course on "VLSI DESIGN" from 5th - 09th October, 2015 through, ICT was organized at ECE Department, RKGIT, GZB, in association with NITTTR, Chandigarh.

About the STC

The main objective of this program is to provide an opportunity to faculty members, research scholars in the field of digital and analog design simulation, low power and nano-scale VLSI Design, device modeling and interconnect design. This workshop was based on Microelectronics, which includes lectures delivered by experts from IIT Roorkee, IIT Ropar, NIT Kurukshetra, NIT Hamirpur, NTTTR Chandigarh and design engineers from Semiconductor Laboratory, Mohali. Workshop was very beneficial for the participants who were interested to learn and cultivate new ideas in the field of VLSI design.

The following topics were covered in the workshop:-
CMOS Design Overview, Digital Design Simulation, Analog CMOS Design, Advance MOSFET, 3D Service Modeling ,Low Power VLSI Design , Verilog Based VLSI Design, Analog Design Simulation, High Performance CMOS Design, VLSI Interconnect Design Issues, High Speed Interconnects, Novel Multigate Transistors , Nano-Scale VLSI Design

The details of ICT Based Online Program on VLSI DESIGN (05-09 october 2015)

- Novel Multigate Transistors & Nano-Scale VLSI Design delivered by Dr. Anand Bulusu, Electronics & Communication Engineering Department, FIT Roorkee.
- VLSI interconnect design issue & High performance CMOS design delivered by Dr. Rajeevan Cbandel, Electronics & Communication Engineering Department, NIT Hamirpur
- Low Power VLSI Design & Verilog Based VLSI Design delivered by Dr. R.K. Sharma, Electronics & Communication Engineering Department, NIT Kurukshetra
- High Speed Interconnects delivered by Dr. Rohit Sharma, Electrical Engineering Department, IIT Ropar.

- CMOS Design Overview delivered by Er. H. S. Jatana, Head, VLSI Design Division, Semi Conductor Laboratory, Mohali, Punjab.
- Analog Design Simulation delivered by Er. Deep Sehgal, SE, VLSI Design Division, Semi Conductor Laboratory, Mohali, Punjab.
- 3D Service Modelling delivered by Er. Amit Saini, Technical Director, CADRE Design Systems, New Delhi
- Digital Design Simulation delivered by Er.Varun Bhadana, Application Engineer, ENTUPLE Technologies, New Delhi
- Valediction programme conducted by Dr. Rajesh Mehra , Course Coordinator, ECE Department, NITTTR, Chandigarh

2. MOU BETWEEN ADVANCED LEVEL TELECOMMUNICATION TRAINING CENTRE, BSNL AND RAJ KUMAR GOEL INSTITUTE OF TECHNOLOGY, GHAZIABAD

It is observed that there is a wide gap between industry and academia and with reference to the practical knowledge on the thrust areas in various disciplines, Advanced Level Telecommunication Training Centre Ghaziabad (ALTTC) of Bharat Sanchar Nigam Ltd., a Govt. Of India owned Enterprise provides training to professionals and students as it saves the time of training of engineering graduates once they join the industry.
MOU is signed with the noble of imparting the requisite knowledge and skills to the student community for bridging the gap between Industry & Academia and thereby enhance their employability.

ALTTC is a pioneer Telecommunication Training Centre and a unit of Bharat Sanchar Nigam Limited, PSU, under the Ministry of Communication and Information Technology imparting training in Telecommunications and its related field like NDN-IMS, Optical Fiber Technology, Access Network, Broadband Networks, Mobile Networks, Satellite Systems, Instructional Technology and areas of IT & Cyber Security.

Raj Kumar Goel Institute of Technology, Ghaziabad have their strength in the form of their noble mission to provide and upgrade education, training and research in fields of technical education, and to create entrepreneurship and a conductive environment for pursuit of the technical education in close cooperation with industries.

Aims and Form of Co-operation

1) Incorporation of special modules of Telecommunication in B.Tech/M.Tech curriculum of college under Raj Kumar Goel Institute of Technology, Ghaziabad.
2) Internship program for B.Tech/M.Tech students.
3) Jointly Certified Courses In RF Engineering ,Optical Fiber Network, Mobile IP Networking etc which will enhance the employability of the young engineering
4) Design of special modules for updating the knowledge and skills of the students
5) To organize industrial Training programs like summer/winter/project trainings/Industrial visit to ALTTC,BSNL
6) Research/Project lab will be developed at RKGIT. Ghaziabad, which will be joint venture of ALTTC and RKGIT.
7) Conduct different programs like soft skills, motivational programmes, leadership programmes etc. so as to groom the students to make them ready for industry.
8) Live project, Research projects, Hi-tech courses in Telecommunication technology.

3. CELEBRATION OF 125TH BIRTH ANNIVERSARY OF DR. BHIMRAO RAMJI AMBEDKAR (CONSTITUTION DAY)

Ministry of HRD advised all Educational Institutions of India to celebrate 125th birth Anniversary of Dr. Bhimrao Ramji Ambedkar as 'Constitution Day' every year. As per this order Raj Kumar Goel Institute of Technology, Ghaziabad has celebrated on 26th November, 2015 as Constitution Day.

This program was organized to increase the awareness about Constitution among the students and faculty/staff members. This function was organized by Dr. Dhirendra Kumar. The complete celebration was divided in 3 parts.

1. Glimpses from the life of Dr. Bhimrao Ramji Ambedkar and quotes.

2. Few important aspects of Constitution of India.

3. Theme of the celebration was the 'preamble of constitution' which is referred to as the preface which highlights the essence of the entire constitution.

Dr. Dhirendra Kumar discussed few important aspects of Constitution of India.

The preamble in Hindi and English was respectively recited by Prof. B. K. Gupta, Honorable Advisor, RKG Group of Institutions who presided over the function The Director (Academic), Dean, 2nd shift, All Principals, HODs of various departments and Faculty/Staff members, students was present in the function.

On this occasion the students who participated in Essay writing competition on "Ambedkar Philosophy and its relevance in present day in India". The following students were awarded first and second prizes.

1. Mr. Akhilesh Sharma, M.E. 3rd year : 1st prize
2. Mr. Gopesh Upadhyay, E.C, 2nd year : 2nd prize

At the end of the function Dr. Dhirendra Kumar thank to Director and Dean (Academic) for giving the opportunity to convene the function.

4. SPECIAL LECTURE

- Lecture on **"Coordinate Transformation"** by Dr. Amit Kumar Pandey

He discussed that coordinate systems are used to describe vectors accurately. Basically, there are 3 coordinate systems such as Cartesian, cylindrical and spherical coordinate systems. These coordinate systems are orthogonal, in which coordinates are mutually perpendicular. It is necessary to choose a coordinate system for a problem. A hard problem in one coordinate system may turn out to be easy in another system.

- Lecture on **"Fundamental of Optical Fiber Communication"** by Dr. Puneet Chandra Srivastava.

He discussed basic of optical fiber communication system. He explained working of optical sources and optical receiver and also losses in optical fiber communication.

5. DEPARTMENTAL CULTURAL ACTIVITY

ECE Department celebrated birthday of Mr. Abhinav Bansal and Mr. Ankit Tripathi in the month of November.

FROM THE DESK OF HOD, ECE

We in general celebrate the family and social function to get several kind of enjoyment. The Vijnana Bharati has planned to enjoy by celebrating a mega technical festival which comprises of several events. In this festival the events are planned in such a way that the students from school to the senior scientist, professors can get meaningful events.

The brief of the events is as follows:

- International Science Festival (IISF 2015), a joint event of Ministry of Science and Technology (DST, DBT and DSIR/CSIR) and Ministry of Earth Sciences, is being organized during December 04-08, 2015 at Indian Institute of Technology Delhi.

- Technology Information Forecasting and Assessment Council (TIFAC) have been chosen as the nodal government institution to organize this mega event in collaboration with Vijnana Bharati (VIBHA).
- IISF aims to provide a single platform to promote interaction among the people and scientists from South Asian Countries to share and spread scientific ideas and discoveries. Around 3500 participants, delegates, invitees, renowned experts are expected to attend various components of IISF 2015.

IISF 2015 is being organized with the following objectives

1. Exposing the fruits of Science and Technology to the masses.

2. Building strategy to instill scientific temper among the people.

3. Showcasing Indian contributions in the field of S&T over the years.

4. Providing platform to young scientists from South Asian and other neighboring countries for exchange of knowledge & ideas.

5. Supporting flagship programmers like Make in India, Digital India, Start-up India, Smart Villages, Smart Cities etc. initiated by the Govt. of India.

AIM

IISF 2015 targets to involve and include commoners with a view to improve their scientific understanding, temperament and appreciation for various feats in science & technology. IISF also targets to showcase innovative practices and achievements by Indian science & technology system. Another important milestone of IISF 2015 would be to promote India's Indigenous Knowledge, well acclaimed in the world. IISF 2015 would provide an effective platform for the scientists-students interactions and also host large-scale practical science laboratory demonstration. Concurrent with the conference, another component of IISF would encompass techno-industrial expo with the participation of national agencies such as DRDO, BARC, ISRO etc. along with the leading PSUs. Science communication by effective media interception such as science documentaries, films etc. would another key component of IISF 2015. All of these are expected to make IISF 2015 stand apart from other events held in the country.

Events under IISF 2015 are as follows

- Young Scientists' Conference ,Industry Academia Conclave, National Level Exhibition & Project, Competition (NLEPC) under 'INSPIRE' Programme of DST, Techno-industry Expo, Science Film Festival
- Practical Science Laboratory Demonstration
- Presentation of technical papers and posters in the following sub-themes : *Indigenous knowledge, Innovative agricultural practices & livestock management, Integrated healthcare including innovative diagnostic aids, Vector control & mitigation, Remote sensing applications, Smart design and advanced manufacturing technologies in line with 'Make in India', Green energy, Waste to wealth technologies, water & ocean resources, environmental management & climate change.*

STUDENT ACTIVITY

QUIZ-A-ECE: AECE, society of ECE department of our college organized a quiz "QUIZ-A-ECE" for all year students on 02.11.2015 i.e. Monday at 3:30 PM, Venue: D- Block. Registration process started from 31.10.2015 till 02.11.2015. 108 teams participated & 26 team has been selected for the final round to be conducted further.

TRAINING BY GINILAB: Comprehensive training on smart board comprising of every experiment was given by "GINILAB" to the group of 25 students for consecutive three days (16 to 19 November, 2015). This training was very useful to enhance the knowledge of the students.

STUDENT ACHIVEMENT:

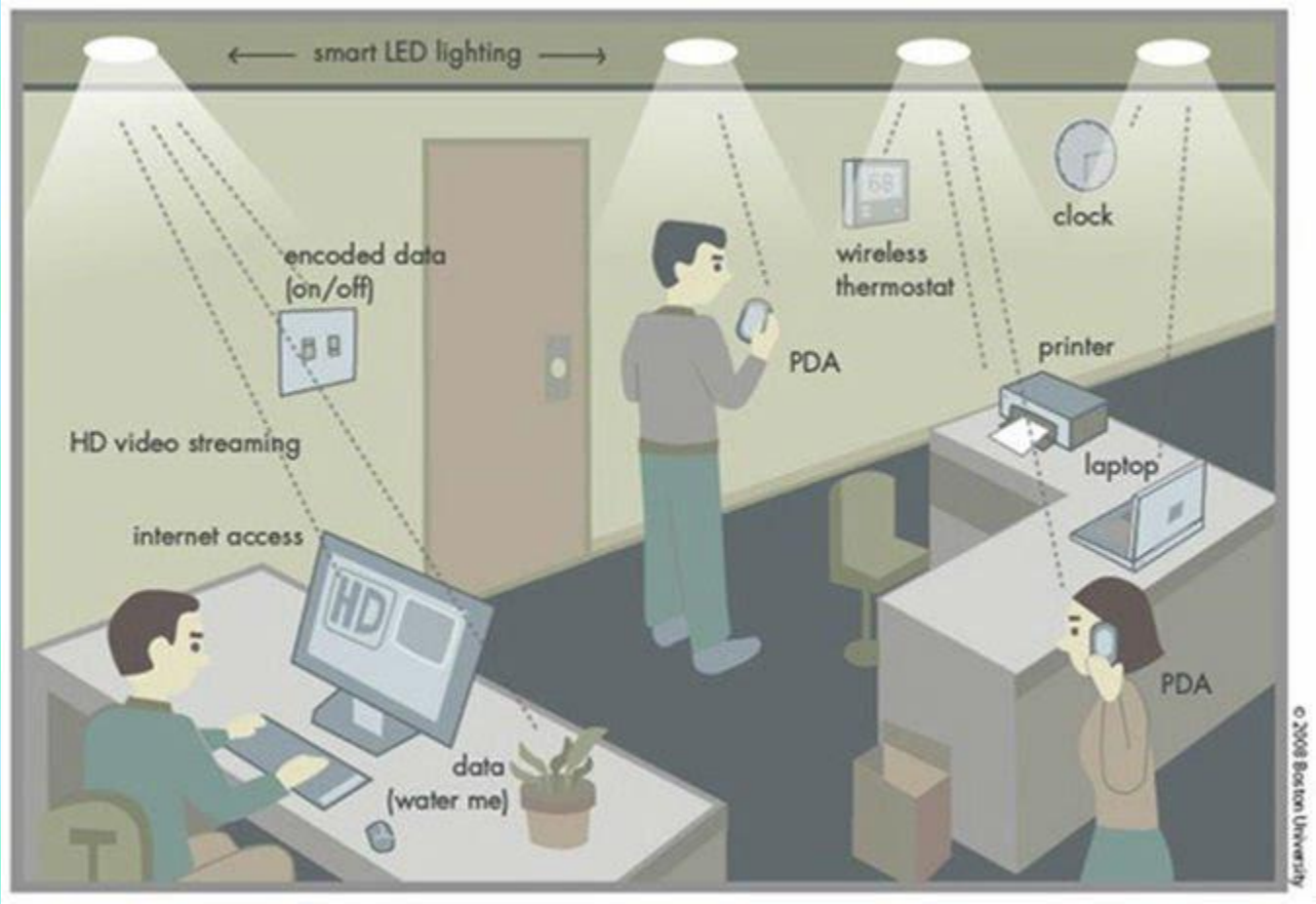
In Essay writing competition on "Ambedkar Philosophy and its relevance in present day in India" Mr. Gopesh Upadhyay, E.C, 2nd year was awarded by 2nd prize on 26th November 2015.

STUDENT FRAME

"LI-FI" by Shyam Narayan Gupta (ECE 3rd yr)

Li-Fi is a wireless technology that transmits high-speed data using visible light

communication (VLC). Scientists have taken Li-Fi out of the lab for the first time, trialing it in offices and industrial environments in Tallinn, Estonia, reporting that they can achieve data transmission at 1 GB per second - that's 100 times faster than current average Wi-Fi speeds.



Li-Fi was invented by Harald Haas from the University of Edinburgh, Scotland back in 2011, when he demonstrated for the first time that by flickering the light from a single LED, he could transmit far more data than a cellular tower.

The technology uses Visible Light Communication (VLC), a medium that uses visible light between 400 and 800 terahertz (THz). It works basically like an incredibly advanced form of Morse code - just like switching a torch on and off according to a certain pattern can relay a secret message, flicking an LED on and off at extreme speeds can be used to write and transmit things in binary code.
The benefits of Li-Fi over Wi-Fi, other than potentially much faster speeds, is that because light cannot pass through walls, it makes it a whole lot more secure and There is less interference between devices.

Cuthbertson says Li-Fi will probably not completely replace Wi-Fi in the coming decades, the two technologies could be used together to achieve more efficient and secure networks.

"Paper battery" by Isha Dixit ECE 3RD YEAR

A paper battery is a flexible, ultra-thin energy storage and production device formed by combining carbon nanotube with a conventional sheet of cellulose-based paper. A paper battery acts as both a high-energy battery and super capacitor, combining two components that are separate in traditional electronics. This combination allows the battery to provide both long-term, steady power production and bursts of energy. Non-toxic, flexible paper batteries have the potential to power the next generation of electronics, medical devices and hybrid vehicles, allowing for radical new designs and medical technologies.

Paper batteries may be folded, cut or otherwise shaped for different applications without any loss of integrity or efficiency. Cutting one in half halves its energy production. Stacking them multiplies power output. Early prototypes of the device are able to produce 2.5 volt s of electricity from a sample the size of a postage stamp. Paper battery offers future power.

While a conventional battery contains a number of separate components, the paper battery integrates all of the battery components in a single structure, making it more energy efficient.

The battery contains carbon nanotubes, each about one millionth of a centimeter thick, which act as an electrode. The nanotubes are embedded in a sheet of paper

soaked in ionic liquid electrolytes, which conduct the electricity. The flexible battery can function even if it is rolled up, folded or cut. Although the power output is currently modest, increasing the output should be easy.

The paper battery is designed to use a paper-thin sheet of cellulose (which is the major constituent of regular paper, among other things) infused with aligned carbon nanotubes. The nanotubes act as electrodes, allowing the storage devices to conduct electricity. The battery will currently provide a low, steady power output, as well as a super capacitor's quick burst of energy. While a conventional battery contains a number of separate components, the paper battery integrates all of the battery components in a single structure, making it more energy efficient and lighter.

COROLLARY

1. ***CDMA*** — Code Division Multiple Access: A digital cellular technology that uses spread-spectrum techniques. Unlike GSM and other competing systems that use TDMA, CDMA does not assign a specific frequency to each user. Instead, every channel uses the full available spectrum. Individual conversations are encoded with a pseudo-random digital sequence.
2. ***Level Translator*** — A device which translates a logic signal from one type to another, for example, ECL to TTL.
3. ***Bit Banging*** — A technique which uses the general-purpose ports of a microcontroller to emulate a serial interface standard (I2C, SPI, etc).
4. ***VCTCXO*** — Voltage Controlled, Temperature Compensated Crystal Oscillator: A TCXO which offers the ability to control the oscillation frequency with an analog voltage
5. ***PAM*** — Pulse-Amplitude Modulation (PAM) is a pulse modulation technique in which the amplitude of the pulse is varied with the input signal amplitude.
6. ***Laser Driver*** — An IC that supplies modulated current to a laser diode in response to an input serial-data stream.
7. ***Full Duplex*** — A channel providing simultaneous transmission in both directions.
8. ***AMPS*** — Advanced Mobile Phone System: An analog only, 1G standard that operates in the 800MHz to 900MHz frequency band. It is still widely used in the United States.

9. *Metal Oxide Varistor*

A Metal Oxide Varistor (MOV or surge-suppressor) is a discrete electronic component that diverts excessive voltage to the ground and/or neutral lines.

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