

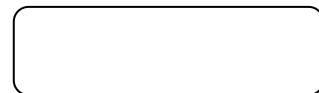
Information Technology

# NEWS LETTER

# Ignited Trendz



**VISHNU**  
UNIVERSAL LEARNING



**VISHNU INSTITUTE OF TECHNOLOGY  
BHIMAVARAM**



## Vishnu Institute of Technology



Vishnu Institute of Technology, the scion of Shri Vishnu Educational Society was established in 2008 and is currently the eleventh educational institution to disseminate education under the aegis of this society. Nascent that it is, it combines in its matrix the lofty idealism of its Founder Chairman the Late Padmabhushan Dr. B. V. Raju, a distinguished industrialist, philanthropist and an eminent educationalist; the experience and vigour provided by the Chairman Sri K.V. Vishnu Raju, a man of holistic vision and his team comprising dexterous administrators, reputed academicians and brilliant line of students. They constantly strive to make the institution join the ranks of prestigious technical institutions.

### **Campus**

The Campus, sprawling over 100 acres, is located in the verdant atmosphere of Vishnupur in Bhimavaram. It is in the very vicinity of the town and is well connected by road. VISHNU also provides hostel facilities to the students who opt for a residential mode of education. The hostels are constantly updated and provide an atmosphere conducive to pursue education.

### **Hands on Experience**

To make the instruction in VISHNU more practical-oriented, special focus is on hands on experience. The Assistive Technologies Lab run in collaboration with the University of U Mass, USA helps students to combine technology with a humanistic outlook. Gadgets for the physically challenged are designed and developed here by the students under the guidance of eminent professors both from the Institute and abroad. VISHNU aims at empowering students with technical skills and can-do entrepreneurial spirit. The IBM Software Centre of Excellence in the campus provides the students with the best of quality technical education there by increasing the skill set of each student and faculty for a great career.

## **Department of Information Technology**

The mission of the department is to advance and enhance computer science engineering fundamentals to build the intellectual capital of students. The IT Department endeavours to be an important resource centre for the development of computing systems and applications.

The department was established in the academic year 2008-09 with an annual intake of 66. It offers 4 year B.Tech. This program affiliated to JNTU Kakinada & approved by AICTE. The department has number of well equipped Laboratories and provides excellent facilities for learning.

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## HELM OF AFFAIRS

Academics are a continuing process of exploration, growth and sustenance. Today information explosion has brought about many changes. New ideas are generated, new interpretations are given and new applications are invented. The equations are changing very fast both in education and at the work place. Every day brings in new demands. One has to constantly upgrade to cope with the fast emerging trends. A software professional once said “We are training people in technologies to find solutions for problems that have not yet been identified”. Moreover the roles and responsibilities of professionals are ever expanding making it imperative to move beyond the confines of the classroom and the stipulated curriculum and focus on the skills needed to cater to the needs of the society. Hence it has become imperative to all the stakeholders in education to arm themselves with the necessary knowledge, skills and attitude to keep themselves abreast of the rapid changes.



That explains everything—the Chairman’s message to the faculty to constantly update themselves with the emerging new technologies and concepts, the focus on research, paper presentations and publications, undertaking new projects, adopting new technologies for information collection and dissemination as well.

**“The key to growth is the introduction of higher dimensions of consciousness into our awareness” -- Lao Tzu.**

That is what the message of our Chairman does, to motivate us to action.

The stimulus has been given...

it’s time for response.

***Chairman Message***

I am happy to inform that the department of Information Technology of Vishnu Institute Of Technology is publishing their department news letter for the academic year 2011-2012. I Commend and appreciate the efforts taken by the staffs and students to enhance the quality of academics in the college. Vishnu Institute Of Technology moreover has the credentials and Proven strengths to initiate such an indispensable academic activity.



***Message from Principal***

It is my pleasure in congratulating the department of IT on the pleasant occasion of releasing the newsletter for the period 2011-2012. It is great to find a considerable number of winners and participants in co curricular and extracurricular activities which certainly prove that our staff and students are adequately equipped and possess necessary skill-sets to bring such laurels to the institution. I am sure that publishing a newsletter of this sort containing the achievements of the wards will be recognition to them and I wish them all the very best for future endeavours.



***Message from HOD***

Welcome and best wishes for all the Staffs and Students of the department who receive this News Letter. It has been interesting and busy year for the members of the department. And has had a number of Successful events including Guest Lecture, Workshop, National Level Conference and Symposium. I invite all the readers of this news letter to share this with your friends and contribute more items for 2014 News Letter.



## ***Progressive Strides***

We are proud to announce that IMC Ramakrishna Bajaj National Quality Trophy for excellence has been conferred upon Shri Vishnu Educational Society for outstanding contribution in the field of education for the year 2011. This prestigious award motivates us to perform and maintain high standards of excellence. Hearty congratulations to our Chairman Sir!

## **Examinations**

As the academic year came to an end, examinations were conducted for II, III and IV BTech from 16-04-12 to 27-04-12, 17-04-12 to 28-04-12 and 16-04-12 to 25-04-12 respectively. Supplementary exams for II & III B.Tech were conducted from 14-05-12 to 28-05-12.

Classwork of I B Tech ended on May 19. The II MID examinations were held from 21-26 May and the final examinations are scheduled in June.

## ***Department Activities***

Vishnu Institute of Technology conducted a Two Day National Level Workshop "Robotryst-2012" on 20th & 21st Jan in collaboration with E-Cell IIT Kharagpur, sponsored by Robosapiens Pvt Ltd, Noida. In this workshop 26 teams from all over India participated and exhibited their

models. Different types of Robots performed their roles.

Mr.Vasim Akram Chief Design Engineer from Robosapiens Noida was the Chief guest for the work shop.

For this workshop resource persons have been deputed from Robosapiens Noida, Mr.Vasim Akram and Mr. Prabhas interacted with students and explained the fundamentals of e-Robotics and their functioning process.

Dr. D. Suryanarayana observed the various functions of all Robots and appreciated the student participants.

A two day work shop on "ANDROID" was conducted by ISTE chapter on 26th and 27th Feb 12 and 222 students participated from II & III B. Tech.

## ***Faculty Activities***

Mr.B Revanth, and Mr.D.Uday Kumar attended the Faculty training programme THE JOY OF TEACHING held at BVRIT Narsapur between 16<sup>th</sup> May to 25th May 2012.

## **Placement Activities**

### **Industrial Training**

The second batch of students were sent to Vizag steel plant as a part of their Industrial Training.

A two day Training program was conducted for Final B.Tech students of VIT by IEG Trainers from Hyderabad on 27 and 28 April to train them for the placements.

Meanwhile Pre placement Training Classes were conducted by Elephos Educational Services for the III B.Tech students from 30 April to 7 May 12 Trainers from Naresh Technologies, Hyderabad gave training on Dot Net & Java from 14-05-12 to 05-06-12 for III CSE & IT.

## Articles

### General Purpose Computing on Graphics Processing

Units:

By—Badarla Karuna  
III IT

#### Introduction

Graphics Processing Units (GPUs) have been in use in one form or another to display information to users since the 1980's. GPUs continued to evolve from simple shape accelerators to performing more complex computations such as 3D rendering. However, only as recently as 2007 did General Purpose Computing on Graphics Processing Units (GPGPU) become a viable option for high performance computing. This availability is due to NVIDIA's Compute Unified Device Architecture (CUDA). CUDA has provided a lot of the back end coordination required for managing

the hundreds of parallel cores found on their GPUs. As well, an added benefit of GPGPU is the ease with which GPUs can be added or upgraded to a standalone desktop machine for increased performance.

Using the large number of cores available on a single GPU, a desktop computer or even laptop can become a mobile HPC device. This makes it ideal for military applications where mobility, package size, and energy requirements are important factors. Remote drones or unmanned aerial vehicles (UAV) suddenly become possible applications. With a GPU installed on a UAV, data can be processed in near real-time on the aircraft instead of post processed at a remote site when time sensitive information is required.

Figure 1 shows how a set of data is segmented and processed in parallel using blocks and threads. A thread is a set of operations that processes data independent of order, thus allowing for parallel execution. Multiple threads create a block and multiple GPU cores process multiple blocks at the same time. With this architecture it can be easily seen that additional cores results in more data being processed in parallel. Thus, overall computational time is reduced. This makes it more efficient than a CPU that processes data sequentially. However, there are limitations associated with GPGPU due to the fundamental differences between CPU and GPU cores. The CPU core is much more

robust and faster enabling it to handle a wider range of tasks when compared to a GPU core. However, since CPU processors have orders of magnitude fewer cores than GPUs, when dealing with highly parallel computations the GPU outperforms the CPU in floating point operations per second (FLOPS). As will be discussed later GPGPUs do have limitations.

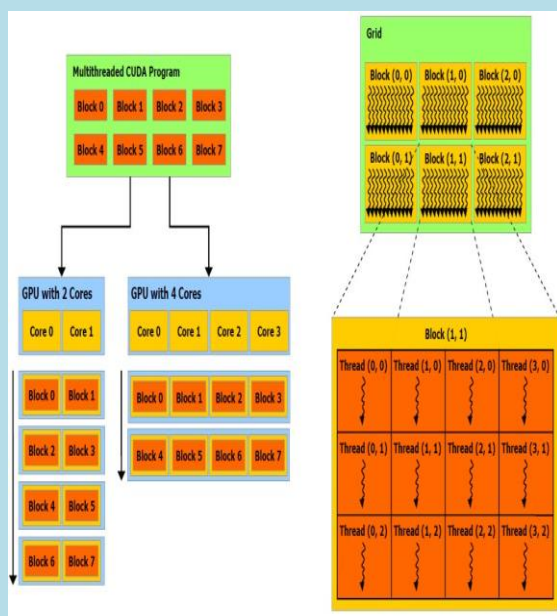


Figure 1. Parallel computation of data

The optimization strategies when porting traditional C/C++ algorithms which run on CPU's to parallel processing architectures found on Graphics Processing Units (GPUs). The CUDA parallel programming architecture is also explored through the use of NVIDIA's Visual Profiler for performance analysis. Real time video feeds, such as from onshore surveillance cameras, offer limited

visibility when fog, haze, smoke, or dust clouds are present. In order to enhance the video, image processing algorithms such as the Adaptive Linear Filter (ALF) are performed. However, algorithms such as the ALF require large computational time thus limiting the picture quality, size of the video, or number of video feeds being processed concurrently in real time. The GPUs parallel processing computational power is exploited to attain speed ups so that image processing can be performed on the fly in real time. Thus, surveillance is enhanced by providing visual improvement for detection and classification of objects in low-visibility conditions using the ALF. The ALF was selected to provide an image processing context for algorithm optimization on GPUs. The optimization strategies being explored will be CUDA Host memory allocations, streams, and asynchronous memory transfers. Performance results of the ALF running on the GPU and the GPU after optimization will also be reported. As well, GPU limitations will also be briefly discussed in this paper as not every algorithm will benefit from execution on parallel processing architectures.