

Chairman's Message



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Dear Friends,

I am pleased to mention that the IEEE WIE Madras Affinity Group has been selected to receive an honourable mention in the 2007 WIE Affinity Group of the year award, in recognition of contributions on behalf of IEEE Women in

Engineering. The WIE Group will receive US \$100 to help support future activities. On behalf of IEEE Madras Section, I whole heartedly congratulate Mrs. Ramalatha Marimuthu, R10 WIE Coordinator and Chair person of Women in Engineering, Madras IEEE WIE Affinity Group for their sincere effort in carrying-out all the activities.

At the GINI Madras Section meeting held at the office of the IEEE Madras Section, on July 14, 2008, Dr. Mini Thomas, Region 10 Student Activity Co-ordinator, Dr. P. Suresh Chander Pal, Chair, GINI Madras Section, the members given below and myself participated.

- 1) Mr. Prijoe Philips Komattu, R10 GINI Co-ordinator
- 2) Mr. Jaison Sabu, Mentor, GINI Madras Section
- 3) Mr. S. Hari Ganesh, GINI Madras Section Student Representative
- 4) Mr. M.S. Barnabas, Vice-Chair, GINI Madras Section
- 5) Mr. Ranjit R. Nair, Secretary, GINI Madras Section
- 6) Mr. V. Ganesh, Treasurer, GINI Madras Section.

Prof. Mini Thomas, Region 10 Student Activity Co-ordinator invited the Section SAC, GINI Execom members including the Section GINI Student representative to attend the "GINI Face to Face Meeting" at Hyderabad during August 9 -10, 2008. This meeting is intended to gain inputs, help strengthen and activate the sick / dormant Student Branches through direct contacts and networking among the Student Branches, increase the activities and the number of Student Branches, give motivational talks and carryout exercises and tips for training the student leaders. It is suggested that IEEE Madras Section may depute the members listed from (3) to (6) who have shown great enthusiasm and eagerness to attend this meeting.

I am happy to inform that the Executive Committee of GINI Madras Section was also formed for the sake of co-ordinating the work of this representative body of GINI MAS.

□ Chairman	:	Dr. Suresh Chander Pal
□ Mentor	:	Mr. Jaison Abey Sabu
□ Vice Chairman	:	Mr. Barnabas. M.S
□ Secretary	:	Mr. Ranjit R. Nair
□ Treasurer	:	Mr. Ganesh. V
□ GINI MAS Representative	:	Mr. Hari Ganesh. S

The IEEE Student Branches of IEEE Madras Section have been divided into 10 IEEE GINI Hubs as given below:

- 1) Chennai 1 – **Mr. Akshay Aravind**, *Jeppiar Engineering College*
contd..... page 2

From The Editor's Desk



H.R. Mohan
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Dear Friends,

The WIE Affinity group of Madras Section seems to be setting trends which other regions are interested in following. Congrats to Prof. Ramalatha, the chairperson of WIE MAG who had attended the WIE Regional Coordinators meeting in US and provided a short report which appears in this issue.

It is great to note the initiative of Dr. M. Ponnaivaikko, our past chairman for the Tamil version of Spectrum – which we hope will become popular among a large section of students.

LINK wishes to acknowledge the efforts of yet another past chairman, Dr. Suresh Chander Pal who is spearheading the GINI project of Madras Section as a pilot initiative of R10. Sr. members have suggested exploring videoconferencing, teleconferencing, online meetings and use of social networking tools to create GINI communities and communicate more effectively.

Brief proceedings on the monthly technical meeting on "Finite Element analysis and its applications in electrical engineering", IEEE - IAS Madras Chapter distinguished lecture programme on "Automotive steering systems with advances in electrical actuators and control" appear along with reports on the inauguration of the student branch website at Sri Venkateswara Engg College.

With the colleges re-opened after vacation, we are sure that activity level will pick-up and the co-ordinators will report them in LINK. We encourage the colleges to keep us informed on the conferences and seminars being organized by them to get listed in the LINK to facilitate paper submission and also to attract delegates. A no. of announcements have appeared in this issue including the one on the convention on Knowledge, Library and Information Networking.

The Info Contest seems to have become popular with increased no. of responses. We congratulate the two winners – Mr. N. Sivaraman of SSN College of Engg and Mr. S. Karthick of Easwari Engg College who will receive a prize of Rs. 500/= each sponsored by SRA Systems, Chennai.

We hope that the two interesting student articles – one on Image Magnification and the other one on Linux, the snippets – Infobits & Resources, Weirdest Computers, Information Security, Green IT – compiled by Mr. Mohan, Editor LINK will interest the readers.

To facilitate the timely publishing of the newsletter covering the activities being held at various places, we request the reports are sent well in advance to the deadline of 10th of every month by mail to ieemaslink@gmail.com with a copy to the Section mail id: ieemas@eth.net.

Editorial Team

Mr. H.R. Mohan, Dr. S. Salivahanan, Dr. M. Ponnaivaikko,
Dr. P. Suresh Chander Pal, Mr. T.S. Rangarajan, Mrs. M. Ramalatha



Technical Meeting on “Finite Element Analysis: Application in Electrical Engineering”

Held on 21st June 2008

A technical meeting on the topic “Finite Element Analysis: Application in Electrical Engineering” by Dr. V. Kamaraj Professor, Dept. of Electrical and Electronics Engineering, SSN College of Engineering, Chennai was organized by the IEEE Madras Section on 21st June 2008. Dr. S. Salivahanan, Chairman, IEEE Madras Section welcomed the gathering. Dr. M.A. Atmanand, Vice Chairman, IEEE Madras Section introduced the speaker.

The speaker, Dr. V. Kamaraj, in his talk, introduced the fundamental concepts of Finite Element Analysis (FEA) and its application in Electrical and Electronic product design to the participants. He highlighted how FEA reduces product size, time to market with minimal prototyping costs. The talk also covered the areas such as: Mathematical and Physical basis of FEA, shape functions, formation of stiffness matrix with an example relating to assembling of stiffness matrices, steps in FEA-Pre Processor, Solver and Post Processor, boundary conditions and commercial FEA packages available in market for the electromagnetic design problems. In addition, the application of FEA to Switched Reluctance Machine analysis was also discussed in detail.

After the talk, Dr. G V Rao, Chairman, IEEE IAS Madras Chapter presented the memento to the Chief Guest and proposed the vote of thanks.

Dr. M. Ponnavaikko, Vice Chancellor, Bharathidasan University at Trichy and the immediate Past Chairman of IEEE Madras Section released the Tamil version of IEEE Spectrum.



IEEE - IAS Madras Chapter Activity

A Distinguished Lecture program on the Topic “Trends In Automotive Steering Systems with Advances in Electrical Actuators and Control” was organized by IEEE - IAS Madras Chapter in association with Indian Institute of Technology, Madras on 4th July 2008 at the Electrical Sciences Block Seminar Hall. The Guest speaker for the evening was Dr. Tomy Sebastian, Chief Scientist, Delphi Steering Systems Inc. Michigan, United States.

The Welcome address was given by Dr. P. A. Janakiraman, Professor, Electrical Sciences, IIT, Madras. Dr. G. V. Rao, Chairman, IEEE - IAS (Madras Chapter) introduced the speaker.

Dr. Tomy Sebastian, shared his rich experience in research and highlighted the latest studies involving Power Electronics in providing a value added and energy saving steering systems for the automobiles. He also shared the present studies being done in the field of steering systems to enable the participants to have a first hand information of the market.

A video clipping on the introduction of IAS was also shown to the participants. On behalf of the IEEE - IAS (Madras Chapter) a memento was presented to Dr. Tomy Sebastian and the Vote of Thanks was given by Dr. G. V. Rao.

The meeting was attended by about 75 participants including Senior Faculty Members, Research Scholars, Students and professionals from Industries.

Report by: Dr. G. V. Rao, Chairman, IEEE - IAS Madras Chapter

Chairman’s message continued...

- 2) Chennai 2 – **Mr. Barnabas, Velammal Engineering College**
- 3) Vellore - **Ms. Saraswathi, Thanthai Periyar Government Institute of Technology**
- 4) Chidambaram - **Mr. Kannan, Mailam College of Engineering**
- 5) Coimbatore - **Mr. Sivakumaran, Coimbatore Institute of Engineering and Information Technology**
- 6) South Tamil Nadu - **Mr. Sivashakthivel, Dr. Sivanthi Aditanar College of Engineering**
- 7) Kanchipuram - **Mr. Prithvin Rajendran, Sri Sivasubramanya Nadar College of Engineering**
- 8) Madurai - **Mr. Gogulmani Krishnan, Sethu Institute of Technology**
- 9) Erode - **Mr. Ranjit R. Nair, M. P. Nachimuthu. M. Jaganathan Engineering College**
- 10) Tiruchy - **Mr. Rangan, K.S. Rangasamy College of Technology**

The student members of different student branches may contact the Hub representatives for the arrangement of the Guest Lectures and meetings in the colleges concerned.

- Dr. S. Salivahanan



Inauguration of the Student branch Website at SVCE

The IEEE Student Branch Website of Sri Venkateswara College of Engineering, Sriperumbudur, was inaugurated on 2nd July 2008. Dr. Suresh Chander Pal, Chairman, Student Activity, IEEE Madras Section and Prof. M. Ramalatha, Chairman, WIE Affinity Group and R10 WIE Coordinator were the chief guests. The event started with invocation. Mr. Nitin Balajee R, Chairperson, IEEE-SVCE student branch the welcomed the gathering and introduced the office bearers.

Mr. Arun Ram , Vice Chairperson and Ms. Nethra, WIE Chairperson, IEEE –SVCE student branch introduced the chief guests.

The inauguration of website <http://www.svce.ac.in/ieee> was followed by motivational speeches by Dr. Suresh Chander Pal and Mrs. S. Ramalatha. Dr. Suresh Chander Pal covered a wide range of topics including the benefits of joining the IEEE and the various activities conducted by IEEE around the world. He also recollected some of his rich experiences as a senior member of IEEE. The talk was highly interactive and enriching.

In her presentation, Prof. Ramalatha gave some statistical and vital information about the various activities and outreach programmes conducted by the WIE section. She recollected some of the successful initiatives by the society to the rural people and motivated the students to work towards the same. Her talk encouraged the students to join the organization and she explained various benefits that accrued to the students from the society.

Dr. R. Ramachandran, Principal, SVCE and Prof. R. Narayan, Head, Department of Electronics and Communication, SVCE graced the occasion.

The event concluded with the vote of thanks given by Mr. Kugan T, Industry Relations officer, IEEE Student Branch, SVCE. The event was well covered and completely video graphed by Mr. Pugazharasan S, Secretary , IEEE-SVCE student branch.

Dr. Suresh Chander Pal suggested the members to form various committees with which all the members will be able to take part in the activities of the branch. He called for nominations from students for various committees and appointed the students in charge for the same.

The function attended by about 150 participants proved to be a grand success in motivating many students to join the organization.

OFFICE BEARERS

- Staff Counselor** - Mr. Ganesh Vaidyanathan S, Assistant Professor ECE
- Chairman** - Mr. Nitin Balajee R, Final Year ECE
- Vice Chairman** - Mr. Arun Ram K, Final Year CSC
- Secretary** - Mr. Pugazharasan S, Final Year ECE
- Joint-Secretary** - Mr. Balaganesh Damodaran, Final Year EEE
- Treasurer** - Mr. Lakshminarayanan VT, Final Year ECE
- Industry Relations Officer** - Mr. Kugan T, Final Year Bio-Tech
- WIE** - Ms. Nethra, Final Year Bio-Tech
- Membership committee i/c** - Mr. Swaminathan, 3rd year
- Program committee i/c** - Mr. Sathya Narayanan, 3rd year, ECE
- Newsletter committee i/c** - Mr. Sasikumar, 3rd year, CSC
- Website committee i/c** - Mr. Arun Ram K, Final Year ECE

Conference Announcements

ADCOM 2008: International Conference on Advanced Computing and Communication; 14 – 17, December 2008, MIT Campus, Anna University, Chennai, India; For details, pl. visit <http://annauniv.edu/adcom2008/>

TIMA: 6th International Conference on Trends in Industrial Measurements and Automation; Theme: Intelligent sensing and control (towards energy management and environmental preservation); 4 – 6, Jan 2009, Chennai, India; Organised by: Dept. of Instrumentation Engg., MIT Campus, Anna University, Chennai; Last date for full paper submission(6 pages): 15th September, 2008; For further details pl. contact: Dr. T. Thyagarajan, Email: tima_2009@rediffmail.com

ICETiC 2009: International conference on Emerging Trends in Computing; 8-10, Jan 2009, Virudhunagar, Tamil Nadu; Organized by: Dept. of CSE, Kamaraj College of Engineering & Technology; Supported by: IEEE Madras Section, IEEE Computer Society - Madras Chapter, Computer Society of India - Div II (Software). Last date for paper submission: 31st Aug 2008. For Further details, pl. contact: Er. N. Saravana Selvam, Email: icetic2009@gmail.com, Website: www.icetic2009.org/

ICWIS-09: International Conference on Web Intelligent Systems; 8 – 10 January 2009, Chennai, India; Organized by: Rajalakshmi Engineering College, Chennai; In Association with: IEEE Computer Society - Madras Chapter, Computer Society of India - Div II (Software) & Chennai Chapter, Indian Institute of Information Technology and Management – Kerala. Last date for the submission of extended abstract: July 30, 2008. For further details, pl. contact: Website: <http://www.rajalakshmi.org/icwis09>, Email: icwis09@rajalakshmi.org

Infobits & Resources

New Online Directory Opens Doors to Networking

Want to find members who share your interests, belong to the same technical society, or graduated from your alma mater? IEEE memberNet, a new online directory, makes this easier. For more information and how you can become part of this networking community, visit <http://bmsmail3.ieee.org:80/u/11810/04142691>

Green Engineering Resource Kit

Green engineering is the use of measurement and control techniques to design, develop, and improve products, technologies, and processes for environmental and economic benefits. National Instruments enables green engineering with the graphical system design platform, providing measurement, automation, and design tools to measure and understand real-world data, then to correct or fix the problem by designing and developing more efficient products and technologies. Download the free E-Kit from <http://bmsmail3.ieee.org:80/u/11812/04142691>

Computer Society Launches Career Site For Budding Professionals

We've all heard the cliché that the most important project any engineer will ever have is the management of his or her own career. The question, of course, is how to do it. Computer professionals just starting out can find part of the answer at the new "Build Your Career" Web site launched in November by the IEEE Computer Society which can be found at <http://www2.computer.org/portal/web/buildyourcareer/home>.

IEEE Women in Engineering Launches Magazine

The first magazine to focus on issues facing women who study or work in the IEEE's fields of interest has been launched in December 2007. Sponsored by the IEEE Women in Engineering group, the electronic *IEEE Women in Engineering Magazine* will be published twice next year and, if it's a hit, quarterly thereafter. Access the premiere issue at http://www.ieee.org/portal/cms_docs/committee/women/13350.pdf

TryEngineering.org

TryEngineering.org at www.tryengineering.org is a Web site designed to attract pre university students to engineering and technology, features a search tool that pinpoints accredited engineering programs in 23 countries.

Section Membership as on 15th July 2008

Life Senior	-	6
Life Fellow	-	1
Life Member	-	3
Senior Member	-	73
Member	-	1049
Affiliate	-	24
Associate	-	113
Graduate Student Member	-	531
Student Member	-	3128
Total	-	4,928

Visit our Website

www.ewh.ieee.org/r10/madras

Mock Interview Programme

IEEE CS Madras Chapter proposes to conduct Mock Interview Programmes (MIP) at various institutions where IEEE Student Branches are active. The targeted participants would be the final and pre-final year students.

A Mock Interview is a simulation of a real-life interview, where the student is grilled with questions, so that with this exposure, when he is faced with the real-life interviews, he is prepared and comes out with flying colours. The Mock Interview usually has two parts: Technical Interview and HR Interview.

The benefits of MIP include: Increased self-confidence/self-worth/self-esteem; Candidate knows his or her strength/weakness in the feedback rating provided; Enhanced success rate in realtime interviews; Feedback on technical/hr/personal evaluation; Preparing to get dream job and Building a life long skill in interviews.

The organisers of the MIP (supporting the IEEE CS) have hand-picked a network of panelists in verticals such as: IT, Core Engineering and Management disciplines.

A Pre MIP Briefing on the previous day to the MIP will cover employability skills / soft skills / resume writing / group discussion / aptitude tests. A Career Skills Workbook of about 30 pages will also be provided to each participant student.

A nominal fee is being proposed and will be collected from each student to meet the expenses involved.

It is expected that the host institution will make the required facilities (such as rooms, lunch to the panelists etc.) available. The IEEE Student Branch office bearers may volunteer in organizing the MIPs. The dates of MIP can be mutually worked out. The HODs / Student Branch Co-ordinators / Office Bearers may pl. contact ieeecsmds@gmail for further details.

Workshop on eResources and Subject Gateways

With the advent of Internet, a lot of reference materials are made available on the Net. However, landing on focused information is a Herculean task and one wastes a lot of time in this process. Library and Information Scientists help both professionals students and faculty members in identifying meaningful resources.

In this context, IEEE CS proposes to organize workshops of 3 hours duration in association with the Madras Library Association at various institutions (where IEEE chapters are active) in accessing eResources and Subject Gateways which will enhance the reference reading and will be useful in their career.

In these workshops, we can address 100 to 150 participants in one go with demos (if Internet facility is provided by the host institutions). Experienced librarians and subject specialists would handle the sessions. A nominal fee will be applicable. HODs / Student Branch Co-ordinators / Office Bearers interested in organizing such workshops in their institutions may pl. contact ieeecsmds@gmail for further details.

Image Magnification Using Adaptive Interpolation

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Abstract: In this digital world, the technology of computer graphics and digital cameras is rapidly progressing. As the technology is marching towards perfection we need to have a very high quality High resolution display. Therefore high resolution (HR) images are needed. High resolution images are not usually provided and there is a need to magnify the original images. One common difficulty in the previous magnification techniques is that of preserving details, i.e. edges and at the same time smoothing the data for not introducing the spurious artifacts. The basic idea of the this technique is to separate the interpolation region in the form of geometrical shape and then the interpolator assign a proper intensity value to the undefined pixel inside this interpolation region. It does not require a preliminary gradient computation because the relevant information is collected during magnification process.

Image magnification Algorithm: First the proposed algorithm is explained for gray scale images and then it is generalized for colour images. Algorithm works in four phases.

First phase: In the this phase of algorithm, the input image is expanded. Suppose the size of the input image is $n \times m$ where 'n' is the number of rows and m is the number of columns. The image will be expanded to size of $(2n-1) \times (2m-1)$. One is subtracted to avoid one additional row and column of undefined pixels which will have the intensity value of the adjacent row and column respectively. In Fig. 1, solid circles show original pixels and hollow circles show undefined pixels.

Fig. 1 Expansion phase showing source image ($n \times m$) and expanded image $(2n-1) \times (2m-1)$



Second phase: In the second phase, the interpolator assign value to the undefined pixel by pixel level data dependent geometrical shapes.

Fig. 2 HR unit cell with undefined pixels



Fig. 2 HR unit cell with undefined pixels Top, Center, Bottom, Left, Right denoted by T, B, C, L, R respectively. The assignment of proper intensity value to the undefined pixel depends on the pixel level data dependent geometrical shapes. In this phase the algorithm scan the image and each time it considers the group of pixels as shown in Fig.2 and checks that what type of geometrical shape, it assigns value to the undefined pixel. If the region is constant and there is no point of high contrast among the defined pixels of the HR cell as shown in Fig. 2. this will be confirmed by calculating the standard deviation of pixels defined in HR cell.

$$\sigma = \sqrt{\frac{(X-X_i)^2 + (X - X_{i-1})^2 + (X - X_{i-2})^2 + (X - X_{i-3})^2}{N}} \tag{Eqn(1)}$$

Eqn(1)
Eqn(2)
Eqn(3)

$T = Md$ where $Md = (XN/2 + XN/2+1) / 2$
 $2 * \sigma < T$

In image magnification thresholding also plays a key roll in preservation of edges. So it's most important to select a suitable threshold during interpolation to preserve the fine details of the image. To preserve the visual quality of the image, the threshold on the basis of safe color [21] is calculated. There are 16 true gray shades from 0 to 255 which can be differentiated visually.



fig(2a)Safe Gray Colors in the 256-Color RGB System

As in Fig.(2a) there are 16 safe colors out of 256. If '256' is divided by '16' we will get 16 as a Quotient. It means that after adding 16 to any gray shad then it will change its visual depiction. To calculate the threshold 'T' for the preservation of the edge using above concept. If N is equal to 16 and where $X_1=0, X_2=2, \dots, X_N=15$ and Median denoted by Md is ginen by eqn (2).

X is the mean of defined pixels in HR cell and σ is standard deviation. If equation (3) is true it mean the HR cell is consist on constant region. No point of high contrast, then it form a square, and all the undefined pixels T, B, L, R, C which are inside the region of this square, will be assign the average value of the defined pixels in the HR cell and it will adopt a form as in Fig. 3.

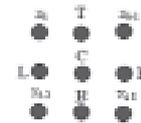


Fig. 3 HR cell which adopt the shape of Square.

All undefined pixels inside this square, will have average intensity value of defined pixels. If the pixel X_i in the HR cell as shown in Fig. 2, isolate from other defined pixels due to intensity difference then there is a top-left corner edge and it forms a shape of triangle. For confirmation, the standard deviation will be calculated of the defined pixels inside a triangle and then it will be compared with threshold as in equation(3) if it is true then it is a triangle with top-Left corner edge. After confirmation, all undefined pixels inside triangle which are C, R, B are assigned the average value of the defined pixels in the triangle which are $X_{i-1}, X_{i-2}, X_{i-3}$ and other two undefined pixels of HR cell are left undefined and will be considered in next phase.

Fig. 4 A triangle with Top-Left corner edge



In Fig. 4 a circle 'Xi' has gray color which shows intensity difference from other three defined pixels of the triangle. The strength of employing triangles in this way is that edges are modeled in the image. In fact it tunes the interpolator to match the edges.

In Fig. 4, when interpolating the HR pixel falling in triangle $X_{i-1}, X_{i-2}, X_{i-3}$, the interpolator will not use the value of x_i pixel which is very different to this plateau and thus the sharpness of the edge is kept. The

interpolator keeps smoothness as well, even across triangle boundaries. The same procedure has been repeated for other three cases of triangle which are bottom-left corner edge triangle, top-right corner edge triangle and bottom-right corner edge triangle. In case ,when pair of pixels on different poles have contrast intensity which split the HR square region into two vertical or horizontal regions. The pixels on the same side having intensity difference less then threshold will be considered in the same region.

Fig.5 HR cell with pixels on different side

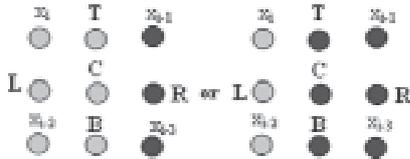


Fig.5 HR cell which adopt the shape of Split Square which divide HR square into two vertical region of different intensity In Fig. 5, when interpolating the HR pixel on different sides, the interpolator won't use the value of the other side and this vertical edge can be expanded to both side but one at the same time as shown in the diagram. So pixels of HR T, C and B would take the average value of left two original pixels X_i and X_{i-2} or right side pixels X_{i-1} and X_{i-3} because both have the same result. The pixels L will take average value of left and R will take average value of right. The same procedure can be repeated for HR square split by horizontal edge. This simply geometry suggest a way to guide the interpolator so that smoothness within the regions and sharpness between the flat region and cliff region can both be kept.

Third phase: In third phase of the algorithm it scans magnified image line by line and looking for those pixels which left undefined in the previous phase. Solid pixels are original pixels in Fig. 6.



Fig.6 Report the layout referred in the description of phase three of the algorithm.

Two scenarios are there in 3rd phase. 1st when c1 and c2 are not assigned in both forms of the Fig. 6. Then the intensity difference of the original pixels is calculated. If this difference is less than threshold then it is assigned the average value of both original pixels to 'a' otherwise leave it undefined. In 2nd scenario when both c1 and c2 are defined then the direction of edge is calculated to specify the interpolation region and then assign proper intensity value to 'a'. At the end of 3rd phase all pixels whose spatial dependence from the neighbourhood values is "sample" have been assigned. Using the information gathered in sofar, in the next stage the remaining "holes" are eventually filled.

Fourth phase: In fourth phase of the proposed algorithm the holes are filled which are left undefined up to this phase. In this phase of algorithm, the median of the neighbouring defined pixels of the undefined pixel is calculated and then assign this calculated value to the undefined pixel. It guarantees a better detail preservation in the magnified image. Eventually the algorithm scan image again by applying the 4th phase of the algorithm and look for undefined pixels whose value is still left undefined and this is accomplished by differentiation to enhance the image. The magnification of image is performed by independently applying the proposed method to each channel.

Conclusion: As we have already said, this algorithm does not require any preliminary information for geometrical shapes because it measures all the shapes during the execution of algorithm and also does not need any extra memory. Therefore the memory requirement is also simple. The algorithm requires only the storage space for the magnified image. This algorithm gives excellent result with respect to execution time and memory space as well. Proposed Interpolation technique when compared with several common magnification techniques which include Nearest neighbor (Pixel Replication), Bilinear Interpolation, Bicubic Interpolation yield better magnified images with no or less amount of jaggies. Jaggies is the term used to describe when lines or curves, that should be smooth, become jagged nature, so it may be developed as a powerful image editing software. Further it may be applied to 3-D images if weak edges were detected and de-noise before magnification.

References:

1. Muhammad Sajjad, Naveed Khattak, and Noman Jafri, International Journal of Computer Science and Engineering Volume 1 Number 2 .Authors are with Department of computer Science, College of signals, National University of Sciences and Technology, Rawalpindi, Pakistan (email:qazi.msajjad@gmail.com, {khattakn, mnjafri}@mcs.edu.pk).
2. Adobe Photoshop. Adobe Systems.
3. Article and Photography by Ron Bigelow available online www.ronbigelow.com

10 Weirdest Computers

New Scientist notes today's computers use pulses of electricity and flipping magnets to manipulate and store data, but information can be processed in many other—and weirder—ways:

1. Optical computing uses light signals to process data and carry out computations.
2. Quantum computing uses quantum mechanical effects to create qubits to run parallel computations.
3. DNA computing processes data and runs programs stored in sequences of genomic base pairs.
4. Reversible computing aims to recover and reuse energy typically discarded in computational operations.
5. Billiard Ball computing uses logic circuits that employ cascades of atoms bouncing off each other.
6. Neuronal computing copies nature's very own computer—the brain.
7. Magnetic computing uses strong magnetic fields to control and observe the way molecules interact.
8. Glooper computers favor gloopware rather than hardware to make waves of propagating ions in a chemical goo behave like logic gates.
9. Moldy computers emulate how slime mold works out the shortest route through a maze.
10. Water wave computing uses wave patterns to make a type of logic gate.

Source: ACM Communications, June 2008

Information Security

10 Security Threats to Watch

The SANS Institute has recently released a list of the worst security threats companies will face this year. CISOs and security officers are aware of these threats, but some are clearly more prevalent than others.

Here's a look at SANS' predictions:

1. Attacks on browser vulnerabilities: Attackers are getting more savvy with exploit codes, and more and more are targeted trusted Websites.
2. Botnets: Bots made headlines throughout 2007, and botmasters are getting increasingly sophisticated in their tactics.
3. Cyber espionage: Well resourced organizations—namely, nation-states—will use phishing and other attacks to gain economic advantage.
4. Attacks on mobile devices: The introduction of new mobile computing platforms will lead to increased attacks, and VoIP systems are also vulnerable.
5. Insider attacks: The threat of an internal strike forces security pros to clamp down on access and set more rigorous policies.
6. Identity theft from persistent bots: Some bots stay on computers for months, all the while collecting personal data that can be used for extortion and identify theft.
7. Spyware: More sophisticated tactics will evade anti-virus, anti-spyware and anti-rootkit tools, leading to more persistent problems.
8. Web application exploits: Programming errors in applications like Web 2.0 tools are seen as increasingly vulnerable, giving attackers a new venue.
9. Blended social engineering: Criminals are using targeted attacks—like a phishing e-mail on job offers for Monster.com users—combined with VoIP to amplify their impact.
10. Supply chain attacks: USB connections from vendors or conferences increasingly contain dangerous software.

Mistakes People Make that Lead to Security Breaches

Technological holes account for a great number of the successful break-ins, but people do their share, as well. Here are the SANS Institute's lists of silly things people do that enable attackers to succeed.

The Five Worst Security Mistakes End Users Make

1. Failing to install anti-virus, keep its signatures up to date, and apply it to all files.
2. Opening unsolicited e-mail attachments without verifying their source and checking their content first, or executing games or screen savers or other programs from untrusted sources.
3. Failing to install security patches-especially for Microsoft Office, Microsoft Internet Explorer, Firefox, and Netscape.
4. Not making and testing backups.
5. Being connected to more than one network such as wireless and a physical Ethernet or using a modem while connected through a local area network.

The Seven Worst Security Mistakes Senior Executives Make

1. Assigning untrained people to maintain security and providing neither the training nor the time to make it possible to learn and do the job.

2. Failing to understand the relationship of information security to the business problem-they understand physical security but do not see the consequences of poor information security.
3. Failing to deal with the operational aspects of security: making a few fixes and then not allowing the follow through necessary to ensure the problems stay fixed
4. Relying primarily on a firewall.
5. Failing to realize how much money their information and organizational reputations are worth.
6. Authorizing reactive, short-term fixes so problems re-emerge rapidly.
7. Pretending the problem will go away if they ignore it.

The Ten Worst Security Mistakes Information Technology People Make

1. Connecting systems to the Internet before hardening them.
2. Connecting test systems to the Internet with default accounts/passwords
3. Failing to update systems when security holes are found.
4. Using telnet and other unencrypted protocols for managing systems, routers, firewalls, and PKI.
5. Giving users passwords over the phone or changing user passwords in response to telephone or personal requests when the requester is not authenticated.
6. Failing to maintain and test backups.
7. Running unnecessary services, especially ftpd, telnetd, finger, rpc, mail, rservices
8. Implementing firewalls with rules that don't stop malicious or dangerous traffic-incoming or outgoing.
9. Failing to implement or update virus detection software
10. Failing to educate users on what to look for and what to do when they see a potential security problem.

And a bonus, number 11: Allowing untrained, uncertified people to take responsibility for securing important systems.

Source & Courtesy: SANS Institute (<http://www.sans.org>)

Announcements

Technical Seminar on “Educational Strategies - The Power to transform our Nation”; 8th Aug 2008; Organised by Hindustan Institute of Science & Technology, Hindustan University, Padur, Chennai and IEEE Education Society, IEEE India Council and Supported by IEEE Computer Society, Madras Chapter. For details, pl. contact: Dr. R. Devanathan, Vice Principal (Academic), Hindustan Institute of Science & Technology, Hindustan University, Old Mahabalipuram Road, Padur, Kelambakkam - 603103. Phone: 044 - 27474262 / 395; Email: deanelectrical@hindustancollege.com

VCaN 2008: National Conference on VLSI, Communication and Networks; 12 – 13, Sep 2008; Organised by Dept. of ECE, Easwari Engineering College; Sponsored by AICTE. Last date for submission of papers: 30.07.2008. For details, pl. visit the website at www.vcan2008.com or email: vcan_2008@yahoo.co.in



IEEE MAS LINK – SRA Systems Info Contest

H.R. Mohan

Chairman, IEEE CS, Madras Chapter
Editor, IEEE MAS LINK
AVP (Systems), the Hindu, Chennai

This is the second contest under Info Contest – an ICT quiz, a regular column in our newsletter LINK. The members are encouraged to participate in the contest and win a prize. Answers to the contest questions can ONLY be sent by email following the guidelines provided at the end of the questions. TWO lucky winners who answer early and to maximum no. of questions (selected by lot if multiple entries qualify) will receive an award of Rs. 500/= each, sponsored by SRA Systems.

Info Contest – 0807

This contest has four sections A, B, C & D having five questions each. The number in bracket at the end of the questions denotes the no. of characters in the answer string.

A. Identify the terms which are defined below.

- A1. The degree of detail something can be broken down into, or the number of discrete components making up any type of system.
- A2. A computer interface using icons or pictures.
- A3. The programming language used to create documents for display on the World Wide Web.
- A4. The ability of hardware or software components to work together effectively.
- A5. The tailoring of an offering to meet the specific needs of a geographic area, product, or target Audience.

B. Identify the company / product / magazine / service from the Tag Line.

- B1. Innovation. Insight. Integrity
- B2. Leading Innovation
- B3. Experience Certainty
- B4. Your Potential. Our Passion
- B5. Technology advice you can trust

C. Provide the Answer.

- C1. Name the web based free email service launched on April Fool's Day in 2004.
- C2. Name the authour of the book "Business @ the Speed of Thought"
- C3. Jimmy Wales is the founder of which online initiative/facility
- C4. Name the India's nationwide Computational Grid managed by CDAC
- C5. Who is the brand ambassador of BSNL

D. Fill in the blanks / Provide the answer.

- D1. CDAC: Param = CRL (Tata group) : _____

- D2. Find the odd man out. Satellite, Precision, Portégé, Tecra
- D3. Name the online gaming portal from Reliance ADAG.
- D4. Name the company which has recently launched its lowest-priced mobile handsets at Rs. 499.
- D5. Identify the missing CMM level: Adhoc, Repeatable, Defined, _____, Optimised

Guidelines to submit the answers to the Info Contest by email.

In the Subject,

- Write the Contest No. (Info Contest – 0807) in the subject line.

In the body of the mail,

- In the first line, write the contest No: Info Contest – 0807
- In the second line, write your membership no.
- In the third line, write your email id.
- In the fourth line, write your name.
- In the fifth line, write the answers to the five questions of Section A, separated by comma.
- In the sixth line, write the answers to the five questions of Section B, separated by comma.
- In the seventh line, write the answers to the five questions of Section C, separated by comma.
- In the eighth line, write the answers to the five questions of Section D, separated by comma.

As the evaluation of the entries is automated, pl. ensure the above guidelines are followed.

Email the answers to: hrmohan.infocontest@gmail.com

The last date to receive the answers by email is 10th Aug 2008.

Info Contest – 0806 : Answers & Winners

Answers:

Chat, Cookie, Cyberspace, Digital, Ergonomics
Nokia, HP, IEEE, SRA Systems, Intel
TCS, eWorld, Al Gore, Mosaic, AMD
HD-DVD, 97, IdeaCentre, False, Bangalore

Winners:



N. Sivaraman
SSN College of Engineering
Mem No: 90309175
Email: siva_keecheu@yahoo.co.in



S. Karthick
IV Year, ECE
Easwari Engineering College
Mem No: 90264616
Email: karthick123.in@gmail.com

Both the above will be awarded a prize of Rs. 500/= each. LINK acknowledges with thanks the sponsorship of the awards by SRA Systems (www.srasystems.com).

GNU Linux – An Introduction



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Introduction: What is an operating system? An operating system (OS) is a software which acts like a bridge between the hardware of a computer and the user who wants to work on it. It is a medium of communication between the user and the computer peripherals. It is the heart of computing.

Everyone would like to have a user friendly operating system as such an OS would be easy to work for even a person with just a little bit of education. There are two major OS in current market, one is the big giant WINDOWS and the other is LINUX.

Linux emerged in the year 1991. Actually it is a non-commercial version of the famous UNIX. It was developed by Linus Torvalds when he was studying in the University of Helsinki.

History of GNU LINUX: During the 1960's the first OS called UNIX was developed and was under test. It was released on a commercial basis during the year 1970. As it was portable many institutions re modified it according to them and adapted it. Also DOS was marketed by Bill Gates at that time. The DOS ruled the PC market. But still no OS provided the power to explore the PC.

In 1991 Mr. Linus Torvalds was a second year student in the University of Helsinki. He was a computer freak. He experiments the computers by over powering it and noting the results. As no OS provided full access he started to develop an OS as hobby. It later on became the famous free OS LINUX. Initially it faced many hardships.

During the mid September 1991 Linux version 0.01 was released. Linus Torvalds posted it in the Newsgroups of MINIX (another OS). He didn't expect many programmers to reply to his posting. He made the source of his OS called as kernel freely available to all who ever wanted to alter it and post it in the net.

The free OS was mainly supported by the GNU community run by Richard Stallman, a computer programmer who began his career in the famous Artificial Intelligence lab of MIT. He was a man who wanted the computer software to be made available freely to the users so that they will reach the bigger mass. This gave LINUX a bigger helping hand at those times of DOS and UNIX.

Initially LINUX was a command line operating system. Later on it was made into a Graphical User Interface. It is now kept on developing at a tremendous rate as it is freely available to millions of the programmers of the world.

Nowadays LINUX even though wasn't a good GUI OS it still rules the networking market of the professionals. Till this time no OS is as good as LINUX in the field of networking. It is so because of its high security and good set of intact file system.

Diving into Linux: Linux is a big sea in which you can see many freely available applications. These are divided into distributions (Distros).

These are nothing but the common name given to the Linux developed by many different communities and organization, i.e. many

Linux are available in the market these days, more than 100 distros. Few major and famously know distributions are:

- Mandriva Linux
- Suse Linux
- Debian Linux
- Ubuntu

Package Management: A package management system is a collection of tools to automate the process of installing, upgrading, configuring, and removing software packages from a computer. The term is most commonly used with regards to Linux, and the systems may rely heavily on it, with a typical Linux distribution including thousands of discrete packages.

In such a system, software is distributed in packages, usually encapsulated into a single file. As well as the software itself, packages often include other important information, such as the full name, a description of its purpose, the version number, vendor of the software, checksum information, and a list of other packages, known as dependencies, that is required for the software to run properly. This meta-information is typically entered into a local package database.

The different package managements are:

- Red hat package management (RPM)
- Debian Package management (DEB)
- Slackware package management (SRC)

Fedora, Open Suse, Mandriva Linux etc... uses the RPM. Debian, Ubuntu, Kubuntu etc... uses DEB. Gentoo, Slackware etc... uses SRC. The best and easy to use package management is Debian. Many users including newbie feel easy to use it.

Desktop Managers: The highlight of Linux is it's customizability according to the needs of everyone. The most important factor in customizability is the desktop managers available for Linux. These are nothing but different desktop environments. There are many of them. Out of them a few are:

- K Desktop Environment (KDE)
- Gnome
- XFCE
- Looking Glass

All the above desktop environments are freely available one.

The KDE is the most widely used desktop environment by the newbies as it is nearly similar to windows and is most easy to use. It is freely available. Its Graphical User Interface is easy to use. It is stable and efficient when compared to the others.

Gnome is 100% free desktop environment and it belongs to GNU Corporation. Its GUI is also good, but not as good for a newbie to use. It is faster than KDE.

XFCE is a desktop environment which is based on the famous Mac OS. But it is rarely used.

Looking glass is a project which is on development. It is a 3D desktop environment developed by Hideya Kawahara, a SUN programmer. He started it as a hobby to develop a 3D desktop environment and fit it into a 2D desktop interface. It is the future desktop environment of Linux and is currently under rapid progress.

File Systems in Linux: A File system is a method for storing and organizing computer files and the data they contain to make it easy to find and access them. File systems may use a data storage device such as a hard disk or CD-ROM and involve maintaining the physical location of the files.

The file systems available in Linux are:

- Ext
- Ext 2
- Ext 3
- Ext 4
- Reiser FS
- Reiser 4

The Developing Platform: Linux is the best ever developing platform for the programmers. It is widely suggested by the programmers to develop software as it has integrated compilers of languages like C, C++ and Java. Also it is notable here that it is the most secure OS currently available.

It is secure because it is available freely. So no one will tamper it. Its users are given rights in such a manner that the data stored by them can't be accessed by other users or even the administrator. Most companies these days are shifting towards the Linux side for networking and security concerns.

Conclusion: Linux keeps on developing as its source code is freely available to all. This makes Linux superior to windows or any other OS available in the market. It is not a commercial one. It aims at the users directly. Many Linux communities offer free Linux OS install discs in order to spread it. One such community is Canonical Limited which distributes Ubuntu one of the best OS for free of cost.

The GUI of Linux is developing constantly. Even, windows have not reached the 3D desktop environment which the project looking glass has achieved. As time passes on Linux is becoming more user friendly and in near future it would become the future of computing.

Tutorials by Dr. Prabhakar Mateti

Dr. Prabhakar Mateti from the Dept. of CSE, Wright State Univ. USA who is in India on sabbatical had volunteered to run few tutorials and deliver talks for the benefit of student community and professionals.

IEEE CS Madras Chapter and CSI had jointly planned tutorial / lecture programmes (in line with that of Distinguished Lecture Programmes) during the period Jul-Aug 2008 with the support of HODs, Student Branch Co-ordinators and Faculty Members at various institutions as detailed below:

Jul 16-19: Easwari Engg College, Aarupadai Veedu Inst. of Tech, Rajalakshmi Engg College, RMK/RMD Engg College & Technical Meeting for IEEE & CSI members.

Jul 24-26: KLN College of Engg, National Engg College & Mepco.

Jul 30 – Aug 2: Kaveri Engg College, KSR College of Arts & Science, Nandha Engg College & Sri Krishna College of Engg and Tech.

Aug 20-23: VIT Univ., Pondicherry Univ. & Annamalai Univ.

Detailed reports will appear later in LINK. To know more about these programmes, pl. contact Mr. H.R. Mohan, Chairman, IEEE CS at ieeecsmds@gmail.com



WIE Committee Meeting at California, USA

Prof. Ramalatha Marimuthu, Chair, WIE, Madras Section attended the Women in Engineering Committee Meeting during 19-20, April 2008 at Anaheim, California, USA in the capacity of Region 10 WIE Coordinator. Nearly thirty 30 attended this meeting.

The meeting started on 19th morning with a roll call and a welcome note from then Chair, Dr. Karen Panetta. The first item was a discussion on nominees for the Affinity Group of the Year Award and voting for the winner. Subsequently, various issues relating to activities and funding for the special projects were discussed. After an analysis on the applicants for the special project funding, decisions to approve or disapprove were taken.

In the afternoon session, members were given a project each on the improvement of WIE website and asked to prepare slides on suggestions for improvement on their modules and present the same. A discussion on "Nerd Girls" program, a brainchild of the Chair, Dr. Karen Panetta was also held.

On the second day, members projected the slides on the possible improvements of the website and sought suggestions too. Following this, Region 3 and Region 10 Coordinators made presentations on their activities. R10 coordinator, Ramalatha Marimuthu, presented on the initiatives on outreach programmes and Sangamam Project which were well received by other coordinators and they were keen to implement them in their regions too.

Report by: Prof. Ramalatha Marimuthu, Chair, WIE, Madras Section

IEEE CS, IEEE TMC, IEEE ComSoc & CSI

cordially invite you for a presentation on

IT Governance & COBIT framework

by

Mr. N.S.N. Pillai

Head - Risk Management & Information Security,

Ashok Leyland, Chennai

President, ISACA Chennai Chapter

and

Mr. R. Vittal Raj

Chartered Accountant & Director Certification,

ISACA Chennai Chapter

on Friday, 8th Aug 2008 at 6.30 p.m. at Hotel Palmgrove, Chennai.

NACLIN 2008: Eleventh National Convention on Knowledge, Library and Information Networking

Theme: Digital Futures: Strategies for Developing World Class Libraries

Venue: Karunya University, Coimbatore

November 4-7, 2008

Organised by

DELNET, Developing Library Network, New Delhi

Central Library, Karunya University, Coimbatore

Supported by

IEEE Computer Society, Madras Chapter

Div II (Software), Computer Society of India

About the convention: Digital Futures: Strategies for Developing World Class Libraries; Digitisation has transformed the methods of creating, processing, archiving and disseminating information and knowledge resources. This new dimension has changed the scope of libraries and their users. Every year rapid advances in the application of information and communication technologies are creating networks of libraries, institutions, societies and individuals, to name a few, and these networks are accommodating changes as rapidly as was never witnessed in the past. ICT are affecting every discipline as there is a plethora of information resources being generated all the time. Library and information science professionals who managed the information and knowledge resources well in the 20th century are at the crossroads today as new technologies, never tested before, are bringing information and knowledge resources much faster to the desktops of users. Many users including researchers and faculty members do not find visits to libraries as necessary as they used to in the past. It is for this reason that NACLIN 2008 is devoted to *Digital Futures: Strategies for Developing World Class Libraries*. LIS and Knowledge Experts will discuss key technical concepts that are responsible for the digital revolution within the libraries and without. Growing importance and uses of the Web; growth of online communities; community-owned networks; content creation using online platforms; search engines, online social networks, impact of mobile technologies among a host of other issues will be discussed at NACLIN 2008. Keeping this in mind the National Convention on Knowledge, Library and Information Networking (NACLIN 2008) is being organised by DELNET in collaboration with the Central Library, Karunya University, Coimbatore.

Tutorials: Two full day tutorials on Web 2.0 : Tools and Technologies & KOHA: Open Source Library Management Software

Convention Sub Themes: Information Society; Content Management Strategies; Digital Discovery: Strategies and Solutions; Web 2.0 Technologies; Knowledge Organisation Systems; Resource Sharing Innovations and Methodologies; Archiving Technologies ; User Interfaces for Digital Libraries ; Copyright & Library Management.

Who Should Attend?: Library and Information Science Professionals, Knowledge Seekers, Leaders in Knowledge Industry, Government Officials, Content Management Experts, Information Management Experts, Professional Staff of IT Companies, Industrialists, Technology Managers, Knowledge Officers, Media Experts, Knowledge Centre Managers and Knowledge Managers

Registration Fee: Members of DELNET, IEEE & IEEE CS, CSI & LIS Professionals from Tamil Nadu : Rs 2,500 per delegate. For others: Rs. 4,000 per delegate. Additional delegate should pay the full registration fees & additional delegate from the same organisation will be provided 25% discount on the registration fees. Accompanying Person (non LIS professional, family member): Rs 1,000 per person for attending the Convention. Accommodation charges will be extra.

Last Date for Submission of Papers: September 15, 2008. For details, pl. contact: Dr. H.K. Kaul, email: hkkaul@delnet.ren.nic.in OR hkkaul@gmail.com

Last Date for Registration: October 15, 2008. For details, pl. contact: Dr. J. Dominic, Organising Secretary, NACLIN 2008, Phone: 0422-2614570, 2614571, 9443001877 (M), Fax: 0422-2615615, email: naclin2008@yahoo.co.in

Website: www.naclin.org

Green IT

Green IT is the practice of using computing resources efficiently with the main objective of meeting the triple bottom line (TBL), which takes into consideration the economic, environmental and social performance of an organization. Green IT is also referred to in connection with the people, planet and profit initiatives of an organization aiming to become a TBL company.

IT initiatives that help in the realization of the green IT

- Reduce energy consumption in data centers from hardware servers and their associated cooling.
- Manage desktop PC energy and heat emissions by using the sleep mode to reduce the energy usage.
- Use thin client applications to reduce energy usage on the desktops.
- Use telecommuting, telepresence, teleconferencing and hotelling of office spaces to reduce energy usage or waste.
- Reduce e-waste by taking advantage of vendor aided recycling programs.
- Reduce paper waste and use recycled paper for printing and copying.
- Purchase Energy Star computing resources.
- Use ink jet printers rather than laser printers. Ink jet printers use 80 percent to 90 percent less energy.
- Use virtualization technologies to reduce the amount of energy-consuming hardware resources, while keeping the personalization experience of the IT users intact.

Adopted from the article How Green is Your BI?—A Roadmap to Implementing Green BI by Harikrishna S. Aravapalli.

Source: <http://www.dmreview.com/>



IEEE Madras Section & WIE Student Project Contest



Eligibility: The contest is open to all IEEE Student members in Tamilnadu.

Scope: Technical area of the project must be within **IEEE Robotics & Automation Society (RAS)**. Robotics is defined to include intelligent machines and systems used, for example, in space exploration, human services, or manufacturing; whereas automation includes the use of automated methods in various applications, for example, factory, office, home, or transportation systems to improve performance and productivity. These systems include, but are not limited to, household function robots, robots for the disabled people, robots involved in environment related activities etc.

Project: The student project may typically be an under graduate project or post graduate thesis or project in any one or more of the above fields. The work must be that of a single student or a group not exceeding two for PG and three for UG.

Submission: A Technical Paper containing a description of the project/product and the results obtained along with the photographs if any, should be submitted to the Project Contest Coordinator **before 20th August 2008**. The style and format of the paper may broadly follow the pattern of an IEEE publications paper and about 30 pages long. Two hard copies must be sent to the Project Contest Coordinator. Electronic submission in PDF format is also required. A declaration from the authors confirming the originality of the project and a bonafide certificate indicating the status of IEEE membership, signed by the IEEE student branch counselor or the college principal are also required.

Evaluation: A panel of judges will evaluate the entries on the basis of concept, creativity, technical content and presentation. Contest entries will be separately judged in the under-graduate and post-graduate categories. Authors of the best three entries in each category will be invited to demonstrate their product and make a technical presentation at a special function to be arranged in Chennai by WIE in December 2008.

Awards: First prize in each category is a cash award of Rs.6000 and a certificate. The second prize in each category is a cash award of Rs.4000 and a certificate. Third prize is a cash award of Rs.2000 and a certificate. All participants will receive a certificate of merit from IEEE WIE.

Project Contest Coordinator: Prof. M. Ramalatha, Dept of ECE, Easwari Engineering College, E-mail: ramalatha_marimuthu@yahoo.com

Contacts: Srikanth M S, E-mail: srikafreak@gmail.com & Srinath A, E-mail: srinath.elite@gmail.com

Visit our Website

www.ewh.ieee.org/r10/madras

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W.P.P No. : TN/CC(S) Dn.35/06-08

Posted On : 24th July 2008

Posted at: Egmore RMS (Patrika)

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