Shell

Newsletter

Department of Computer Science & Engineering

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Vision and Mission of the Institute

Vision

- To be one of the premier Institutes of Engineering and Management education in the country.

Mission

- To provide Engineering and Management education that meets the needs of human resources in the country.
- To develop leadership qualities, team spirit and concern for environment in students.

Vision and Mission of the Department

Vision

- To be a premier department for education in Computer Science and Engineering in the state of Karnataka, moulding students into professional engineers.

Mission

- To provide teaching/ learning facilities in Computer Science and Engineering better than prescribed by University for easy adaptation to industry and higher learning.
- Provide a platform for self learning to meet the challenges of changing technology and inculcate team spirit and leadership qualities to succeed in professional career.
- Comprehend the societal needs and environmental concerns in the field of Computer Science.

"Shell" from the Department of Computer Science and Engineering, is dedicated to Dr. U.R. Rao, former Chairman of ISRO, the first Indian to be inducted into the prestigious "The Satellite Hall of Fame", Washington.

Inside *Shell* ....

B. N. M. Institute of Technology

Affiliated to V.T.U, Belagavi | Approved by A.I.C.T.E, New Delhi

Vidyaya Amrutham Ashnuthe

Editor's Communique`

Dear Reader, a very warm welcome to you from the Shell team.

Shell tries to extend the horizon of knowledge by providing the readers with a variety of articles in the most interesting domain of current technology. With the use of good theme and visual, Shell strives to nurture the spark of curiosity and transform it into a raging inferno.

This issue is dedicated to ***Dr. U.R. Rao,*** *former Chairman of* ***ISRO.*** The main highlight of this issue is the interview with ***Dr. Naagaraj Subramanya,*** Managing Director, ***NSOFT.***

I would like to express my appreciation to all those who have contributed articles in this issue.

Knowledge begins a gentleman but it is conversation that completes him.

Thank you all!!!

Department Profile

The Department of Computer Science & Engineering at BNMIT is renowned for imparting state of the art education and also carrying out cutting edge research. In addition to the strong UG Program, two PG Programs and research facilities for M.Sc (Engg.) and Ph.D courses are also offered. The Department has an equipped R&D centre and ongoing sponsored projects from VTU, DST-IISC and company incubated facilities.

The Department is associated with professional bodies' viz. IEEE (USA), ACM (USA), Computer Society of India (CSI), Institution of Engineers & Indian Society for Technical Education.

Major areas of specialization of the faculty include Image Processing, Computer Vision, Pattern Recognition, Computer Networks, Network Security, Embedded Systems, Compiler Design, Wireless Sensor Networks and Data Mining.

The department organizes national and international conferences regularly. Guest lectures are arranged every semester for the benefits of students. Students are placed in leading IT companies. Students are also pursuing higher studies in reputed Universities around the globe.

Rank Holders 2014-15

Deepthi Devaraj
1st Rank
(6 Gold Medals)

Chaitra K.V.
2nd Rank

Meghana Adiga B. N.
7th Rank

Neha V
8th Rank

Swathi A V
10th Rank

Ada Lovelace - The first computer programmer

Augusta Ada Byron, Countess of Lovelace-better known as Ada Lovelace showed her gift for mathematics at an early age. She translated an article on an invention by Charles Babbage, and added her own comments. Because she introduced many computer concepts, Ada Lovelace is considered as the first computer programmer. Born on December 10, 1815 in London, she was well known for her work on the analytical engine with Charles Babbage. Ada was the only legitimate daughter of the famed poet George Gordon Byron and his mathematics loving wife Anne Isabella Byron. She was encouraged by her mother to pursue higher studies.

At the age of 17, Lovelace's mentor, the scientist and polymath Mary Sommerville, introduced her to Charles Babbage. On one occasion Babbage described her as "that Enchantress who has thrown her magical spell around the most abstract of Sciences and has grasped it with a force which few masculine intellects could have exerted over it". At the age of 19, she was married to William King. When King was made Earl of Lovelace, she became Lady Ada King- Countess of Lovelace. She had three children. She died in 1852 from uterine cancer.

In her notes, Ada described how codes could be created for the device to handle letters and symbols along with numbers. She also theorized a method for the engine to repeat a series of instructions, a process known as looping that computer programs use today.

Her notes became one of the most important documents that inspired Alan Turing's work on the first modern computer.

Commemoration:

The computer language Ada, created for the Department of Defense, USA, was named after Ada Lovelace.

'Ada Lovelace' day is celebrated in mid October to raise the profile of women in Science, Technology, Engineering and Mathematics and to create new role models for girls and women in these fields.

Magadal Shriya **IV CSE 'A'**

Fog Computing (Fogging)

Before we go into fog computing, it is essential to know about the concept of cloud and cloud computing. The word cloud is a metaphor for the internet. The term cloud computing means internet based computing. In this kind of computing, a network of remote servers hosted on the internet is used for processing and storing data.

What is fog computing?

Fog computing, also known as fogging or edge computing, is similar to cloud computing. It provides data, compute, storage, and application services to end-users. The concept of fog computing was developed by Cisco. The major difference between the two is that cloud computing concentrates on all the processing and application being concentrated on the cloud, whereas fog computing is a distributed computing infrastructure in which processing and applications are concentrated in devices at the network edge rather than existing entirely in the cloud.

What is the need of fog computing?

The current cloud architecture is heavily reliant on distributed processing and available bandwidth from the edge device to the backend server. Most of the processing occurs in the cloud rather than the end devices.

Cloud computing is efficient in dealing with the present data processing and storage needs. The problem occurs when the amount of data to be handled by the servers is very huge. In such a scenario, the current cloud structure falls apart as it relies heavily on distributed processing and available bandwidth from the edge device to the backend server. This leads to a bandwidth bottleneck problem which reduces the efficiency of the system. Also, it is impractical to force the cloud to store and process all the data.

Fog computing removes these disadvantages of cloud computing by ensuring that the processing of data is done at the edge of the network. It also suggests that end devices be allowed to communicate with each other without the cloud intermediate. This removes the bandwidth bottleneck problem.

The unique characteristics of fog computing are proximity to the end users, dense geographical distribution, support for mobility, reduced latency.

Macha Pujitha **IV CSE 'A'**

Keyssa's Connectivity

How about transferring a 1080p Avatar movie in seconds? Do you think it's practically feasible to attain such high data transfer rates?

And the answer is Yes…!!!

Eric Almgren, head of the very secretive Silicon Valley startup known as Keyssa makes a breakthrough in wireless transfer in smart phones that is certainly "faster" and "more power efficient".

Keyssa, a startup backed up by US$47m in funding from investors that include Intel, Samsung has unveiled Kiss Connectivity, a technology that allows devices to "Kiss" when they are positioned close together to transmit huge amounts of data and videos between devices in close proximity, with virtually no battery drain.

As smart phones have shrunk and file sizes have grown, Wi-Fi and physical connectors, such as USB and HDMI cables, haven't kept pace. The latest Wi-Fi standard has a top speed of 1.25Gigabits per second and that's if no one else is using the network. The fastest USB standard tops out at 5 gigabits per second. Because it requires a large internal connector, it isn't widely used.

Kiss connectivity uses a "coffee bean sized connector" which uses an extremely high frequency carrier to transport electrical-based protocols over a short distance through plastics and air, the company explains. Unlike wireless network life Wi-Fi and cellular, kiss connectivity is a "point to point connection". This makes data travels secure from one device to another.

Swaroop Gupta **VI CSE 'B'**

Quantum Computing

In recent times, the computer world has seen an acute increase in the amount of data generated. This massive amount of data generated, poses the need for incredibly high data processing power. Since the proliferation of personal computers and the emergence of the Internet, there has never been a more apt timing for an evolutionary revamping in processing speed and computing capacity. With the demand for higher processing power having fallen into perpetuity, scientists have used this as an opportunity to explore and seek new ways of performing computations at higher speeds. With question at hand being: "Will there ever be the amount of computing power that we need or want?" scientists have the answer in the form of quantum computers.

The traditional data processing involves the use of microprocessors which contain an aggregation of millions of transistors each of which can take the value of either 1 or 0 at a single instant of time. The Moore's Law states that, the number of transistors on a microprocessor continues to double every 18 months. Going by the fore stated law, by the year of 2030, we will find the circuits on a microprocessor measured on an atomic scale. However, this will not quite be the case with quantum computers, which will harness the power of atoms and molecules to perform memory and processing tasks. These quantum computers can potentially perform computations at speeds significantly higher than any silicon-based computer.

The Turing Machine, developed by Alan Turing in the 1930s, used tapes of infinite length divided into little squares to hold the values 1s and 0s. The microprocessors of today, which are invariably based on the working of a Turing machine, use transistors in their on or off states to represent 1s and 0s respectively. The quantum Turing Machines, however, use a tape that exists in a quantum state. This means the symbols (1s and 0s) used in the quantum Turing machine can exist either as 1 or as 0 or in superposition where they represent both 1 and 0. In a quantum computer, information is encoded using quantum bits (or Qubits, as they are referred to popularly) which can exist in superposition. Qubits are tiny particles that are magnetically suspended in an extremely cold environment just fraction of a degree above absolute zero. Qubits represent atoms, ions, photons or electrons and their respective control devices that are working together to act as computer memory and a processor. Owing to this ability of quantum bits being able to hold multiple values simultaneously, quantum computers have the potential to be millions of times faster than the supercomputers of today.

Sudesh Kumar **VI CSE 'B'**

Department Activities

- **A technical talk on opportunities in Aerospace Industry**

A technical talk on Aerospace Industry was organized for undergraduate and postgraduate students. The resource person **Mr. Mahendra Pratap**, from Kenworth Solutions, Bengaluru, gave an insight about Aerospace Industry and necessary knowledge to work in this space.

He spoke about aircraft operations, process development, deployment of systems, analysis on electrical, electronic and mechanical systems and anicialliary services. He also informed the gathering about career prospects in aerospace industry.

• An interaction with Dr. Vasudev Kalkunte Aatre

Dr. Vasudev Kalkunte Aatre is a former Advisor to the Defence Minister and also a former Chief of DRDO (Defence Research and Development Organization). Professors from BNMIT had an opportunity to meet and interact Dr. Aatre. The discussion was about development in the country, field of education.

Dr. Aatre has published over 50 technical papers in national and international journals and authored textbooks for graduate and under-graduate levels. Dr. Aatre was awarded the Padma Bhushan in the year 2000 by the then President K. R. Narayanan. He was bestowed with Padma Vibhushan award, India's second highest civilian award in 2016.

• Seminar on Raspberry Pi

A seminar on **Raspberry Pi and its applications** was conducted by a team of students from VI CSE who won the first prize in the **National Raspberry-Pi Development Championship** as part of **COGNIZANCE-16,** the annual technical fest of **IIT Roorkee.** In order to motivate their junior students of IV CSE to focus on achieving similar strides, the department gave an opportunity to the prize winning students to conduct this seminar. The team shared their knowledge about Raspberry Pi and its applications. They also demonstrated their prize winning Raspberry Pi project and also gave insights on how to do similar projects using the Raspberry Pi module.

• Ruby on Rails - A 2-day workshop by Mr. Aniruddha S.G

A workshop on Ruby on Rails was organized in the department. The resource person Mr. Aniruddha S.G, introduced the students to the basics of the framework. On day 1, the resource person gave an introduction to data types (strings, numbers, arrays, and hashes), control structures, iterations, methods, class & objects and inheritance. A hands-on session helped the students to understand the topics better. Students solved some of the examples from various case studies.

In the second session Mr. Aniruddha explained how the deployment of a web application is done. He deployed a 'College Fest Management' application which managed various events such as enrollment and registration.

• Project Management - a Life Skill by Mr. P S Ravindranath

A talk by **Mr. P S Ravindranath** mainly focused on creating awareness among our students about the importance of Project Management. Students were encouraged to adopt Project Management concepts in their future projects and develop them on par with industry standards.

Quiz Time

1) When Rajiv Gandhi required assistance for a project, the Americans refused, fearing it would be used for the development of nuclear weapons. Due to this, project X was later started as an Indian venture. In 1990, at an expo in Zurich, it beat almost all its competitors except for one from the United States- ID X. What is the name of the project?
2) *"God, grant me the serenity to accept the pages I cannot edit, the courage to edit the pages I can, and the wisdom to know the difference"*. What is this prayer popularly known as?
3) Mark Gasson is a British scientist who pioneered developments in direct interfaces between computer systems and the human nervous system. He is active in the research fields of implantable medical devices. He is most widely known for his experiments in transmitting something into a human implant. For an experiment, he injected it into his own body, leading to his claim to be the first human infected with _____.
4) Programmer Bram Cohen, graduate student in Computer Science, University of Buffalo, designed protocol X in April 2001 and released the first available version on 2nd July 2001, and the final version in 2008. X is used to distribute large amounts of data over the Internet. As of February 2013, X was responsible for 3.35% of all worldwide bandwidth and has 15–27 million concurrent users at any time of the day. What is X?
5) Which iconic video game character was first introduced as *'Jumpman'* in a 1981 game called *'Donkey Kong'*?

Answers in the next Issue

Kunal V VI CSE 'A'

Dr. Naagaraj Subramanya , Managing Director

Dr. Naagaraj, seasoned technocrat who served in Hindustan Aeronautics Limited & CMC Limited, for more than a decade and a half before starting NSOFT. Dr. Naagaraj holds a Masters from IIT Chennai and a Doctorate in Engineering from Indian Institute of Science, Bangalore. He has contributed to the research in the domain of Design and manufacturing and has delivered multiple papers in leading journals as part of his Doctoral work. He has been instrumental in creating different solutions for different verticals in NSOFT.

In an interview with Sumukh Sharma, student of VIII Sem CSE 'B', **Dr. Naagaraj Subramanya** talks about his entrepreneurial journey.

Q) Could you tell us what distinguishes you from other competitors in the field?

One thing we constantly believe is R&D. We constantly strive to improve our work. So today as I told you, we started from nothing and we created our solution which was working with the technology available at that time. But we have constantly added on value to our system. This is something which sets us apart. For example, we are in a position today to convert a normal single phase meter into a smart meter without investing a large amount of money. Today, if we have any electronic meter, we build a retro fit around that, convert the electronic meter into a smart meter, into a time-of-the-day meter, into a prepaid meter so we are in a position today to provide meters without you trying to do it. So we build a hardware-software combination to achieve this and none of the other competitors are moving toward that target. So we set an edge between us and somebody else.

Q) What are some of the challenges you have faced when you were running this company?

When you are small, no one is going to believe in you and when you are small your financial muscle is something which is nonexistent. No one will part one rupee if they are not sure about what you are trying to do. The basic problem is money. It is the bottom line. If you have money, you can hire people. But hardly anybody would want to support you unless there is a commercial angle to it. That is definitely a challenge.

Q) What advice do you have for the newcomers who want to become entrepreneurs?

You have to believe in whatever you are trying to do. That is a fundamental thing. Don't start something just because someone asked you to. You have to have complete passion and dedication and a firm belief. And you definitely require support.

Q) Do you have any words for the fresh graduates?

Be willing to learn. Here everyone does everything. I am an MD and an employee. There should be no restrictions on the area to work on. The idea will be to get the job done on time and make the customer happy. And the first three years should be a complete investment of your time. And be open to other roles as well.

Students' Achievements

1. National Level Competition

- Students of VI SEM CSE, secured the 1st and 2nd place in the National Level competition on Raspberry PI Development Championship held at IIT Roorkee in Feb 2016.

1st place in the Raspberry PI Development Championship
From left: Kunal V, Akshay L Aradhya, Anagha A, Nayana S.

2nd place in the Raspberry PI Development Championship
From Left: Aishwarya D Prakash, Harshita D H, Harshita S, Archana Choudary R.

- **Aashutosh Singh, Harshith.G.Guruprasad and Madhav Ram** of VIII CSE were awarded the 2nd prize for their project titled "Bluetooth Control Rover" in the National Students Project Exhibition-2016 organized by Alpha College of Engineering, Bengaluru, in association with the All India Council for Technical Education(AICTE),New Delhi, held on 14th May 2016.

2. Cultural Events

- **Bhargavi Venkatram** of IV CSE bagged the 1st prize at the All India Radio (Akashavani) National Music Contest-2015 for Carnatic music.

3. Development

- An Android app '**Why Buy Book?**' has been developed by VI CSE students **Devashish Rana** and **Mohit Agrawal**. This app is currently used by students of BNMIT. The app has several features. Some of the features are that it provides easy access to teachers' notes and presentations. Students can place an order for either hard copy or soft copy of the notes. The notes so ordered will be delivered within 24 hrs.
  As a future enhancement, Devashish and Mohit are planning to extend the app utility to all colleges in Karnataka.

4. Entrepreneur

- '**DigitGenie Web Solutions**' is a professional Web & Software development company founded by VI CSE students – **Shreyas Kashyap** and **Swaroop Gupta**. The company is successfully operating in the IT market sinceFebruary 2016.
- "**BookTrade.co.in**" is a platform for students to buy and sell old books. This website has been designed by IV CSE student – **Mohammed Azam**. Currently, the tool caters to only engineering students.
- "**Om Sai Process**" deals with selling products viz. as awards, trophies, mementoes and the like made of acrylic, wooden, crystal and brass material. This business was started by our student of 2013 batch - **Ananya**. Imported products and gifts are also part of the business.

Editorial Team

Students

- **Sumuk Gummaraju – IV A**
- **Surabhi Nagendra – IV B**
- **Anagha A- VI A**
- **Sudesh Kumar – VI B**
- **K. Veneet Reddy – VIII A**
- **Sumukha Sharma – VIII B (Editor)**

Staffs

- **Prof. Sheela Sridhar**
- **Prof. Shashikala**
- **Prof. Sajitha N.**

Any Suggestions and articles, kindly mail to: bnmitcse.terminal@gmail.com