

in this Issue >>>*Creating Specialists**Set The Stage**Innovative Minds**Updating Powers**Outdoor Experts**New Mind! New Ideas!***2012 DECEMBER****A Techno Creative Newsletter For SOE**

SPECTRUM

VC's message >>>

Providing solutions..... For the human race

Dear Students and faculty,

It is creditable that the students of School of Engineering have been successfully bringing out their Newsletter every semester. On this occasion, I want to reiterate that the Gautam Buddha University not only provides a high-quality education, which enables the students to work efficiently and effectively in professional capacity but also act in a humane manner for the betterment of the society.

The GBU community is not only engaged in the search, creation and dissemination of knowledge, in the advancement of science, and participation in the development of technological innovations but also in providing solutions for the human race. The emphasis on the human angle being the key to the application of all learning and technology is the basis of the philosophy governing the ethos of Gautam Buddha University.

I wish the School of Engineering, which is one our major schools, all the best in all their endeavors.

*Creating Specialists and All-Rounders
Making Your Interest.. Your Work...*



Dear Students and Faculty,

The context in which today's engineers and engineering educators operate is fast-paced and inter-disciplinary. Moreover, it becomes interconnected and complex because of the multi-cultural community that forms it.

Our students are at the threshold of branching out into various specializations. For the same, the School of Engineering has proposed new Masters Programs in each branch. It will give them more options besides the Management stream to specialize in. The students should take an informed decision and choose the branch that is closest to their primary interest, so that they excel in it.

Besides the basic curriculum, our students have been actively participating in various national level project competitions and seminars and have won laurels for the University and the School. Credit also goes to the support of the University and the faculty of School of Engineering, who work tirelessly with them to make them perform in the School as well outside.

Congratulations and best wishes to all.

Dr. Vandana Sehgal
Dean, School of Engineering



Dr. Shabana Urooj

Electrocardiogram is an interpretation of the electrical activity of the heart over the certain period of time; which is detected by electrodes attached to the heart and on the limbs, to the outer surface of the skin. A single normal cycle of ECG represents the consecutive atrial and ventricular depolarization during every heartbeat which is associated with the peaks and troughs of ECG waveform. ECG signals are frequently corrupted by impulse noise in diverse forms. Power line interference of 50/60 Hz is a common artifact corrupting the raw ECG which appears as a sinusoidal wave. Another artifact is baseline wander, where the baseline (of ECG waveform) starts to drift up and down in a sinusoidal pattern due to respiration. Therefore, ECG signal conditioning for providing baseline correction and noise elimination is a primary requirement in understanding the

ECG Signal Conditioning using non-linear filters



functioning of heart and diagnosis of cardiovascular diseases.

It is also important to limit the distortions posed by baseline correction and noise suppression algorithms for further analysis such as QRS detection and temporal alignment to give dependable results. Conventional methods for ECG signal conditioning include: high-pass filtering and band-pass filtering. Both of these filtering techniques possess sharp cut-off frequencies which often distort the signal and at times cannot track with the changing characteristics of time varying ECG signals. FIR and IIR filters were also not appropriate in improving ECG signal quality as additive noise has same frequency band as ECG signal. In recent years, much of research work is under progress employing non-linear filtering techniques like, Morphological Filtering (in spatial domain) and Wavelet Analysis (in transform domain). Wavelet based approaches are sometimes limited due to the constraints in selection of appropriate wavelet family and the thresholds. These approaches are generally found successful in removal of distortion leading to baseline drift but are not capable in suppressing the noise.

Highly sophisticated techniques in wavelet domain for ECG noise suppression require numerous experiments for ruling out scales and threshold; therefore posing heavy computational overheads.

Morphological filtering is a non-linear transformation technique primarily used for local modification of geometrical features of a signal. An important aspect in baseline removal and noise suppression is the selection of optimum size of the structuring element. The size of structuring element should be generally greater than the width of the characteristic wave. Combination of Morphological Top-Hat and Bottom-Hat operators are well suited for both base-line correction and denoising of ECG signals. The effectiveness of the morphological operators proposed for filtering does not require *a prior* knowledge of onset/off-set points or the beat interval. Hence, the reproduction of clinically significant features can be simply set by selection of structuring element of reasonable dimensions. This further helps in exercising, effective control over ST distortion; thereby assisting us in accurate and credible clinical analysis of ECG signals.

Innovative minds >>>



Dr. Shabana Urooj has got: Young Professional Associate Membership Award from American Ceramic Society, USA in September 2012 for presenting a paper on *Innovations in Biomaterials 2012* held at Raleigh North Carolina USA (10 -13 Sep'2012) and she also got the **Excellence Award** from IJREAS listed in October 2012.

Dr. Shilpa pal, delivered a guest lecture on Seismic analysis of dam foundations, in a workshop on ERD at AMU. She has also published many papers: **1.Inclusion of earthquake strong ground motion in a GIS – based landslide susceptibility zonation in Garhwal Himalayas** in Natural Hazards, Springer. **2.Stability analysis of rock slope using blasting**, page 36-39, **2nd National Conference on Trends and Advances in civil engg.** Sept 2012, Amity University. **3.Distinct element stability analysis of surbhee resort landslide in Garhwal Himalayas**, India National Journal of Disaster and Development, NIDM, New Delhi.



The Khan market proposal by **Dr. Vandana Sehgal** was published on a net journal "Arch Daily". The proposal animates a typical model town type market into an experience of ultimate recreation. Renowned news channel AAJ TAK aired an interview of Dr. Vandana on the planning issues on the Khan Market subsequently.

Dr. Vanita Ahuja Presented paper in Regional Conference organised by 'International Network of Women in Engineering and Science' and Indian chapter of 'Women in Science and Engineering'. She was also invited by North India Chapter of 'Project Management Institute - USA' to deliver expert lectures.

Ashok Kr. Suhag has published paper in 13th IEEE conference, WRTL T held at Nigata, Japan and one paper in IJSSEM, Springer.

Anurag Dixit, has published paper on "Modelling techniques for predicting the mechanical properties of woven fabric textile composite: A review, Mechanics of composite materials, Springer.

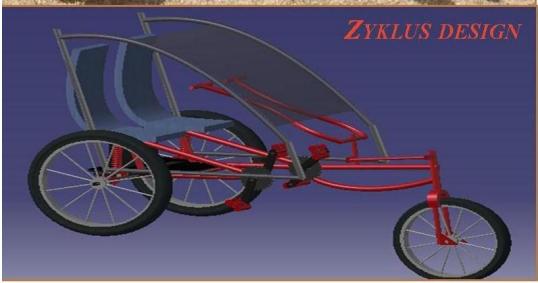
Sachin Mishra of mech 3rd year, got his technical papers accepted **Topic - Product Development Advancement by CAD** in international conference on "role of Science and Technology in progress of the world" organized by DRDO, New Delhi.

Ajay Kumar of mech 2nd year with Sachin Mishra got his paper accepted, "**Topic- applications of carbon fibre in automobile industry**" in international conference on "role of Science and Technology in progress of the world" organized by DRDO, New Delhi.

Updating powersto power updates....

From innovation to evolution, excitation to revitalization

SOE in top gear to bring laurels for the university



VAJRAYANA : the go green vehicle

Team Vajrayana consisting of eight students from 3rd year mechanical engineering (Sachin Mishra, Varun, Arjit, Aanchal, Namanit, Waris, Sachin Gupta, Rajat) participated in efficycle competition organized by SAE India in which 130 team across the nation participated to showcase and compete with their models.

The task for the budding engineers was to design and manufacture an energy efficient 3 wheeler hybrid vehicle driven by both human as well as electric power. Team Zyklus, leaded by Akshay Kant also presented their design. Team Vajrayana with its fabulous design got the opportunity to manufacture their vehicle. The vehicle was praised by print media for innovations and aesthetics. The programme was hosted by UIET, Chandigarh.

Over the terrain

Students of Mechanical Engineering 2nd year(ME-1) manufactured GBU's first Remote controlled IC Engine Car under SAE Club with top speed of 60Km/hr. The team is going to participate in various reputed Technical fests.

Bringing laurels...

Sachin Mishra of Mech. 3rd year, attended Short term course on 'Computer aided strength of materials and analysis' at MNIT Jaipur during 24-28th, Dec, 2012.

Devyani, Aayushi, Aditi and Vikrant of Civil 3rd year, attended short term course on 'Water ingress implications and water proofing of building and structures' at IIT Delhi during 16th july to 20th july 2012.

Prateek, Abhishek K, Abhishek, Rachit of Civil 3rd year, attended workshop on earthquake related disasters on 26 april 2012, at AMU



Breaking walls....

Students from GBU participated in sports fests in many colleges in the recent times. In the past few months, both, boys and girls teams, participated in sports fest of SU, VGI, IMS etc. and won prizes in various sports.



Students from GBU participated in Pickwick fest organized by Jamia University in which GBU got 1st prize in graffiti and 3rd in group discussion.



BAJA : the off-road vehicle

A team of ten students from 2nd and 3rd year mechanical engineering (Sachin Mishra, Sahil, Waris, Pradeep, Ajay, Pooja, Kartikay, Aanchal, Varun, Mohit) have participated in Baja, another competition organized by SAE India at Bangalore Institute of Technology. The team presented their innovative design of an all terrain vehicle. The vehicle was praised by many prominent professors and the judges.

Outdoor experts >>

Guest lectures..

Prof. S Suneja delivered a guest lecture on 6th Nov on 'Eco process in Developing cultural region of Braj: area of Mathura Vrindavan' for the students of MURP.

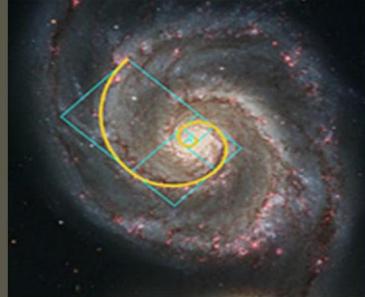
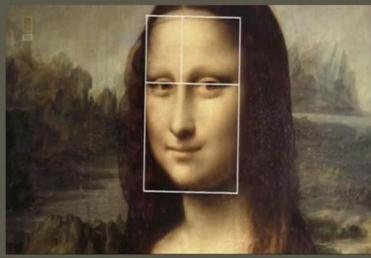
Educational visits..

SOE organized visits to DCRUST, Murthal for students of mechanical engineering (2nd & 3rd year) for attending labs. Students of Civil engineering (3rd year) attended the labs at Delhi Technological University.

Students of MURP (3rd Sem) attended International Film Festival on Disaster Risk Reduction.

If it is in Golden Ratio, it is Beautiful

The whole world finds Mona Lisa beautiful, have you ever wondered why? Try drawing a rectangle around her face and then subdivide that rectangle in a particular ratio, The Divine Golden Ratio i.e. 1:1.618. This ratio has a great impact on arts and designs influencing designers, perspectives of a pleasant design.



This number is believed to be the equation for things perceived as being aesthetically pleasing. This ancient and almost mystic and omnipresent number has boggled the greatest of human minds for almost 2400 years now. The golden ratio seems to be as much a law of nature as the rotation of the Earth. Everything from snails to humans to entire galaxies seemed to have been created on this blueprint.

Now-a-days the automobile designers are also highly inspired by this golden proportion. Aston Martin have used the golden ratio for making One-77, the super car, the best car they have ever made. It has been awarded with several internationally renowned design awards. Off course the credits goes to the designers but more importantly to The Golden Ratio.

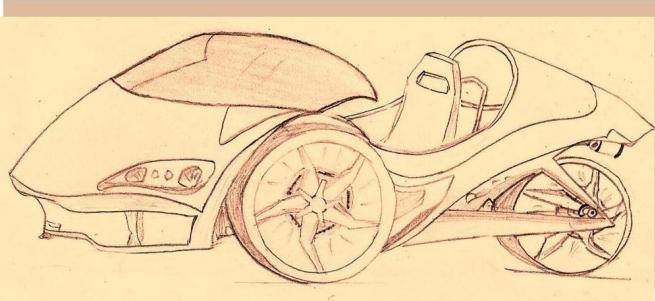
Aanchal Yadav
Mech. Engg. 5th Sem



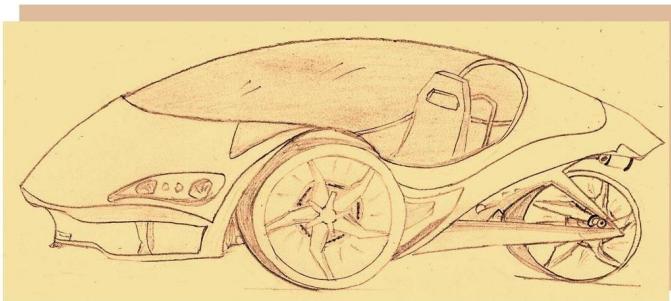
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New Minds! New Ideas!

Sometimes travelling in a closed car seems so suffocating and uneasy for some and at the same time if its raining and you are on a two wheeler you find that too not-very-good, off-course excluding the people who're out just to enjoy the rain. What if your car behaves just like your mood and the weather? Here is an idea of a three wheeler car whose windshield can be converted into its roof-top as well as door, whenever desired. Although it seems simple as an idea, but not so simple to execute.



Team vajrayana of mechanical engineering from SOE has applied this concept in their efficycle and trying to implement in future projects also.



Green Earth >>

Akhilesh Kumar (M.Tech, MURP) won 1st prize in the competition, Social awareness on environment, organized by department of humanities, GBU.



Coming Soon >>

Abhivyjanjana (February)

A Techno-Cultural fest of GBU

Shauryotasva (February)

The Annual sports meet of GBU

Technical Clubs (January)

New technical clubs in SOE



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Notice board No. 16

Ground floor, SOE