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FROM THE EDITORIAL TEAM

“Elementary Dear Watson!” – These words have been immortalized by Sir Arthur Conan Doyle in his tales of the unforgettable Sherlock Holmes. It is amazing how seemingly complicated and unsolvable problems can have simple elementary solutions. Not convinced? Consider this. We all know of the titanic proportions that the battle between HD DVD and Blu-ray disc formats have assumed. The contest has been raging for months with no side getting an upper hand. Just when you thought we have a classic deadlock, here comes a solution from Ricoh Optical Components Co, right out of the blue! Ricoh has proposed a one-objective-lens solution – a simple round diffraction plate 3.5 mm in diameter and 1 mm thick, with concentric grooves on both sides function as a diffraction grating. One side has a grating for blue beams used for Blu-ray and HD-DVD. The other side is a grating for red laser beam (for DVDs) and infrared beam (for CDs). Thus the optical device can be used for reading both formats (and more!). There are others working on Four format compatibility for discs, but according to Ricoh, this is the most simple and elegant solution.

There are two valuable lessons to be learnt from this interesting event. One, think differently and look for simple solutions. Two, One should be strong in the fundamentals of whatever field he or she is working in. Without this, one will never be able to find simple solutions. Ok, Ok ! We know you have heard this before.

Anyway, welcome to the fourth edition of SIGNALS – The IEEE SP Bangalore chapter Newsletter. Checkout the ‘Upcoming Events’ section for a list of exciting events in the Global DSP calendar. Keep up to date the industry scenarios with ‘Info Track’.

Send us your feedback. More importantly, contribute to the community by sending in articles, info, tips, etc. . Keep the spirit of sharing alive!

The Editorial team

ANNOUNCEMENTS

Calling all MATLAB show-offs!

Ever wanted to show off your MATLAB skills, but modesty stopped you? Good, we respect that. But we offer an alternative! For the greater good of “enlightening the DSP community” come out with your skills and fire on all guns!

Many of you must have developed fast and easier ways to work with MATLAB. Or maybe you have a quick and dirty implementation of an algorithm. Or you compiled a list of FAQs for beginners? You are welcome to boast your heart out!

Please send your contributions to ieesp@dsplab.ece.iisc.ernet.in

INFO TRACK

HP announces miniature wireless chip

Hewlett-Packard Co. has developed a 2 to 4 millimeters square wireless data chip, which can find a myriad of applications in embedded systems. The chip is a CMOS memory device with a built-in antenna. It sports 10 megabits-per-second data transfer rate (faster than Bluetooth wireless technology and at par with Wi-Fi rates) with a storage capacity ranging from 256 kilobits to 4 megabits in working prototypes. The best part is that the antenna sub module does not require a separate power source. It works on the principle of inductive coupling, which is effected by the use of a special “read-write device”. The chip is called a “memory spot chip” and was developed by the Memory Spot research team at HP Labs. Proposed applications include use in printers, PDAs, cameras, etc..

New Frontiers in Human Machine interfaces

Researchers from Advanced Telecommunications Research Institute International (ATR) and Honda Research Institute Japan Co. have made significant break-throughs in the endeavour to interface brain activity to machines. An article titled "Decoding the perceptual and subjective contents of the human brain," published by Dr. Yukiyasu Kamitani et al, which describes this, appeared in Nature Neuroscience. MRI can be used to record and track brain activity of a person performing some action. This information can be decoded and fed to machines to perform some action. This technology has already been tried successfully to control robots. Future applications range from vehicle safety to aids for people with disabilities.

WMP Vs JPEG

With the emergence of new technologies and upgrades to existing technologies, we can gleefully expect power struggles and (usually) advancement in the field, driven by the force of competition. The newly introduced WMP - Windows Media Photo, by Microsoft, claims to give better quality at half the size of a JPEG image.

According to Bill Crow, senior program manager for WMP, several innovative approaches have been used in areas such as color space and color conversion. WMP employs a new methodology to the basic discrete cosine transform technology used in JPEG. WMP is also based on a symmetrical algorithm that supports both lossless and lossy compression. It requires no complex math or special hardware support. To preserve compatibility with existing systems, the WMP format uses the existing TIFF "container". WMP will be built into the next-generation of Windows - Vista.

On the other hand, the JPEG camp pushed further with it's own JPEG 2000. Encoder firmware that can turn FPOA (field-programmable object arrays) into high speed JPEG encoders, has been developed. The encoder can handle 250 frames/s for an image size of 1,024 x 768 pixels; 190 frames/s for 1,024 x 1,024 pixels; 150 frames/s for 1,280 x 1,024 pixels; and 45 frames/s for 2,048 x 2,048-pixel images, with clock rates upto 1 GHz.

JPEG has a very strong base of users. But WMP has the muscle of the Microsoft juggernaut. Lets hope this battle for supremacy results in image compression algorithms with higher compression rates and better fidelity of decoded images.

Note: For a comprehensive introduction to JPEG 2000, you may refer the article "Scalable Image Coding with JPEG2000" by Shailesh Ramamurthy(Motorola India Electronics Private Limited), in the January 2006 issue of the SIGNALS newsletter.

UPCOMING EVENTS

August

- Special lecture on “Computer Vision in Biology”
Speaker: Prof B S Manjunath, University of California, Santa Barbara
Date: Monday, August 7, 2006
Venue: Room PE 311, EE dept, IISc, Bangalore, India

December

- IEEE International conference on signal and Image Processing, Hubli, India
Date: 7th - 9th December, 2006
E-mail: icsip@bvb.edu

Year 2007

- International Conference on Information Sciences, Signal Processing and their Applications - ISSPA 2007

Full Paper Submission: September 15, 2006

Tutorials/Special Sessions Proposals: September 15, 2006

Notification of Paper Acceptance: November 15, 2006

Final Accepted Paper Submission: December 1, 2006

Link: www.isspa.info

- SPAWC 2007, the 8th IEEE International Workshop on Signal Processing Advances for Wireless Communications, Helsinki, Finland
Date: June 17-20, 2007

Submission deadline: January 15, 2007

Notification of acceptance: March 30, 2007

Final paper due: April 15, 2007

Link: <http://wooster.hut.fi/spawc07/>

GETTING CONNECTED

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- To email all of the list's subscribers (please use this responsibly), send your mail to IEEESP-BLR@LISTSERV.IEEE.ORG
- Creating a new subscription is easy. If you want to subscribe a member to the list, send a mail from your email to LISTSERV@LISTSERV.IEEE.ORG and type "subscribe ieeesp-blr" without quotes in the body of the message. Leave the subject line blank. More information on using LISTSERV is available at <http://listserv.ieee.org/>

Links

This link contains information related to IEEE SP conferences
<http://www.ieee.org/organizations/society/sp/SPSConf.html>

IEEE SP Bangalore Chapter Homepage
<http://ewh.ieee.org/r10/bangalore/sps/>

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