

HODs DESK

Ms. Asha Panicker , Associate Prof. & HOD, DEC

Graduate Aptitude Test in Engineering (GATE) is an all India examination administered and conducted jointly by the Indian Institute of Science and seven Indian Institutes of Technology on behalf of the National Coordinating Board - GATE, Department of Education, Ministry of Human Resource Development (MHRD), Government of India.

The overall coordination and responsibility of conducting GATE 2009 lay with the Indian Institute of Technology, Roorkee, designated as the Organising Institute for GATE 2009.

The IITs and IISc have pioneered advanced education at master's level in India. The purpose of GATE is not only to conduct a test for admission for master's degree but also to identify the potential engineers/ researchers in various fields and help them pursue their study in the area of their choice.

To secure a very high percentile in GATE, it should always be remembered that you are adjudged relatively and not absolutely. Hence, your rank obviously depends on how you performed relative to your competitors. The kind of questions asked in GATE exam is that of multiple choice which carries a negative marking for a wrong answer chosen. One should always know that although the questions have only one correct answer, other probable choices are deliberately put there to confuse the candidates. In that sense, finding the correct choice from the wrong ones does require a lot of practice and versatility, since all the choices appear very similar to the correct one.

From our branch out of the 17 students who appeared for GATE, 14 secured valid gate scores as listed below:

Semester	Sl. No	Name	Percentile
S6A	1	ARJUN NARAYANAN	99.5
S6B	2	SILBY SEBASTIAN	88.53
S8	3	SRIJITH K	99.08
S8	4	LIJO MANUEL	99.04
S8	5	TRISSOJI JOSEPH	95.82
S8	6	ANOOP THOMAS	95.11
S8	7	AISWARYA PRASAD	93.42
S8	8	ARATHI S G	92.73
S8	9	BIJOSH ISSAC	88.53
S8	10	ANISHA NATARAJAN	88.16
S8	11	DONA XAVIER	86.05
S8	12	LIZ ZACHARIA	86.05
S8	13	ANJU SURESH	85.55
S8	14	PARVATHY NANDAKUMAR	85.55

3 staff members of our department (Mr. Rejesh N. A., Mr. George Thachil & Mr. Basil Abraham) also secured gate scores.



Arjun Narayanan (99.5)



Srijith K (99.08)



Lijo Manuel (99.04)

VOLUME

06

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Electronauts

"DEFINING INFINITY"



This is a report of the activities of Electronauts, the association of the Dept of Electronics & Communication, during the academic year 2008-09. The executive committee comprises of Ms. Tressa Michael (Staff - in - charge), Ms. Sona K, Mr. Pramod G and Mr. Vijilesh Krishnan (Staff Advisors), Srijith K (President), Anna Mary Mathew (Secretary), Vijay George (Vice President), Deepak Mohan, Jyotsna Menon and Nidhin R.

The association activities of 'Electronauts' for the academic year 2008-09 was inaugurated by Mr. Unnikrishnan, Scientist G, NPOL on 9th August '08. The event opened with a Ranga Pooja by S7 students and was followed by a talk by the Chief Guest on contemporary issues in electronics and a report on the Mini Project Exhibition of the 2005-09 batch conducted in July '08. Senior faculty members were felicitated and prizes were awarded to the winners of the exhibition.

A quiz competition, Cross Fire, was arranged for the students of S5 and S3 in August, in order to test and improve their technical knowledge and analytical ability. The competition was conducted in two phases by the students of S7.

In September, the association held Gurudakshina'08, a tribute to all teachers, in connection with Teacher's Day. The event was graced by the presence of Rev. Fr. Jose Alex, Dr. J Isaac, Dr.A.C.Mathai and Dr. C Karthikeyan. The students of S7 expressed their respect and gratitude to the teachers in the form of 'Gurudakshina'. Prof. Asha Panicker, Head-of-Department, addressed the students. The winners of Cross Fire were felicitated. Cultural programmes by students and games for teachers made the day a memorable one.

Students of S3 were encouraged to take up Micro Projects as a co-curricular activity during the 4th semester with the aim of improving their understanding of the applications of electronic circuits, developing practical skills and preparing them for mini and main projects in the coming years. A project coordination team was formed with Mr. K. Rama Varma as Project Coordinator, Mr. Basil Abraham and Mr. George Thachil, and a 4 member student coordinator team from each of the two classes. The students will do their micro projects as groups of two.

In January, a poster designing competition was organized for the S4 students. The classes were divided into six groups of ten each. The topic given for the competition was 'The latest trends in Electronics'. The event was organized by the S6 students. Posters were made on topics like Chandrayaan, booming FMRI technology, Bluetooth, Mechatronics, Nanobots, WiMAX etc. A talk on Digital Signal Processing was organized for S6 students by Dr. Supriya, CUSAT on the scope of DSP, its advantages and applications.

The Electronauts Association meeting for the even semester was held on February 4th, 2009. It was presided over by Dr. J Issac, Principal, Dr. C Karthikeyan and Prof. Asha Panicker. Priya V of S6 EC β gave a presentation on the objectives of the department. It was followed by a presentation on the association activities conducted during the previous semester and future plans. Anisha Natarajan of S8 shared her team's experience at CISCON 2008 conducted by the Manipal Institute of Technology, where they presented a paper in VLSI. Other activities included a technical talk on Formula 1 technology by Ananthakrishnan of S4 EC α , release of the course material of Advanced Microcontrollers compiled by Ms. Kiran Susan Pavu, Lecturer, DEC, and prize distribution for the winners of poster designing competition.

On March 4th 2009, the association organized technical competitions involving the second, third and fourth year students of all departments. The events included 'Diskha' (Technical Quiz), 'Micro Masters' (Microprocessor Code Debugging), 'Bug the Bugs' (Circuit Debugging), 'Thejasvi' (Logical Puzzles) and 'Prahelika' (Sudoku). The events were well-received with huge participation. Winners were awarded cash prizes and certificates.

The association releases its newsletter 'Electrovision' to craft a new medium of exchange of information among fellow Electronauts. It comprises of updates of the activities of the association, technical write-ups by staff and students, and innovative pieces by students. The association has also launched the e-version of the same and it is available at www.rajabiritech.ac.in/News&Events. Electrovision was released every month during 2008 and will be released bimonthly from 2009 onwards.

Fare Well to 2005-2009 Batch

On behalf of all members of DEC, ELECTRONAUTS bid farewell party to the fifth batch of the department on 06th April 2009 in the new Cafeteria. The function was presided over by Dr. Vinod Kumar.P.B. and Professor Emeritus Dr.A.C.Mathai. Dr.Vinod Kumar and Dr.A.C.Mathai delivered message to the outgoing students. Dr.C.Karthikeyan, Ms.Asha Panicker and other faculty members shared their experience with the students. Student representatives expressed their gratitude and respect to the department.

Infinity is not defined. But each year we are getting closer to 'defining infinity'.

Nanopiezoelectronics

Dr. C. Karthikeyan, Professor, DEC

The piezoelectric effect--in which crystalline materials under mechanical stress produce an electrical potential--has been known of for more than a century. But in 2005, Zhong Lin Wang, a materials scientist at Georgia Tech, demonstrated for the first time that it is also possible at the nanoscale by bending zinc oxide nanowires with the probe of an atomic-force microscope. As the wires flex and return to their original shape, the potential produced by the zinc and oxide ions drives an electrical current. The current that Wang coaxed from the wires in his initial experiments was tiny; the electrical potential peaked at a few millivolts. But Wang rightly suspected that with enough engineering, he could design a practical nanoscale power source by harnessing the tiny vibrations all around us--sound waves, the wind, even the turbulence of blood flow over an implanted device. These subtle movements would bend nanowires, generating electricity. Zhong Lin Wang thinks piezoelectric nanowires could power implantable medical devices and serve as tiny sensors.



Nanoscale sensors are exquisitely sensitive, very frugal with power, and, of course, tiny. They could be useful in detecting molecular signs of disease in the blood, minute amounts of poisonous gases in the air, and trace contaminants in food. But the batteries and integrated circuits necessary to drive these devices make them difficult to fully miniaturize. The goal of Zhong Lin Wang is to bring power to the nano world with minuscule generators that take advantage of piezoelectricity. If he succeeds, biological and chemical nano sensors will be able to power themselves.

Reference & Credits : Katherine Bourzac, Technology Review, MIT Publication, April 2009.

SEMINARS ATTENDED

Ms.Tressa Michael, Lecturer DEC attended an AICTE sponsored short term TRAINING PROGRAM ON DIGITAL SIGNAL PROCESSING AND NEURAL NETWORKS at Viswajyothi College of Engineering & Technology, Vazhakulam from 23/03/09 to 28/03/09

Ms.Kiran Susan Pavu, Lecturer DEC attended a training session on the DSP TMS320F28335A conducted on 28.03.2009 at Government College of Engineering, Thrissur. It was organized by PANTECH SOLUTIONS to familiarize the participants with the above kit which can be used for motor control and Power Electronics Applications.





REVERSIBLE COLOR TO MONOCHROME EMBEDDING USING TEXTURIZATION

Boolu Ann Gabriel, David Sajan Mangalam , Mithun Varghese S8 ECE

When digital color documents are to be printed using a black-and-white printer or transmitted using a conventional black-and-white fax machine, we are faced with the problem of representing color images in black-and-white, while trying to retain the information conveyed in charts and pictures. Graphics, like pie charts, were likely prepared using very contrasting colors to enhance visibility. Once the color graphic is converted to monochrome, sometimes the contrasting colors are mapped to the same gray level and their visual difference vanishes. So, the first problem is how to convert colors to black and white such that different colors would look different on paper too, even if they have the same luminance component. Beyond the above problem, we devised a color-to-gray mapping that is reversible; that is, given the monochrome image, or black and white printed paper produced with our method, we can recover the original colors.

DETECTION OF DIABETIC RETINOPATHY

Dona Xavier, Parvathy Nandakumar, Sandhya Gangadharan S8 ECE

The aim of this project is to develop an automated system to find out the diabetic count and to assess the severity of the disease diabetic retinopathy, by analyzing the retinal fundus image using the principle of digital image processing techniques. For this we analyze the retinal images and separate out or extract the required parameters like blood vessels, optic disk and exudates and process them to find out the diabetic count and severity of the disease. With a large number of patients undergoing regular screenings, tremendous amount of time is needed for medical professionals to analyze and diagnose the fundus photographs.



We present a reversible method to convert color graphics and pictures to gray images based on mapping colors to low-visibility high-frequency textures. From a monochrome textured image, the decoder can identify the textures and recover the color information. An image is textured by carrying a wavelet transform and replacing band-pass sub-bands by the chrominance images. The low-pass sub-band is the same as that of the luminance signal. The decoder performs a wavelet transform on the received gray image and recovers the chrominance channels. Registration problems are discussed and examples are presented.

As a result, this may delay the patients being referred to ophthalmologist for further examination and treatment. Giving due consideration to the increase in occurrence of diabetes, as well as to the fast advances in computer hardware and software technique, the development of a cost-effective PC-based retinal image analysis system offers a potential of being very useful in the mass screening of diabetic retinopathy.

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Lab Staff Upgradation program

ECLSUP-2: APRIL 21, 22 & 27, 2009

Lab experiments are designed to give the student a better understanding of the theory learnt in the classrooms and, therefore, labs have a very important role to play in the engineering curriculum. It is thus essential to conduct periodic programs to update of the knowledge base of the technical staff who manages the labs, especially in respect of the new lab equipment that get added from time to time.

It is with this in view that Dept. of Electronics & Communication Engg. organised an in-house Lab Staff Upgradation Program on April 21, 22 and 27, 2009. This was the second in the series, the first having been held in 2005.

The 3-day program was inaugurated by the Principal on April 21, 2009. Ms. Asha Panicker, HOD-ECE, gave a brief outline of the program. Twelve members of lab staff, including those from DAE and DEE, attended the program with great interest and enthusiasm.

The first day's sessions (April 21, 2009) were conducted by Mr. Rejesh N A, Ms. Harsha A, Mr. Vijilesh Krishnan V K and Ms Liny Elson Varghese, and dealt with the theory and operation of Function Generator, Spectrum Analyser, CRO and Digital Storage Oscilloscope.

The second day's sessions, comprising of classroom and lab sessions, covered Micro-processor architecture and programming in some detail, and were conducted by Ms. Sheeba Kumari M and Ms Tressa Michael.

The third and final day of the program (April 27, 2009) was dedicated to the study of AT89C51 micro-controller. Mr. Jaison Jacob and Ms. Kiran Susan Pavu conducted the classes as well as the lab session.

Certificates were issued to all participants by the Director-RASET.

The program co-ordinator, Mr. K. Rama Varma, was ably assisted by Mr. Jiju K. Mathew in the conduct of the program.



Principal Inaugurating the Program



HOD Addressing the Gathering



Prof. K Ramavarma Briefing the Program schedule

ECLSUP-2



