MVR NEWS LETTER FOR THE YEAR 2013-14

Bringing out the Best
in every Student...

MVR

College of Engineering & Technology

Affiliated To JNTU Kakinada, Recognised By AICTE

Opp Hanuman Statue, Paritala, Vijyawada Rural

The Institution has been established by the well reputed SWARNA GROUP of VIJAYAWADA under the aegis of SWARNA ACADEMY OF SCIENCES, VIJAYAWADA. The **SWARNA GROUP** has been in the existence for more than 35 years with diversified fields of business viz., Hotels, Theatres, Banking, Finance, Real estate, Granite and Education.

SWARNA ACADEMY OF SCIENCES, VIJAYAWADA (ACADEMY) was established in the year 2007 for the noble cause of imparting high quality technical education in Engineering, Technology, and Management sciences. The ACADEMY is promoted by **Sri Muthavarapu Srinivasa Babu**, a very dynamic, innovative and enterprising person, committed and dedicated to the cause of education.

SWARNA ACADEMY OF SCIENCES, VIJAYAWADA has instituted its first educational institution "MVR College of Engineering and Technology, Paritala", in the year 2008, with the state-of-the-art facilities, such as modern computer centre, E-class rooms, round the clock internet facilities, well equipped Labs, workshops, conference cum seminar halls, spacious class rooms with OHP and LCD projectors, digital library, library with rich collection of books, national and international journals. Placement assistance cell, hygienic canteen, sports, transport facilities and city centre make MVR COLLEGE OF ENGINEERING & TECHNOLOGY, PARITALA a perfect place to study.

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.

Message from Principal

It is my pleasure in congratulating the department of CSE on the pleasant occasion of releasing the newsletter for the period 2013-2014. 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 endeavors.

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 Symposium. I invite all the readers of this news letter to share this with your friends and contribute more items for 2014 News Letter.

Student achievements(2013-14)

The department of CSE congratulating the following students for their achievements

1. G NAGASRI, E GEETHIKA, N L PRIYANKA & T PAVANI WINNERS IN PAPER PRESENTATION IN VR SIDDARDHA INSTIUTE.
2. C DURGA BHAVANI, THIRD PRIZE IN PUZZLE HUNT AT LBRCE,MYLAVARAM
3. CH SWETHA, CONSOLATION IN PUZZLE HUNT AT LBRCE,MYLAVARAM

Articles

General Purpose Computing on Graphics Processing Units: (J TRIVENI,III CSE)

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.

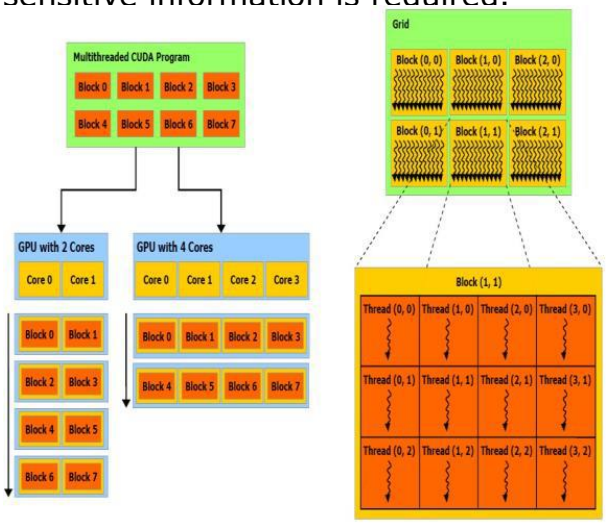

Figure 1 shows how a set of data is segmented and processed in parallel using blocks and threads. A thread is a set of operations that processes data independent of order, thus allowing for parallel execution. Multiple threads create a block and multiple GPU cores process multiple blocks at the same 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.

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.

MOBILE COMPUTING (P USHA RANI ,CSE)

Mobile computing is human–computer interaction by which a computer is expected to be transported during normal usage. Mobile computing involves mobile communication, mobile hardware, and mobile software. Communication issues include ad hoc and infrastructure networks as well as communication properties, protocols, data formats and concrete technologies. Hardware includes mobile devices or device components. Mobile software deals with the characteristics and requirements of mobile applications. Mobile computers are spreading faster than any other consumer technology in history.

Smart phones have even begun reaching the group of relative technophobes that consumer researchers call the "late majority." About half of mobile-phone users now have one.

Mobile security or mobile phone security has become increasingly important in mobile computing. It is of particular concern as it relates to the security of personal information now stored on the smart phone.
More and more users and businesses use smart phones as communication tools but also as a means of planning and organizing their work and private life.

Within companies, these technologies are causing profound changes in the organization of information systems and therefore they have become the source of new risks. Indeed, smart phones collect and compile an increasing amount of sensitive information to which access must be controlled to protect the privacy of the user and the intellectual property of the company.

All smart phones, as computers, are preferred targets of attacks. These attacks exploit weaknesses related to smart phones that can come from means of communication like SMS, MMS, wifi networks, and GSM. There are also attacks that exploit software vulnerabilities from both the web browser and operating system. Finally, there are forms of malicious software that rely on the weak knowledge of average users.

Different security counter-measures are being developed and applied to smart phones, from security in different layers of software to the dissemination of information to end users. There are good practices to be observed at all levels, from design to use, through the development of operating systems, software layers, and downloadable apps.

Cloud Computing (A NIKITHA,CSE)

Buying computers for everyone isn't enough -- you also have to purchase software or software licenses to give employees the tools they require. Let's say you're an executive at a large corporation. Your particular responsibilities include making sure that all of your employees have the right hardware and software they need to do their jobs. Whenever you have a new hire, you have to buy more software or make sure your current software license allows another

user. It's so stressful that you find it difficult to go to sleep on your huge pile of money every night.

Instead of installing a suite of software for each computer, you'd only have to load one application. That application would allow workers to log into a Web-based service which hosts all the programs the user would need for his or her job. Remote machines owned by another company would run everything from e-mail to word.

Processing to complex data analysis programs. It's called cloud computing, and it could change the entire computer industry. In a cloud computing system, there's a significant workload shift. Local computers no longer have to do all the heavy lifting when it comes to running applications. The network of computers that make up the cloud handles them instead. Hardware and software demands on the user's side decrease. The only thing the user's computer needs to be able to run is the cloud computing systems interface software, which can be as simple as a Web browser, and the cloud's network takes care of the rest.

There's a good chance you've already used some form of cloud computing. If you have an e-mail account with a Web-based e-mail service like Hotmail, Yahoo! Mail or Gmail, then you've had some experience with cloud computing. Instead of running an e-mail program on your computer, you log in to a Web e-mail account remotely. The software and storage for your account doesn't exist on your computer -- it's on the service's computer cloud.

When talking about a cloud computing system, it's helpful to divide it into two sections: the front end and the back end. They connect to each other through a network, usually the Internet. The front end is the side the computer user, or client, sees. The back end is the "cloud" section of the system.

The front end includes the client's computer (or computer network) and the application required to access the cloud computing system. Not all cloud computing systems have the same user interface. Services like Web-based e-mail programs leverage existing Web browsers like Internet Explorer or Firefox. Other systems have unique applications that provide network access to clients.

On the back end of the system are the various computers, servers and data storage systems that create the "cloud" of computing services. In theory, a cloud computing system could include practically any computer program you can imagine, from data processing to video games. Usually, each application will have its own dedicated server.

A central server administers the system, monitoring traffic and client demands to ensure everything runs smoothly. It follows a set of rules called protocols and uses a special kind of software called middleware. Middleware allows networked computers to communicate with each other. Most of the time, servers don't run at full capacity. That means there's unused processing power going to waste. It's possible to fool a physical server into thinking it's actually multiple servers, each running with its own independent operating system. The technique is called server virtualization.

maximizing the output of individual servers, server virtualization reduces the need for more physical machines. If a cloud computing company has a lot of clients, there's likely to be a high demand for a lot of storage space. Some companies require hundreds of digital storage devices. Cloud computing systems need at least twice the number of storage devices it requires to keep all its clients' information stored. That's because these devices, like all computers, occasionally break down. A cloud computing system must make a copy of all its clients' information and store it on other devices. The copies enable the central server to access backup machines to retrieve data that otherwise would be unreachable. Making copies of data as a backup is called redundancy

Events @ MVR 2013

MVR TECHNOTSAV

TWO DAYS WORKSHOP ON MULTIMEDIA

CAREER DEVELOPMENT

G NAGARAJ (NIT MEGHALAYA)

BEST FROM WASTE

NATIONAL SEMINAR ON EARTHQUAKES

MATHEMATICS DAY PROGRAM

DEPARTMENT OF S&H

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