Without mathematics there is nothing you can do. Everything around you is mathematics. Everything around you is numbers.
I am glad to know that Faculty of Engineering and Technology (FET), Manav Rachna International Institute of Research and Studies, is bringing out the Technical Magazine, INGENIEUR SPHERE. I take this opportunity to congratulate the management, faculty members, students, the editorial board and all the contributors for helping in bringing out this issue.

By nature, human beings have a strong unending urge for self-expression through creative endeavours. The magazine INGENIEUR SPHERE is a platform to give expression to the thoughts, ideas and the artistic pursuit of students. This is the age of cutthroat competition in every field of activity. Apart from being adept in the field of study, one needs to have a holistic development of personality and this is our priority. The magazine INGENIEUR SPHERE is a unique blend of art and technology, and it allows for new medium and avenues of expression to be explored in amazing ways. Our budding engineers definitely have hidden technical writing talents struggling to find a medium of expression. I am glad that FET has created this avenue for the students.

I send my best wishes to the whole team of the magazine INGENIEUR SPHERE. I am very sure that under the dynamic leadership of Dr. Prashant Bhailla, President MREI and Dr. Amit Bhailla, Vice President MREI, the tireless effort of FET, the editorial team, INGENIEUR SPHERE and enthusiasm of the students, the magazine will be a true mirror, reflecting the creativity as well as the outstanding achievements of the students.

Dr. N.C. Wadhwa
Dr. M.K. Soni
Pro - Vice Chancellor

I have always fostered the idea that educational institutes must provide maximum avenues to students to identify themselves their physical, mental emotional, visible and hidden potential. Manav Rachna International University and Research and Studies earnestly try to provide them adequately with such facilities in the form of sports, cultural activities, professional visits, workshop experiences and exposure to industries. The technical magazine INGENIEUR SPHERE published by Faculty of Engineering and Technology, is yet another cornerstone in this direction. This magazine opens a new canvas for the students for expressing their creative talents, sharing their views and feelings on different aspects and shades of technology. This journey goes a long way in stimulating and training their minds to learn, assimilate and express.

Shaping the magazine into something aesthetic, innovative, distinct, consistent and meaningful is certainly a gratifying experience. It is rather a daunting challenge, but the final triumph in giving shape to the students vision endows them with a sense of accomplishment.

I congratulate all the students, faculty members and editorial team who have contributed in making this venture a success.

Prof. (Dr.) M.K. Soni

Dr. Naresh Grover
Dean Academics

True education is the education that encompasses intellectual, moral, emotional, social and physical dimensions. With primary purpose to assist students in grooming them to become active and contributing member of the society, we encourage students to work towards developing social, artistic, athletic, cultural, emotional, moral, societal and humanistic elements of their lives. Every student is special, and we believe that given the right environment and ample opportunities, every student has the potential of shining in one field or the other.

Technical Magazine INGENIEUR SPHERE being published by Faculty of Engineering and Technology is one such prospect, where each and every student is welcomed to express and explore his/hers creative urge. It is heartening to note that our students, who are primarily technically inclined, do not lack in expressing their ideas. I am pleased that the students and faculty editorial team members have been extremely enthusiastic in bringing out INGENIEUR SPHERE and have wholeheartedly contribute in making the magazine a window through which we can gaze at the young and energetic lives of our students, their thoughts and dreams, their aspirations and hopes.

I congratulate each and every person who has contributed in bringing out INGENIEUR SPHERE.

Prof. (Dr.) Naresh Grover
ABOUT FET

MRIIRS has its origins in Career Institute of Technology and Management (CITM), an esteemed educational entity, which originated in 1997. CITM was accredited by the NBA twice, first in the year 2003 for three B.Tech Programmes and next in 2007 for four B.Tech Programmes in July 2008, Govt. of Haryana granted Autonomous Status to the Institute. Subsequently, in October 2008 Ministry of HRD, Govt. of India conferred “Deemed to be University” status on the Institute. The Institute was named as Manav Rachna International Institute of Research and Studies (MRIIRS) in 2018. MRIIRS is accredited with "A" Grade by NAAC (An autonomous institution of the UGC). Faculty of Engineering and Technology (FET), a part of Manav Rachna international Institute of Research & Studies is a foreground of future engineers and entrepreneurs. With eye soothing greenery greeting the entrance of the engineering block, it has been a harbour where skills meet creativity. FET has been ranked among “Top 5 Emerging Engineering Colleges” by India Today and a Top Engineering Institution in “Indian Rankings 2018” by NIRF, Ministry of Human Resource and Development, Government of India. With 11 distinguished departments (Aeronautics, Automobile, Biotechnology, Civil, Mechanical, Computer Science, Electrical, Electronics, Chemistry, Physics, Mathematical), it stands strong in this competitive world. Believing in making students self-sufficient and self-reliant; FET has always been buzzing with activities. With a lot of activities, lectures, workshops, seminars happening throughout the year under the aegis of student chapters of various professional bodies like CSI, ASHRAE, IETE, QCI, IEEE, ACM to name a few. With top notch facilities on one hand and state of the art facilities on the other, FET students have been stealing the limelight globally and bringing laurels to the college. Some notable achievements include winning Microsoft Imagine Cup, Shell Eco Marathon, Manipal, BAJA USA and Grid Tech etc.

Unfurling every student’s desire to be a global citizen in this small world, FET boasts of international tie ups with Curtin University; Australian, Lough University; Finland and few significant others. For a student’s academic proficiency, FET has always been a good sport offering a mix of extra-curricular and the college curriculum. FET has hit the student chords with industry academia collaborations like Su-Kam, IBM and JBM and quenching the entrepreneur thirst with Business Incubators. FET has a very good track record of placement of students. A large number of students have been successfully placed in reputed organizations such as TCS, Infosys, L&T, InforTech, HCL Technologies, Maruti Suzuki, Huawei Technologies, NIIT Technology, Microsoft, I-Flex, Dell, Oracle, Nokia Siemens, Ericsson, Cease Fire, Escorts, Sandvik Coromant, Wipro, IBM, Hewlett Technology, Capital IQ, Data64, Life Cell International etc and have earned salary packages as high as Rs. 8 lac per annum. With aspirated placements, inspiring alumni record FET has been a pride and continuously thrives for the best.

In a young person’s life choosing a career and that too in a right way, is highly significant. The students of Faculty of Engineering and Technology, Manav Rachna International Institute of Research and Studies have decided to be engineers. Engineers are the backbone of the developments in any country. Technological development alone will take India to the forefront of developed nations and the speed of this technological revolution will be due to the contribution of students. I hope our students will actively participate in the process of building a prosperous and technologically advanced India.

In the journey of life, the path one takes is as important as the destination itself. While pursuing one’s education, one should pause and introspect! The question one may ask oneself is – Are we really fully utilising the opportunities offered to us? In the ever changing and highly competitive environment of today, it is imperative to make each day a new learning experience. MRIIRS presents ample opportunities to the students to make their personality multi-faceted by giving them a chance to be a part of various co-curricular activities. I am pleased that the Faculty of Engineering and Technology magazine INGENIEUR SPHERE has given our students an opportunity to explore their talents in technical writing and a medium of expression. My best wishes to all the students, faculty members and editorial team members who have contributed in making the magazine a reality.

Prof. (Dr.) Krishna Kant
EDITOR’S DESK

Ms. Bindiya Ahuja
Editor, Ingenieur Sphere

Ingenieur Sphere, Technical Magazine being published by Faculty of Engineering & Technology, Manav Rachna International Institute of Research & Studies was originated with its first issue in November 2017. It gives me immense pleasure to bring forward the second issue of the magazine reflecting the latest trends & technology in the form of articles written by our esteemed faculty members and students. Our every issue covers a story of one Indian Scientist to aware our readers about great Indians brains. This issue covers the story of great Indian mathematician, Scientist, and writer Ms. Shakuntala Devi. In our alumni interview series, we are very proud to present an interview of an alumnus of Department of Biotechnology, Ms. Nikita Pawar, working as an IAS Officer since 2012. This issue shows glimpses of all the technical events organized by various departments of FET in a period of July’17 to Dec’17 covered in FET Highlights section. With this issue, we have started a new series “Wizards of Maths” covering the journey of Mathematicians starting with Carl Friedrich Gauss.

We are thankful to all the authors for their contributions in bringing this issue successfully. We look forward to receiving constructive feedback and suggestions from our esteemed readers at fetmagazine@manavrachna.edu.in.

With Kind Regards

Ms. Bindiya Ahuja
Editor
Ingenieur Sphere, FET Technical Magazine
Know Our Departments
Department of Computer Science and Engineering

The Department of Computer Science and Engineering was established in year 1997. The Department has been accredited twice by National Board of Accreditation (NBA) in 2003 and 2007.

The Department offers various Programmes such as:
1. B.Tech (4 Years)
2. B.Tech IBM Specialization in Cloud Computing, Business Analytics and Optimization, Cyber Security and Forensics (4 Years)
3. M.Tech in Computer Networking (2 Years)
4. PhD

The Department is having 68 well experienced and highly qualified faculty from reputed Institutes. There are 22 PhD and 46 M.Tech faculty. Student Progression is done through Soft skill development, Feedback/ Surveys, Motivation for Participation in Seminar/ Conferences/ Competitions, Students publication Support, Career counseling and Technical Classes, Moral values reinforcement through ISR Activities, Industrial Training and Visit, University scholarships and free ships, Placement services and initiatives, etc.

Total number of Students enrolled in the Department is 1113. Recently 17 projects of our students got recognition at various national and state levels like Li-Fi which Won Second position in NELING FEST 2020, Hyderabad; Huawei technologies R&D Center at Bengaluru. Our students were among the top 8 Finalist; North India Cyber Security Hackathon IIT Delhi, Won Second Prize; Hackathon Competition at Infosys, Won Second position; and many more. The focus is also on research and development activities as our students have published more than 50 research papers in reputed National/ International Journals/Conferences. In addition to this our students are working on Live Projects as the Department has signed the MOU with various Industries like TCS, R Systems, ACADVIEW, IBM, EMC 2 etc. to bridge the Gap between Industry and Academia.

The Department has an excellent placement record till date. Virtually 100% students have been placed including higher studies, entrepreneur and reputed industries off-campus and on-campus. Few of the reputed companies which have been hiring our students regularly are TCS, IBM, HCL, Infosys, Toc-Mohindra, Samsung, NIIT, Cvent, Deli, Infogain, Armed Forces, Accenture, cognizant, Amazon, Honeywell, Wipro etc.

The Department is having chapter of various professional bodies such as IEEE, ISTE, ACM, and CSI. Further, our students are members of these professional bodies which provides the platforms to the students for professional learning. Also the extracurricular activities are provided to our students and our students has brought laurels to the Department by winning Gold Medal in Football at MNIT Jaipur, First Prize in Fashion Show at Chandigarh, got recognition in documentary making at Mumbai etc.
India, a land popular for its contribution in the field of mathematics has always been proud of its mathematical prodigies and one such prodigy in recent times of modern India was Shakuntala Devi who was world renowned and referred to as “Human Computer”. Born in 1929 in a poor family in Bangalore (India), Shakuntala Devi dropped out of school because her father, a circus worker, could not afford the monthly school fee of Rs 2. She grew up in a slum and at a very young age, her mathematical abilities were recognized by her father. Her father taught her mathematical operations like multiplication, division & square root and took her to his circus to demonstrate her quick calculation abilities & memory power to the crowds.

As the word about her skills spread, she started doing road shows as well across the city. At the age of 6, she gave her first major show at Mysore University and there was no turning back after that. In her early 20s, she toured Europe extensively to demonstrate her skills. During an interview on BBC, she was given a complicated mathematical calculation which she solved within seconds but her answer was different from what the interviewer & his team had calculated.

When she insisted that her answer was right, the interviewer & his team of math experts reexamined their calculations for several minutes and finally admitted that their initial calculations were wrong. That incident spread like wildfire across the world after which she was being popularly referred to as “The Human Computer”. In 1977 at Southern Methodist University in Dallas, she calculated the 23rd root of a 201-digit number. It had taken four minutes for a professor to write the problem on the board, and it took more than a minute for a Univac computer to figure out the answer. Shakuntala Devi got it in 50 seconds. After the 1977 record at Dallas, she went on to create more records including one in 1980 where she solved multiplication of two 13 digit randomly picked numbers in just 28 seconds and entered the Guinness Book of World Records. She was a math evangelist, human computer, social worker & role model, and India is indeed proud to be home to such an inspirational personality. Further played a great role in making mathematics an interesting subject for millions of students due to her practical, fast & efficient approach towards problem solving. She had authored several books for children to help them develop interest in mathematics and help them understand the subject better.

On the social front, she started “Shakuntala Devi Education Foundation Public Trust” with a mission to provide quality education for children of deprived sections of the society. Also, she encouraged research in Vedic mathematics and helped spread global awareness about India’s contribution towards mathematics.
Green homes are healthy homes

Much of the scenic beauty of nature has been replaced by densely populated areas that sprawl for miles. This visual pollution affects us all and leaves us with a longing for a closer connection with nature. The one place where you can exercise some control over your environment is inside your home or apartment. There’s a little that can be done to directly eliminate vehicular exhaust, factory or refinery pollution, radiation and whatever else is being done to destroy the planet and us. We spend about 90% of our time indoors. Whatever amount of time we spend indoors should be as clean and chemical free as possible. Even toxic chemical fumes we don’t contact physically or consume can leak into our indoor air. There are several ways to create a healthy, green home environment. Interior plants enhance our sense of well-being and restful. In addition, houseplants can be a satisfying hobby and can help purify the air in our homes. These plants trap and absorb many pollutants and convert carbon dioxide to oxygen. Many of these chemical compounds, which are released into our air through a process called “off-gassing,” come from everyday items present in our homes and offices. An indoor garden is a source of great joy for many people and can be your refuge from the outside world. Whether you live in a small apartment, or a large house, by introducing certain plants into your home, you will start to notice improvements to your health, and overall happiness. Plants create a living space that is soothing to be in, can enhance your mood and plants can also help with loneliness and depression caring for a living thing gives us a purpose and is rewarding - especially when you see that living thing bloom and thrive.

Indoor beautification and varied spatial positions and sensations of colors in the built environment create visual contrasts which contribute to urban aesthetic development. To understand urban aesthetics the interaction and interdependence of the complex environment need to be considered separately. The physical environment, the biological environment and the socio-cultural environment each make their contribution to the whole. A little bit of greenery can transform a space and breathe new life into a room. But not all houseplants can thrive in any place. To choose a plant for a specific spot in your home, you’ll want to keep two things in mind: plant care and your home’s décor aesthetic. The plants have different requirements like sun exposure and humidity levels. Therefore you should not put a plant that needs full sun in a windowless bathroom, or an air plant in your sun-drenched living room, when it prefers indirect light. Fortunately, there are more than enough houseplant varieties to suit any kind of dwelling and design. Positioning indoor garden houseplants is primarily based on aesthetics. Inhospitable locations can nonetheless be utilized by selecting very hardy species of houseplants for your indoor garden. Another factor is the key attribution of each variety which helps in deciding where to put a plant. For instance, Weeping Figs remove toxins and increase oxygen levels, which is why they’re practically made for your bedroom. And since Jade Plants are to be kept in your main hall to welcome people as they enter your home as it symbolizes good luck.

Author

Dr. Nidhi Didwania F.B.S
Managing Director, M/s Tricho Agronica Pvt. Ltd.
Progress in India’s electricity sector

The utility electricity sector in India has one National Grid with an installed capacity of 330.86 GW. India is the world’s third largest producer and fourth largest consumer of electricity. India’s power sector that was marred by continuous shortages and lack of quality and steady supplies to homes and factories has seen an unprecedented turnaround in the past three years.

Within the last three years, India’s total power capacity has increased by nearly one third (31% or an addition of 76,577 MW) and the conventional or coal based power capacity (which is the mainstay of the country’s overall power capacity) has increased by 26% (one fourth) from 214 GW in March 2014 to 270 GW in March 2017. Renewable power plants constituted 31.2% of total installed capacity and share of fossil energy is about 66.2%.

As the high ash content in India’s coal affects the thermal power plant’s potential emissions, India’s Ministry of Environment and Forests has mandated the use of beneficiated coals whose ash content has been reduced to 34% (or lower). Power plants in urban, ecologically sensitive and ecologically sensitive areas. Energy shortages in 2014 were 42,428 million units (31% or an addition of 76,577 MW) and the conventional or coal based power capacity (which is the mainstay of the country’s overall power capacity) has increased by 26% (one fourth) from 214 GW in March 2014 to 270 GW in March 2017. Renewable power plants constituted 31.2% of total installed capacity and share of fossil energy is about 66.2%.

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YOGA : A Societal Fabric

The general perception about Yoga is that of an alternative exercise regime and since it is on a reduced level of kinetic exercises, it is meant to be enjoyed alongside the fruits of retirement. Well, nothing can be more fact-free than this. Let us recapitulate the Eight Limbs of Yoga as expounded by Maharishi Patanjali:

- **Ahimsa (अिहंसा)**: Nonviolence, non-harming other living beings.
- **Satya (सत्य)**: Truthfulness, non-falsehood.
- **Asteya (अस्तेय)**: Non-stealing.
- **Brahmacarya (ब्रह्मचर्य)**: Chastity, marital fidelity or sexual restraint.
- **Aparigraha (अपिरग्रहः)**: Non-avarice, non-possessiveness.

While the exactitude of translation can sometimes make the essence different from the original, here is the essence of Yam:

In the popular discourse, the world refers Yoga to be conceptually restricted to its third limb, i.e., The Aasan, relegating the first two limbs, The Yam and Niyam, as the threads of individual interaction/relationship with the society, whereas The Niyam bring the relationship/interaction with the body. The underlying operating principle of Patanjali Yog Sutri is Atirek (अतिरेक), i.e. Not outside the mean, median and mode resulting into any imbalance into the individual or the societal ecosystem, for example, take violence, it has two parts, Hinsa and Sanhara (हिंसा और संहार), हिंसा is violence, but संहार has no English equivalent. The kinetic actions in both are similar, but the purpose is different, and thus, at the level of thought and philosophy, there is a gross difference. In Hinsa, the purpose is to harm the other whereas, in Sanhara, the purpose is to stop the other, in order to save many. This conceptual scaling and gradation of different aspects of human life, is an anthropological gem of Eastern Civilisations. In fact, The Yam and Niyam, can also be nominated as External and Internal Ethics as under:

- **The Citizen, Society and Laws : A Yogic and Anthropological Perspective**

In the world order, constitution-ism is a very recent phenomenon; it began as an arrangement between the Roman Empire and the Nation States which emerged (with the evolution of French Nation) through the French Revolution. The essential component of French Revolution and the French Life still revolves around Egalitarianism. The French Revolutionaries broke the shackles, once and for all. Unfortunately, the French Revolutionaries did not have much thought leaders within their rank and file (something akin to Anna Hazare Movement), though there were stalwarts within the French Nation outside the movement, and thus the Nation-State evolved. This nationalism the spread within Europe and thereafter, as the European Century took over the entire world, it spread to the rest of the world. Constitution-ism, in its pristine historicity, is the term which denotes the separation of The Nation State from the shackles of the (Roman Catholic) Church. This segregation of verticals between governance and religion came to be known as Secularism. The democratic movements across the world, by constant processes of sedimentation, application and re-assessment, further went on to separate the judiciary, executive, parliament, audit mechanism and few constitutional bodies. With the advent of Industrial Revolution, Europe captured most of the world and colonised it. The present Indian Discourse is now wedged between the colonial model of governance and serving an indigenous population. It will be worth an effort to trace our own lineage and anthropological background and seek models which suit us.

The difference between Evolution and Revolution is the essence at its core. Evolution follows the process of ‘consultative sedimentation’ whereas Revolution is essentially shurning through a ‘combative competitiveness’. Milk may change into another food depending upon the process adopted during the change, but will essentially remain the same i.e. Milk Food. The Egalitarianism which emerged (or which got adopted) did ensure all the citizens to be absolutely equal, but another issue emerged, as these laws started to be applied, it meant to be alone.

We are witnessing the factors of culture, family, society ingrained in dutiful compliances (The Dharma) essentially got left out. The Western Societies realised the mistake of leaving the society out of the regulatory, policing and justice dispensation system of their nations. They remedied their system and the Americans adopted the Jury Trial method of prosecution. The Western World also brought in few societal checks to correct the anomaly at very early stages, smaller oversights on part of the citizens invite corrective measures such as Compulsory Community Service. Thus, ‘Amelioration’ preceded ‘Correction’ and ‘Punishment’ before the individual fell apart from the society and commits a crime. The community service mechanism ensures a chance is offered to the erring individual for societal re-integration.

There also exists a need to re-invigorate, re-furbish and re-establish the role of family, community and the society and further adopt the Jury System of delivering justice.

The Indian Civilisation has nearly always adopted a self-correctional, self-regulating model of governance. Upto the 1980s, kids could be disciplined by their aunts, uncles, neighbours, teachers and anybody who felt a sense of belongingness towards them. Now, the arrangement is changing within the society, an impact of the western anthropological model we adopted. The western society amended this model to improve its societal life and we logged behind. However, the Indian Hinterland still is self-correctional and self-regulating and India as a whole has less than 20,000 police stations, with urban landscape outnumbering the rural. In the United States, the numbers may be 20 times as higher.

As part of our colonial relic, the Indian executive does not deliver policing as a service, it is still a suppressive watch-dog mechanism. An average policeman takes it as his right to correct and punish citizens, against the desired ethos to assist and regulate. Very regularly, traffic cops would surprisingly appear from behind trees. One wonders why they should wait for citizens to commit that error, and not take a pre-emptive action as the original arrangement, stand at that Red Light and regulate the traffic.

The aim of this short note is to channelize the critical thinking of students into the domain of Indic Studies which has an exceptional bandwidth for the benefit of, not only the humanity, but the entire life as it exists on the planet. Most of the issues facing the mankind are due to existing Atirek (अतिरेक) in the ecosystem of society and governance. The students must develop a critical thinking and analyse the different theosophical perspectives which can act as answers to the issues facing the society today.

**AUTHOR**

Dr,Shobha Shrivastava
Deputy Registrar,Faculty of Engineering & Technology, MRIIRS
CROSSWORD

Across
5. Bulbs shining less
7. This controls everything
8. Side by side circuits
9. Anything in a circuit
10. Bulbs shining more
12. Beware of the teeth
13. There can be no power without this

Down
1. This should move things
2. No honey from this
3. Power flows around this
4. Thin wire which breaks if power is too much
6. The name of the energy
11. Components one after the other
13. Throws some light on the subject

BUZZWORD

1. Which alphabet replaces the question?

2. Which letter replaces the question mark?

3. Four people need to cross a rickety bridge at night. Unfortunately, they have only one torch and the bridge is too dangerous to cross without one. The bridge is only strong enough to support two people at a time. Not all people take the same time to cross the bridge. Times for each person: 1 min, 2 mins, 7 mins and 10 mins. What is the shortest time needed for all four of them to cross the bridge?
92 per cent of the world’s currency is digital. This means that most of the money you earn, transact with, use to buy goods/services and so on exists only on computers and hard drives. Only an estimated 8 per cent of currency globally is physical money. All the black money piles come from within this 8 per cent. This is a fair estimate that economists seem to agree on though, not an exact figure. This low percentage seems absurd but when you stop to think, it makes sense considering that most large transactions are done electronically anyway.

In 1956, 5 megabytes (5MB) of data weighed a ton
It was 1956 when IBM launched RAMAC, the first computer with something like a hard drive that we use today.

By hard drive, we mean something that used magnetic disks - a moving head was used to access and write that data. At the time, it was considered a massive leap in mass storage technology because it signified a shift from punch cards and magnetic tape (which stored data sequentially) to randomly accessible hard drives.

RAMAC itself stood for Random Access Method of Accounting & Control. The whole cabinet weighed over 1000kg and the 5MB data was spread over 50 huge aluminium disks, coated with magnetic iron oxide. The disks rotated at a speed of 1200 rpm and the machines were leased for $3,200 per month back in the day.

Russia built a computer that ran on water: in 1936
Before the miniaturisation of transistors, computers had a much more visible system of counting: things like gears, pivots, beads and levers were often used and they needed some sort of power source to function.

Vladimir Lukyanov built something like this in 1936 but he used water to create a computer that solved partial differential equations. In images of the Lukyanov computer, you’ll see a complex system of interconnected tubes filled with water.

How to make personalised movies using Google Photos
1) Open the Google Photos app
2) Go to the Assistant tab in the app
3) Tap Movie to get started
4) Choose your theme and tap on ‘Get Started’
5) Check out the movie that Google automatically created
6) Tweak the results as per your choice for both pictures and background sound
7) Save changes and your video is ready

How to automatically forward Gmail messages to another account
Step 1: In the top right, click Settings gear icon.
Step 2: Click on Forwarding and POP/IMAP tab.
Step 3: Under the “Forwarding” section, click Add a forwarding address.
Step 4: Enter the email address where you want the messages to get forwarded automatically.
Step 5: Click ‘Next’ and ‘Proceed’ to complete the process.
Step 6: Once done, a verification message will be sent to that email address. Click on that.
Step 7: Go back to the Gmail account Setting page and refresh it.
Step 8: Click on Forward a copy of incoming mail to.
Step 9: Click ‘Save Changes’ at the end of the page.

Jokes

Q: What do computers eat for a snack?
A: Microchips!

I decided to make my password “incorrect” because if I type it in wrong, my computer will remind me, “Your password is incorrect.”

Q: What did the spider do on the computer?
A: Made a website!

Me: Siri, where is the best place to hide a body?
Siri: The second page of a Google search.

Q: What did the computer do at lunchtime?
A: Had a byte!
“Turmeric : The Indian Golden Herb for Golden health”

Turmeric or Haldi “purifier of the body” is a spice usually used in vegetables and curries preparations. This is indigenous to south India and Indonesia. Its active ingredient is curcumin. Turmeric gives yellow color to prepared foods (often as a much cheaper replacement for saffron). It is also used as a dye for coloring of fabric. Due to its health improvement properties turmeric is used in various ayurvedic medicines and it mimics the effect of various other medicine use to cure cancer. It is taken as a dietary supplement in our diet that helps in stomach problems and other ailments. It is popular as a tea in Okinawa, Japan. It is currently being investigated for possible benefits in Alzheimer’s disease, cancer and liver disorders.

Turmeric is a perennial herb and its plants like ginger plant. Its smell is sweet and color is golden yellow. This is dried in the sun after harvesting and then it is converted into its traditional shape. Curcumin from turmeric, as well as other substances in this herb, have antioxidant properties, which some claim may be as strong as vitamins C and E. Curcumin has been used to show antioxidant, anti-inflammatory, antiviral, antibacterial, antifungal, and anticancer activities and thus has a potential against various malignant diseases, diabetes, allergies, arthritis, Alzheimer’s disease, and other chronic illnesses. A teaspoon of turmeric a day keeps cancer at bay. There has been a substantial amount of research on turmeric’s anti-cancer potential. Evidence from laboratory and animal studies suggests that curcumin has potential in the treatment of various forms of cancers. The other diseases which may be cured by turmeric are 1. Intestinal disorders: - Turmeric is a very effective intestinal antiseptic. The green haldi, its juice and dry powder, mixed in butter milk or plain water, is highly beneficial in intestinal problems, especially chronic Diarrhea, it also helps prevent flatulence.

2. Worms: - About 20 drops of the juice or raw turmeric, mixed with a pinch of salt, taken first think in the morning daily, is considered an effective therapy for expelling worms.

3. Anemia: - Turmeric is rich in iron and is valuable in anemia. A teaspoon of raw turmeric juice, mixed with honey, is taken every day in the treatment of this condition.

4. Measles: - Turmeric roots or dried in the sun and ground to a fine powder. This powder mixed with a few drops of honey and the juice of fever gourd leaves, can be taken by those suffering from measles.

5. Asthma: - Turmeric is an effective household remedy for bronchial asthma. A teaspoon of turmeric powder with a glass of milk twice or thrice daily is very effective. Its best effect is on empty stomach. Taking 1/4 teaspoon of turmeric powder with 3-4 gulps of warm water acts as a preventive against attack of asthma.

6. Cough and cold : - Turmeric with its antiseptic properties, is an effective remedy for chronic cough and throat irritation. Half a teaspoon of fresh turmeric powder, mixed in 30 ml of warm milk is very effective in these conditions. To prepare this milk is poured on a hot ladle with turmeric in it and boiled over a slow fire. In case of a running cold, smoke from burning turmeric can be inhaled; this increased the discharge from the nose and brings quick relief.

7. Sprains: - Turmeric paste mixed with lime and salt can be very beneficial for treating sprain or the swellings.

8. Boils: - Turmeric powder can help in healing of the boils. In case of fresh boil, a few dry roots of turmeric are roasted and the ashes dissolved in a cup of water and applied over the affected portion. This solution enables the boils to mature and burst.

9. Skin disorders: - Turmeric is very effective in the treatment of skin diseases like ringworm and scabies. In such cases, the juice of raw turmeric can externally applied to the affected parts. Simultaneously, turmeric juice mixed with honey should be taken orally.

10. Dental problems :-Rinsing the mouth affected parts. Simultaneously, turmeric juice powder, 2 clove and 2 dried leaves of guava in 200 GMS water) give instant relief.

11. Dental problems :-Rinsing the mouth affected parts. Simultaneously, turmeric juice powder, 2 clove and 2 dried leaves of guava in 200 GMS water) give instant relief.

12. Liver Disease: -Turmeric accomplishes the liver from damage. 13. Bacterial Infection: Turmeric’s volatile oil functions as an external antibiotic, preventing bacterial infection in wounds.

14. Heart Diseases: Turmeric has been proved to be helpful in preventing the blockage of arteries that can eventually cause a heart attack or stroke in one of two ways. First, in animal studies an extract of turmeric lowered cholesterol levels and inhibited the oxidation of LDL (“bad”) cholesterol. Oxidized LDL deposits in the walls of blood vessels and contributes to the formation of atherosclerotic plaque. Turmeric may also prevent platelet build up along the walls of an wounded blood vessel. Platelets collecting at the site of a damaged blood vessel cause blood clots to form and blockage of the artery as well.

Turmeric in cosmetics
Turmeric is at present used in the formulation of some sun screens. The Government of Thailand is funding a project to extract and isolate tetrahydrocurcuminoids (THC) from turmeric. THC are colorless compounds that might have antioxidant and skin lightening properties and might be used to treat skin inflammations, making these compounds useful in cosmetics formulations.

Author

Dr. Kalpana Varshney
Assistant Professor, Department of Chemistry
Li-Fi: A boon for existing communication System for Managing Big Data explosion and security

Li-Fi: Light Fidelity
Internet has become a very important part of our life, in some way or other all of us has increasingly become dependent on internet. For us it is impossible to think about a day when we are not connected to the net. The first thing, before getting up in the morning and the last thing in the night, before going to bed is that we are on net, then let whether it be our homework or chatting with friends or downloading HD movies over Wi-Fi.

The current technologies are finding it very difficult to handle the enormous demand for Wi-Fi and transmissions of big data in the present world. With the predicted growth of mobile devices, by 2019 is more than ten billion mobile devices are predicted to exchange 35 quintillion (10^18) bytes of information each month. These are just mobile devices, what about computers, big data servers, and Internet of Things devices? Do we realize the magnitude of the problem?

But scientists have discovered a solution for big data and transmission of data 100 times faster than traditional Wi-Fi network. Imagine Wi-Fi on steroids, this speed boost will come from an unlikely source: the lighting above your head. Instead of Wi-Fi radio aerials, computer-controlled LED bulbs will flicker above your head, beaming out signals like a super-fast Morse code.

To pick up, you will just have to plug a dongle into a laptop, which will "read" the tiny variations in light. It could provide super-fast connections delivered via ordinary light bulbs. It sounds like science fiction, but "Li-Fi" is already here.

History
Li-Fi is a model of optical wireless technology. It’s main aim is to provide unprecedented connectivity within a localized network to fulfill the increasing demand for larger bandwidths, faster and more secure data transmission as well as environmental and undoubtedly human friendly technology heralds the start of a major shift in wireless technology.

Harald Haas of the University of Edinburgh, UK was the first person to use the term Li-Fi. He used it in his TED Global talk on Visible Light Communication. He said “at the heart of this technology is a new generation of high brightness light-emitting diodes”. He took this idea and, together with a group from the University of Edinburgh, founded pureLiFi a year later. The visible light communication is the idea used behind Li-Fi instead of radio waves like conventional Wi-Fi routers, enabling much faster data transfer speeds. The visible light communication technology delivers high-speed, bi-directional mobile communications like Wi-Fi, but in a much more secure way. Li-Fi technology is able to increase bandwidth by 100 times and recently managed to achieve 1Gbps real-world results during testing, while boasting a theoretical top speed of 224Gbps. This means that you’d be able to download 18 1.5GB movies in a single second. The LED lights require so little energy, they can be powered by a standard ethernet cord. Inventor Harald Haas has also suggested that the smart lights could be powered by solar cells charging batteries. In addition, Li-Fi does not create electromagnetic interference, so it can used as an important applications in sensitive locations like healthcare facilities, underwater, aircraft cabins and opens endless opportunities for military operations.

Li-Fi revolution is the one that can break the world’s dependence on radio waves. The rate at which world is adopting wireless communication, the world will very soon run out of the radio spectrum.

Working
Everything sounds great, but the question is “How does this LiFi technology actually works?” The operational procedure is simple, at one end we have a light source whose intensity is modulated by the data from the internet or local network, on the other hand a Photo detector or a light sensor is placed which detects the light and get the binary information, which is built up by the flashing of the LED, as when the LED is off signal 0 is transmitted and when the LED is turned on 1 is transmitted. The Photo detector then again converts it into a data stream which is send to the connected devices. The customer can now communicate through LED output or over the existing network.

Devices
The equipments used for communication of visible lights are the devices used for transmission and receiving. Transmitting devices cane be LED (light-emitting diode) and Fluorescent lamp and Receiver Devices can be Avalanche photo diode and Image sensor.
Features of Li-Fi Technology

1. Capacity: The radio frequencies spectrum is 10,000 times smaller than the visible light spectrum bandwidth. RF also spreads out and cause interference whereas Li-Fi can be well contained in a tight illumination areas, it can achieve about 1000 times the data density at free of cost.

2. Efficiency: Li-Fi requires less number of resources than radio technology that too at much lower cost. There is negligible additional power in transmission of data with LED, as Led illumination is very efficient. RF data transmission and propagation is very difficult underwater but Li-Fi is extremely efficient in underwater communication.

3. Safety: Light is the major source of life on earth, so Li-Fi technology has no major health or safety issues. Li-Fi does not use radio antenna systems, which makes it a much more faster and eco-friendly technology.

4. Security: Eve drop is one of the very basic problems that we face with our network in day today life. Can Li-Fi be a solution to this problem? As in Li-Fi systems the signals are confined to the close illumination area and they are not allowed to travel through the walls. Also, there is no additional security required for connecting two devices, Li-Fi can very well know where their data is being travelled.

5. Line Of Sight(LOS): Li-Fi signals are not allowed to travel through our daily life objects instead they can be reflected. But as reflection of Li-Fi signals, much of energy can be absorbed, which may lead to lowering of the data rate. This can be a coverage disadvantage but can be turned into a very successful security advantage, if used wisely.

6. Multipath Distortion: This is a problem that causes Inter Symbol Interference as a transceiver receives multiple signals from different sources with different amount of delay at each source is at different distance from its destination. This also affects the performance of Li-Fi system.

7. Interference from sunlight: The light from the LED sources comes to the receiver along with interference of many lights in that surrounding and most of it is the sunlight. The solution to this problem is quiet expensive as we will need a receiver which can identify and distinguish the signals. Optical filters can also be used to delete the interference, which can be further optimized by the photo-detector.

8. Wi-Fi V/s Li-Fi

Li-Fi is high speed wireless communication using visible light communication technology. Li-Fi is named so because it very similar to Wi-Fi, it’s just that it uses light instead of radio waves. But the two technologies are still considered complimentary, as Wi-Fi is very good for wireless coverage within a large area, but Li-Fi is great for high speed wireless communication within a smaller region and for solving radio interference issues.

From above discussion it is very clear that Li-Fi has some unique advantages over Wi-Fi. That is why it is not just allowing data rates that are much higher than those of Wi-Fi, but could also be a cost-effective alternative to existing communication technologies.

Advantages

1. Larger data transfer capacity (10,000 times the radio transfer speed)
2. High effectiveness
3. More accessibility
4. Highly secure and simple to utilize
5. Fast information exchange
6. Reliable and Low cost

Applications

Some of the interesting applications of Li-Fi are:

1. Mobile Connectivity.
2. Smarter Power Plants
3. Undersea Awesomeness
4. Hospitals: Airlines
5. Education systems
6. Reduction in accident numbers

Conclusion

The demand of internet is growing day by day and with that sensors are being added to more and more number of things and places every day, which require faster and heavier transmission of data. Li-Fi may be the solution as we cannot stop the big data and internet of things to grow. LiFi can simply be implemented by inserting a tiny micro chip into a LED light bulb to make it a LiFi transmitter. Imagine 1.8 billion light bulbs can be converted to 1.8 billion Li-Fi transmitters in the world. The company PureLiFi has already released a plug-and-play Li-Fi system with a capacity of 11.5 MB per second, comparable to first generation Wi-Fi. Other projects are testing the technology in office buildings and hospitals around the world.

Light as the major source of this technology, takes it to the next level as it helps to expands its working field since light is available in very field. Even in the fields where radiations are harmful and affect the nature of the working environment like in aircrafts, hospitals and underwater, Li-Fi wins. Education fields, medical field, industrial areas and many other fields can work upon this technology and explore to surprise the world. To build a cleaner, greener and safer and a brighter future we can put this technology to practical use and make every LED bulb in this world as a wireless Li-Fi transmitter.

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Student, 2nd year, CSE
FET HIGHLIGHTS

Automobile Engineering Highlights

HONDA 2-WHEELER FREE CHECK-UP CAMP
Automotive Training & Research Center (ATRC) under MRLC Centre of Excellence at Dept. of Automobile Engineering organized a camp titled HONDA 2-WHEELER FREE CHECK-UP CAMP on August 05, 2017 for all MREI associates during 09:00-13:00 HRS.

Following services were offered in the camp free of cost for a HONDA 2-wheeler

1. Washing of 2-wheeler
2. Engine oil level check
3. Brake adjustment
4. Clutch free play checkup
5. Air filter cleaning
6. Battery terminal checkup
7. Horn checkup

The vehicle servicing session was graced by the presence of Dr. N.C. Wachwa, Vice Chancellor, Manav Rachna International Institute of Research and Studies (MRRIRS), Dr. Krishin Kant, Executive Director & Dean - Faculty of Engineering & Technology (MRRIRS), and Prof. (Dr.) Pradeep K. Varshney, Director Manav Rachna Research, Innovation & Incubation Centre (MRLC).

INDUSTRIAL VISIT TO HONDA MOTORCYCLE AND SCOOTER INDIA PVT. LTD.
An industrial visit to Honda Motorcycle and Scooter India (Plot No. 1, Sector 3, IMT Manesar, Gurugram, Haryana 122050) was organized by the department on 30.08.2017 for 38 students of Automobile Engineering. Dr. Devendra Vashisht & Mr. Ram Pravesh accompanied the students.

The plant visit was followed by an interaction with Technical expert Mr. Rahul Verma (Section Manager quality feedback line 2 & 3 Vehicle quality) & senior official of HMSI wherein the student queries were well addressed. Few concepts and discussion like transition from BS-IV to BS-VI and Kaizen (Japanese techniques for continuous improvement) were also touched upon.

GUEST LECTURE ON "CHALLENGES IN THE AUTOMOTIVE SALES & MARKETING AND EXPECTATION OF INDUSTRY FROM STUDENTS" BY ALUMNI
The Department of Automobile Engineering, FET, Manav Rachna International Institute of Research and Studies, organized a Guest Lecture by Mr. Abhishek Kamra, Corporate Manager Sales at Jaguar Land Rover New Delhi on “Challenges in the automotive sales & marketing and expectation of industry from students” on 20th September, 2017 in the Seminar Hall, Block C from 11 AM to 12 PM.

Mr. Abhishek Kamra is an Alumni of the department shared his memories as a student here in Manav Rachna International Institute of Research and Studies, with 65 current Automobile Engineering Students of different Semesters.
GUEST LECTURE ON "REQUIREMENT FOR GETTING SELECTION IN INDIAN ARMY" BY ALUMNI
The Department of Automobile Engineering, FET, Manav Rachna International Institute of Research and Studies, organized a Guest Lecture by Captain Purushottam Sharma, from Indian Army on “Requirement for getting selection in Indian Army” on 4th October, 2017 in CUG-7 from 10:30 AM to 11:30 AM.

In his one hour presentation he showed the capabilities of the Indian army through video presentations. He explained the different technological areas on which army persons are working on. He then discussed the different opportunities available through competitions that are available for young graduates. He further explained that serving for Indian army is a voluntary service where no one compels to join this national service.

Civil Engineering Highlights

ONE DAY WORKSHOP ON "SWACHH" UNDER SWACHHATA PAKHWADA
As part of the Swachhata Pakhwada, an initiative of University Grants Commission the Department of Civil Engineering, Faculty of Engineering & Technology organised a one day workshop on 7th September 2017.
  • Cube Casting
  • Logo Making
  • Painting

Dr. Sadique Abbas, HOD, Department of Civil Engineering welcomed the gathering and gave a brief introduction to Swachh. Dr. N.C. Wadhwa our honorable VC, in his address extended his heartiest good wishes for the workshop. He talked about the ethical values Mahatma Gandhi tried to pass on to us i.e. dignity of labour and clean India.
Dr. Vivek Kumar, Associate Professor in Centre for Rural Development & Technology, IIT Delhi, delivered a talk on “Care for Surroundings – Solid waste management”. He discussed municipal waste and its management, challenges faced in this area. He discussed the history of solid waste and how it has become a menace now. The session provided an intellectual exercise on waste management. Later Mr. R.N. Malik (Retd. E&C, PHED, Haryana) gave an overview on waste management techniques, its significance and the responsibility we carry as a stakeholder to this noble cause.

ESTABLISHMENT OF AIR QUALITY MONITORING LAB
The ‘Air Quality Monitoring Lab’ has been set up at Manav Rachna Campus by Department of Civil Engineering, Faculty of Engineering and Technology (FET), Manav Rachna International Institute of Research and Studies (MRIIRS) to understand the aerosol chemistry in Delhi-NCR region.
This is a collaborative project of Manav Rachna International Institute of Research and Studies (MRIIRS, Formerly MRIU), IIT-Kanpur, IIT-Delhi, PRL Ahmedabad, and PSI Switzerland. This one-of-its-kind lab has received funding support from the Department of Science & Technology, Govt. of India. A total of 13 equipments have been deployed in the Manav Rachna campus, out of which 2 are exclusively available at Manav Rachna Campus- High Resolution Time of Flight Aerosol Mass Spectrometer (HR-ToF-AMS) and Proton Transfer Reaction-Time of Flight Mass Spectrometer (PTR-ToF-MS). Lab was inaugurated by Dr. Prashant Bhalla, President, Manav Rachna Educational Institutions (MREI) in the presence of Dr. N.C. Wadhwa, Vice Chancellor, MRIIRS; Dr. I. K. Kilar, Dean, Department of Students’ Welfare (DSW), MRIIRS; Dr. Krishan Kant, ED and Dean, FEIT, MRIIRS; Mr. V. K. Mahra, ED Quality Assurance and Enhancement; and all HODs and faculties of Manav Rachna.

INDUSTRIAL VISIT AT GEOLOGICAL SURVEY OF INDIA FARIDABAD
Department of Civil Engineering, Faculty of Engineering and Technology, Manav Rachna International Institute of Research and Studies (MRIIRS), Faridabad organized a one day visit to Geological Survey of India, Faridabad on 30th March 2018.

A group of 35 students from 4th semester along with Mr. Alham Shadab and Mr. Ramezut Tauheed proceeded to the pioneer organization. The visit coincided with the celebrations of the 167th anniversary of the organization. The students got the opportunity to interact with world class scientists in the field of earth science to quench their curiosity. Demonstrations were given about the various state-of-the-art laboratory facilities available at GSI, Faridabad, for mineral identification and characterization studies. These laboratories included X-ray diffraction analysis (XRD) laboratory, Electron Probe Micro Analyser (EPMA) laboratory, X-Ray Fluorescence Study (XRF) laboratory, Laser Ablation Inductively Coupled Plasma mass Spectrometer (LA-ICPMS) and Experimental Petrology Studies Laboratory.

Computer Science Engineering Highlights

CSE EXPERT LECTURE BY IBM ON "INTRODUCTION TO DATA ANALYTICS"
Department of Computer Science and Engineering (CSE), Faculty of Engineering and Technology, Manav Rachna International Institute of Research and Studies, organized an expert lecture by Mr. Jyoti Sahai, Chairman and Managing Director at Kavali Business Analytics. The expert lecture was held on 21st August 2017, in AS-24, MRIU campus, Faridabad.

B.Tech 1st Semester CSE (IBM Specialization-BAO) B.Tech 3rd Semester CSE (IBM Specialization-BAO) and B.Tech 5th Semester (IBM Specialization-BAO) attended the lecture. Total of 60 students attended the lecture and the expert focused on Data Analytics and Optimization techniques.

"IBM ICE (INNOVATION CENTRE FOR EDUCATION) DAY"
Under the IBM-MRIIRS academic initiative, Department of Computer Science and Engineering (CSE), Faculty of Engineering and Technology, Manav Rachna International Institute of Research and Studies, became host to an academic event called "IBM ICE (Innovation Centre for Education) Day", in association with IBM, on January 17, 2017, at its MRIU Campus, Faridabad. The objective of this event was to give the software engineers of tomorrow an edge over their peers, in the understanding and usage of industry-leading IBM enterprise class software and have one to one interaction with IBM employers and professionals.

DISTINGUISHED LECTURE BY INTERNATIONAL SPEAKER FROM MIT, US AND LAUNCH OF FEIT TECHNICAL MAGAZINE
Department of Computer Science and Engineering, Faculty of Engineering & Technology, MRIIRS in association with IEEE Computer Society, Delhi section organized a distinguished lecture on "Navigation Sensors and Systems in GNSS Degraded and Denied Environments" on 17th Nov 2017.
The Distinguished Speaker was the renowned personality from Massachusetts Institute of Technology, USA, Dr. George E. Schmidt who enriched the students and faculty members with his precious knowledge in the area of Global Navigation Satellite Systems (GNSS). He is serving MIT, USA for last 46 years. Dr. George is a receiver of NATO’s highest technical award, the von Kármán medal. He is a member of the Board of Governors of the IEEE Aerospace and Electronic Systems Society (AESS) and an avionics consultant. He is an AIAA Fellow and an IEEE Life Fellow.

Faculty of Engineering & Technology also launched its Technical Magazine “INGENIEUR SPHERE” which is intended for students and faculty members to get updated about latest technologies.

The event was graced by the presence of Dr. N. C. Wadhwa, VC, MRLIU, Dr. M. K. Soni, PVC, MRLIU, Dr. Krishna Kent, ED & Dean FET, Dr. S. S. Tyagi, Chair, IEEE Computer Society, Delhi section and professor CSE, Dr. Suresh Kumar, HoD, CSE, Dr. R. S. Tarancho, HoD, Aeronautical, and faculty members and students.

**STUDENT’S ACHIEVEMENT IN HACKTHON – 2017 (INFOSYS)**

Infosys Chandigarh Development Center organized Hackathon 2017. Team comprising of four students (Rohandeep Khurana, Dhanaajay Gambhir, Gaurav Soni and Yash Singh) from Computer Science and Engineering Department of Manav Rachna International Institute of Research and Studies, Faridabad won 2nd prize for developing Smarter Streets using AI. The objective of the event was to provide students with hands-on experience in real-time project environments. Industry best practices and frameworks. Over 136 students from 26 educational institutions participated in the two-day event hosted by Infosys at its Chandigarh campus. 34 teams participated in this competition with each team comprising 3 to 4 members. These teams developed IT solutions to the problem statement they picked during the introductory session held on 22nd July 2017 at Infosys Chandigarh campus. Infosys identified and nominated 15 employees to mentor these students at the Hackathon.

**WORKSHOP ON BIG DATA AND HADOOP**

Workshop on Big Data and Hadoop has been organized by Department of Computer Science and Engineering (CSE), Faculty of Engineering and Technology, Manav Rachna International Institute of Research and Studies, in association with Nucleus Computers Ltd. on ISO 9001:2013 Certified Company on “Big Data and Hadoop” on 13th November 2017 from 11 am to 2 pm followed by internship hiring test for 7th Semester. Mr. Abhishek having more than 10 years experience in Big data from Nucleus Computers Ltd. Addressed the students and explained them the architecture of Hadoop, Parallel computing in details. He also explained the advantages of studying courses like Big Data and Hadoop, Cloud computing. He also shared their knowledge about current demand of industries and suggested them to thoroughly do the subject like object oriented programming, operating system and database. This workshop was highly appreciated by the students.

**IEEE DAY CELEBRATION**

Department of Computer Science and Engineering, Faculty of Engineering & Technology, MRLIRS celebrated IEEE Day on 5th October 2017. Various technical events were organized for the celebration like Poster Making, Code Debugging, Technical Quiz and LAN Gaming. Around 300 students participated in the event from various colleges/universities like MRLI, NGFCET Patiala, IITM, Jankpuri. The event was graced by the presence of our chief guest Dr. K. Subramaniam, Chair, IEEE Delhi Section, Mr. Harish Maysore, Mr. Sri Chandra, Senior Member IEEE, Dr. N. C. Wadhwa, VC, MRLIU, Dr. Krishna Kent, ED & Dean FET, Dr. S. S. Tyagi, Chair, IEEE Computer Society, Delhi section and professor CSE, Dr. Suresh Kumar, HoD CSE and faculty members. Dr. K. Subramaniam delivered an expert talk and enlightened the students with latest technologies like cyber insurance, data analytics. After that cash prizes were distributed to the winners and runner-ups of the competitions.
DEBATE COMPETITION ON ‘SHOULD LETHAL AUTONOMOUS WEAPONS BE OUR UPCOMING ARMY?’
Department of Computer Science and Engineering (CSE), Faculty of Engineering and Technology, Manav Rachna International Institute of Research and Studies, organized a debate competition, Words of the Hour, on the topic ‘Should Lethal Autonomous Weapons be our upcoming Army’, on 10th August, 2017, at its MRRIS campus, Faridabad. Dr. Supriya Panda & Dr. MukeshChowla were the judges for this event. Dr. Suresh Kumar (HOD, CSE, MRRIS) also graced the occasion by his auspicious presence. While, thousands of arguments flooded the floor, the judges were influenced by a 2nd year girl of Biotechnology, Shivani Khare. She was selected as the winner and was awarded with a trophy, followed by Prejwal Katyal (Runner Up) and Jagbeer Singh (2nd runner up).

Electronics and Communication Engineering
Highlights
EXPERT TALK BY DR. SHISHUR VARMA, PROF. IIIT ALLAHABAD ON “CONFIGURING WIRELESS SENSOR NETWORK FOR IOT APPLICATIONS”
An expert talk on Configuring Wireless Sensor Network for IOT Applications was organized on 7.6.17. The speaker for the talk was Dr. Shishur Varma, Professor from IIIT Allahabad, India. His area of interest is Wireless Sensor Networks, Mobile Computing, Mobile Multimedia and Digital Signal Processing & Optical Communication Systems. Dr. Shishur Varma focused mainly on Wireless Sensor Network and gave an overview of IOT Applications. His lecture was graced with the help of presentation on the upcoming technological advancement in the field of Wireless sensor network covering all aspects of IOT Applications. The faculties were really benefitted from the vast experience of Dr. Shishur Varma and his technical knowledge.

TRENDING NEWS IN ECE – COMPETITION (CLUB EVENT)
Department of Electronics and Communication Engineering, FET, MRRIS organized a Presentation Competition in association with Institution of Engineers on 8th September 2017. The competition was open for the students of both 1st and 3rd Semester. There were 45 students who participated in the event. Total 16 presentations were given in the event. The event was judged by Dr. Deepak Batra (Associate Professor, ECE) & Dr. Sunanda Gupta (Assistant Professor, ECE). The Guest of Honour for the event was Dr. Dipali Bansal (HOD, ECE), Dr. Geeta Nijhawan (Professor Academic) and Dr. Shruti Vashist (Professor Student Welfare). The students participated with enthusiasm for the event as it was a great learning experience for them. The following students were adjudged the 1st, 2nd and 3rd prize winners and their topics of presentation were:
* 1st prize winner: Mr. Ritesh Singh & Mr. Abhishek Bhayana; Topic: Artificial Intelligence
* 2nd prize winner: Ms. Shreyas Suman & Ms. Mahima Devangan; Topic: Haptic Technology
* 3rd prize winner: Ms. Sradhya & Mr. Mayank Duggle; Topic: Artificial Vision.
INDUSTRIAL VISIT OF 5TH SEM ECE TO HUGHES SYSTIQUE GURGAON
Visit of students of 5th Semester students of Electronics & Communication Engineering Department (FET, MMRIS) Faridabad along with following faculty members organized for the exposure of the students in the field of Wireless Communication Engineering and the Industrial requirements. Interaction with Technical Head Wireless Mr. Tarun Singh. He talked about different verticals of the company and various projects in which HSC is dealing providing a glimpse of the technologies prevailing in the market.

Interaction with HR Head: Ms. Rohit Sahs. He talked about the requirements of the industry and various dos and donts to be followed to grab an opportunity in the companies like HSC.

INDUSTRIAL VISIT OF 3RD AND 5TH SEM STUDENTS TO NPTI FARIDABAD
65 Student of 3rd & 5th semester along with 2 faculty members (Dr. Vinilsh Singh & Ms. Priyanka Bansal) of Electronics & Communication department, FET, MMRIS visited NPTI on 6-9-2017. An introductory note about organization was given by Ms. Madhu Bala Kumar, Deputy Director after that Mr. N.R. Holder, Deputy Director share brief working of simulation setup in campus. Ms. Indu Maheshwari share view of electronics engineers in smart city project & shared her valuable experiences. After that demonstration and lab visits were conducted by Er. Durgasonkar Sahu.

EXPERT TALK BY DR. ZAFEERUDDIN, PROF. JMI, NEW DELHI
Department of Electronics and Communication Engineering, FET, MMRIS organized a one day expert lecture by Prof. Dr. Zafeeruddin, Jamia Millia Islamia on the topic "Linguistic Variables and its applications" on 25.9.17 for the students and faculty of ECE department at 11:30 hrs in CG-29. Dr. Zafeeruddin is Professor in the Department of Electrical Engineering, Faculty of Engineering & Technology, Jamia Millia Islamia (A Central University), New Delhi, India. He has received Indian National Science Academy (INSA), Visiting Fellowship Award for the year 2004-05 for his work with Prof. N. R. Pal in Computational Intelligence Lab., at Indian Statistical Institute Kolkata, India. He is a Fellow Member of IETE (India) and Life Member of World Federation of Soft Computing (U.S.A.), The Institution of Engineers (IE, India), and many more. He shared comprehensive introduction of Fuzzy logic, Fuzzy sets, hedges and use of Linguistic variables in Fuzzy logic and its applications. Faculty of Electronics and Communication department and about 63 students were benefited by attending this lecture.

TECHNICAL PAPER PRESENTATION
Technical paper presentation on 27.10.17 for the students of III and V sem. Students get an exposure to the recent development in Electronics & Communication Engineering which helped them in gaining knowledge regarding the current research as well as industrial requirements. The event provided a good platform for student to enhance their knowledge in ECE Domain and motivate participants to focus on their skill development. The following students were adjudged as 1st, 2nd and 3rd for their topics of presentation:

- 1st prize winner: 3rd Semester - Ms. Swati, Ms. Ritika & Ms. Deepanu; Topic: Nano particles
- 1st prize winner: 5th Semester - Mr. Vinish & Mr. Kushy; Topic: Vedic Multiplier
- 2nd prize winner: 3rd Semester - Ms. Ritu & Ms. Rishi; Topic: Fractal Antenna
- 2nd prize winner: 5th Semester - Ms. Vaishali; Ms. Shilpa & Ms. Harshita; Topic: Wireless Sensor Networks
- 3rd prize winner: 3rd Semester - Ms. Yogita & Ms. Roha; Topic: Textile Materials for the design of Wearable Antennas
Electrical and Electronics Engineering Highlights

WORKSHOP ON ADVANCED MODULAR PROGRAMMABLE LOGIC CONTROLLER (PLC)
Department of electrical and electronics engineering organized 3 day Workshop on Advanced Modular Programmable Logic Controller (PLC) from 1st - 3rd November, 2017 for students.

Experts from Mitsubishi Electric India provided the hands on training on PLC. After attending the workshop the participants were able to:
- Understand the need and advantages of Automation in Industries.
- Basic concepts and features of IQR PLC and GOT2000.
- Interface the GOT2000 with PLC.

Mechanical Engineering Highlights

WORKSHOP ON HMT LATHE
(Resource Person: Rakesh Malik Manager HMT Machine Tools)
Topic covered:
1) Introduction of machine tools.
2) Specifications of NH-22 lathe machine.
3) Types of operations performed on NH22 lathe machine.
4) Setup of parameters like RPM, Feed, Depth of cut.
5) Accessories of NH-22 Lathe Machine.

A two day workshop was successfully conducted in Manav Rachna International Institute of Research and Studies on 29th and 30th Dec-2017 by Mechanical Engineering Department in Mechanical Workshop.

Eight faculties from Mechanical Engineering Department participated in workshop.
The session was taken under the Guidance of Rakesh Malik (Manager HMT Machine Tools), Dr. Manoj Nayak H.O.D Mechanical and Mr. Pankaj shakkarwal. They discussed various tips and techniques on effective machining. They practically demonstrated all above said objectives and at the end of session all the faculties had hands on session of operating NH-22 Lathe Machine.

FACULTY DEVELOPMENT PROGRAM ON “SERVO AND VARIABLE FREQUENCY DRIVES”
Department of electrical and electronics engineering organized 5 days Faculty development program on “Servo and variable frequency drives” from 18th - 22nd December, 2017 for faculty members from Manav Rachna Educational Institutions, other institutions and industries.

Experts from MRIIRS and Mitsubishi Electric India highlighted the benefits of automation and introduced Servo and variable frequency drives to the participants gave examples and practice session on Servo and variable frequency drives.

After attending the workshop the participants were able to:
- Understand the need and advantages of Automation in Industries.
- They learnt the basic concepts and features of Servo and variable frequency drives.
- They were able to implement the various examples using PLC programming.
Biotechnology Highlights

DR. PUSHPA C. TOMAR, FACULTY IN THE DEPARTMENT OF BIOTECHNOLOGY, RECENTLY ATTENDED THE “7TH INTERNATIONAL SCIENCE CONGRESS (ISC-2017)”.

Dr. Pushpa C. Tomar, Faculty in the Department of Biotechnology, recently attended the “7th International Science Congress (ISC-2017)” which was held from 8-9th December 2017 at College of Science and Technology Rinchending, Phuentsholing, Chukha, Bhutan jointly organized by International Science Community Association and College of Science and Technology. Her paper entitled “EFFECT OF CADAVEIRNE ON PROTEIN PROFILING OF CULTURED TISSUES OF BRASSICA JUNCEA (RH-30) UNDER MULTIPLE STRESS” was accepted by scientific committee for Oral presentation in the conference. The focal theme for the conference was- Widespread Research: Strengthening Nations and Spreading Happiness.

Exttempore Competition Organized on 07.11.2017 by Club - Environ & Molecular Biosciences Research Cluster

Club ‘Environ’ of Department of Biotechnology, FET, Manav Rachna International University, Faridabad conducted exttempore extempore competition on the topic “Current trends in Biotechnology and Environmental Sciences” on 7th November, 2017. The competition saw a participation of students from B.Tech and postgraduate students of Department of Biotechnology. Students were given three minutes to speak on a topic selected from a range of topics by lottery system. The judges for the event were Dr. Manu Solanki and Dr. Rajesh Ghangal. The participants were assessed on the basis content, quality and the presentation skill. The winner of the competition is Sanjesh Sood from B.Tech V semester and runners up were Debashish Mahanta (B.Tech V Semester) and Pratik Chawla (B.Tech III semester).

Industrial Visit to Ayurvet Research Foundation for MSC and Mtech (Biotechnology) Students on 3/11/2017

The post graduate students (M. Sc. And M.Tech) of Department of Biotechnology along with Prof. Joseph Davis, Dr. Shilpa Chapadaaonkar and Dr. Rajesh Ghangal visited Ayurvet Research Foundation, R&D Centre at Goharia (Sonipat) on 3rd Nov 2017. We started from University at around 06:45 hrs, picking students from predefined pick up points and reached there at 11:30 hrs. Ayurvet Research Foundation is a Public Charitable Trust whose main branch is situated in Saha, Himachal Pradesh. It’s R & D Center which caters the need of farmers have a sole motto that is “Empowering farmers with sustainable technologies”. They basically put their emphasis on Animal health and nutrition, soil less agriculture, cultivation of medicinal and aromatic plants.

Club ‘Biotechnia’ of Department of Biotechnology, FET, Celebrated Non-Violence Week on 3 to 6 Oct 2017

Club ‘Biotechnia’ of Department of Biotechnology, FET, Manav Rachna International University, Faridabad celebrated NON-VIOLENCE WEEK on 3rd to 6th October, 2017. The event consisted of sub -events viz., Slogan writing, Poster making and Quiz competition. Nearly 100 students participated in the event. The purpose of the event was to celebrate the International Non-Violence day, which is celebrated on 2 October. The honourable judges were Dr. Abhisheka Shourie (Head, Department of Biotechnology) and Dr. Shilpa S. Chapadaaonkar (Associate Professor, Department of Biotechnology). The winners and runners up were felicitated with certificates and prizes. Shoiriya Saxena and Goldy were adjudged winners and runners up respectively in Slogan competition. In the sub event Poster making competition the first and second positions were bagged by Trisha Jain and Kritika Seth, respectively. Quiz competition, a team event saw the maximum number of participation and the winners were Hardik Grover and Komal Arora. The runners up team comprised of Gargi Parashar and Leena. Special acknowledgements to Dr. Abhisheka Shourie, Head and Associate Professor, Department of Biotechnology, FET, MRIU and Dr. Soma Patra, Incharge Club Biotechnia, Department of Biotechnology, FET, MUI and the volunteers Khushwant Singh, Gunjan Gupta, Divyansh Longoo and Abhishek Kumar for their contribution in making the event successful.
**Aeronautical Engineering Highlights**

**EXPERT LECTURE ON “TECHNOLOGY MANAGEMENT ISSUES OF INDIAN AERONAUTICS SECTOR”**

An expert lecture on the topic, “Technology Management Issues of Indian Aeronautics Sector” was delivered by Air Cmde Devender Sharma of the IAF on 11-10-2017 for the benefit of Aeronautical faculty and students. Air Cmde Sharma is a serving officer of the Indian Air Force, currently working in the Integrated Defence Staff of the Ministry of Defence, Govt. of India. He is a post-graduate in Aerospace Engineering from I.I.Sc., Bangalore, and M.S. in Defence/Strategic Studies. He has held several important assignments including R&D project of indigenous AWACS, as instructor at IAF Test Pilots School, and as a member of the evaluation team of Indian Aeronautics Infrastructure to achieve self-reliance. He is also pursuing his Ph.D. in design and development of virtual flight test-bed.

The lecture covered the analysis of growth of aeronautical sector and problems related to non-availability of technologies and special materials. Current engagements of various aeronautical organizations, both in Govt. and private sector, on the manufacture, overhaul, maintenance and development of new aeronautical systems were also discussed. This provided an opportunity to all the aeronautical faculty and students to get acquainted with the aeronautical developments and the problem areas that are causing delays in timely completion of the on-going important projects. Some of the recommendations made by the high-level committees in this regard were also briefly touched upon.

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**EDUCATIONAL VISIT TO AIR FORCE MUSEUM BY B.TECH. (AERO) STUDENTS ON 31-O8-2017**

The B.Tech. (Aero) students of 1st, 3rd and 5th semester were taken an educational visit to Air Force Museum, Palam, on 31-O8-2017. The Air Force Museum provides a unique opportunity to learn how various types of aircraft have developed during the last 7-8 decades.

It was a one day visit for a total of 14 students accompanied by one faculty member. The visit was meant to familiarize the students with various types of aircrafts of trainer, transport, fighter (both subsonic and supersonic) and bomber categories, helicopters, aero-engines and missiles, their roles, capabilities and operation. During the visit, the structural design features of various types of aircraft, aero-engines of piston type and turbine type, helicopters and missiles were explained to the students. The students were also shown the interior of a transport aircraft AN-12 including the layout of instruments and controls in the cockpit.
Many organizations collect vast amounts of customer, scientific, sales, and other data for future analysis. Traditionally, most of these organizations have stored structured data in relational databases for subsequent access and analysis. Relational database is widely used in most of the application to store and retrieve data. They work best when they handle a limited set of data. Handling real-time huge volume of data like Internet was inefficient in relation database systems. To overcome this problem the NO-SQL or Not Only SQL Database came into existence. A growing number of developers and users have begun turning to various types of non-relational, now frequently called NOSQL databases. The data structures used by NoSQL databases (e.g. key-value, wide column, graph, or document) are different from those used by default in relational databases, making some operations faster in NoSQL. Handling real-time huge volume of data like Internet was inefficient in relation database systems. To overcome this problem the NO-SQL or Not Only SQL Database came into existence. A growing number of developers and users have begun turning to various types of non-relational, now frequently called NOSQL databases. The data structures used by NoSQL databases (e.g. key-value, wide column, graph, or document) are different from those used by default in relational databases, making some operations faster in NoSQL.

MongoDB is a free and open-source, cross-platform, document-oriented database program. Now the question that might come to mind is.. Where this name does come from MongoDB? An open-source document-based database system “MongoDB” derives from the word “humongous” because of the database’s ability to scale up with ease and hold very large amounts of data. MongoDB stores documents in collections within databases (Mongo DB is non-relational database, which features the richest and most like the relational database. It supports complex data types, which uses BJSON data structures to store complex data type. It uses powerful query language, which allows most of functions like query in single-table of relational databases, and support index. High-speed access to mass data: when the data exceeds 50GB, MongoDB access speed is 10 times than MySQL. Because of these characteristics of MongoDB, many projects with increasing data are considering using MongoDB instead of relational database. Document database is not concerned about high performance read and write concurrent, but rather to ensure that big data storage and good query performance. MongoDB has two major components: Compass and Atlas. MongoDB Compass is a simple-to-use, sophisticated GUI that allows any user within your organization to visualize and explore your data with ad-hoc queries in just a few clicks — all with zero knowledge of the MongoDB query language. MongoDB Compass is a simple-to-use, sophisticated GUI that allows any user within your organization to visualize and explore your data with ad-hoc queries in just a few clicks — all with zero knowledge of the MongoDB query language. MongoDB Compass is a simple-to-use, sophisticated GUI that allows any user within your organization to visualize and explore your data with ad-hoc queries in just a few clicks — all with zero knowledge of the MongoDB query language. MongoDB Compass is a simple-to-use, sophisticated GUI that allows any user within your organization to visualize and explore your data with ad-hoc queries in just a few clicks — all with zero knowledge of the MongoDB query language.

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Out of NOSQL’s basic four categories MongoDB is under Document Database.

The attractive features that makes MongoDB distinctive are, it provides high availability with replica sets. When a primary replica fails, the replica set automatically conducts an election process to determine which secondary should become the primary. An even data distribution, because of shards (the shards are the key ranges based on which the distribution takes place). In addition, support for fixed-size collections called capped collections. This type of collection maintains insertion order.

Where does MongoDB fail?

**# No Join**

**# No transaction**

**# Working with JSON. No concept of table.**

**# There is no specified structure for records.**

### Author

Mr. Abhay Narayan Singh
Student, 2nd Year, CSE
CURRENT AFFAIRS

Facebook pledges $10 mn for community leaders

The Facebook Community Leadership Programme will offer residency, fellowship and training opportunities, as well as community leadership circles and specialized assistance on the social networking platform.

Deep-sea fish use hydrothermal vents to incubate eggs

Eggs of deep-sea skates have been discovered near the hottest type of hydrothermal vents, where super-heated water emerges out of the sea floor. These vents, called black smokers, emit dark, sulphurous plumes. Credit: Ocean Exploration Trust

German court rules Facebook use of personal data illegal

BERLIN (Reuters) - A German consumer rights group said on Monday that a court had found Facebook’s use of personal data to be illegal because the U.S. social media platform did not adequately secure the informed consent of its users.

Apple Watch shipments in Q4 2017 Surpassed Sales of Entire Swiss Watch Industry: IDC

HIGHLIGHTS
- Apple Watch shipments saw a 32 percent growth
- Apple Watch shipments hit 9 million in Q4 2017, Canalys reports
- An IDC analyst claims that Apple has become the “biggest watchmaker”

Self-Driving Trucks

Tractor-trailers without a human at the wheel will soon barrel onto highways near you. What will this mean for the nation’s 1.7 million truck drivers? 

Availability, 5 to 10 years

Reversing Paralysis

Scientists are making remarkable progress at using brain implants to restore the freedom of movement that spinal cord injuries take away.

Paying with Your Face

Face-detecting systems in China now authorize payments, provide access to facilities, and track down criminals. Will other countries follow?

The 360-Degree Selfie

Inexpensive cameras that make spherical images are opening a new era in photography and changing the way people share stories.

Reinforcement Learning

By experimenting, computers are figuring out how to do things that no programmer could teach them.

Hot Solar Cells

By converting heat to focused beams of light, a new solar device could create cheap and continuous power. Solar panels cover a growing number of rooftops, but even decades after they were first developed, the slabs of silicon remain bulky, expensive, and inefficient. Fundamental limitations prevent those conventional photovoltaics from absorbing more than a fraction of the energy in sunlight.

Hyperloop One

We came one step closer to near-supersonic speed terrestrial transport this year. Hyperloop One tested its passenger pods at the DevLoop test site in the Nevada desert — and it was a speedy success. Using electromagnetic levitation, the carbon-fibre and aluminum passenger pods travelled through the 500-meter-long concrete vacuum tubes at 150 miles per hour, taking just five seconds.

Turning pollution into power

The idea of solving both the problem of air pollution and power generation in one piece of technology is an interesting one. Researchers from the University of Antwerp and KU Leuven (University of Leuven) in Belgium have a new technological process that manages to do both of these things simultaneously. The technology allows the hydrogen gas to be stored, which can later be used as fuel.
Latest Technologies

Gene therapy for curing hereditary disorders

This is best illustrated in the case of a baby boy, who had serious immune deficiency that forced his parents to wear surgical masks and boil toys in water. They believed the only option was to get a bone marrow transplant but learned about therapy that replaced the gene that was destroying his immune system. It worked and the baby was cured.

Quantum Computers

The first thing to understand about quantum computers is that they’re not easy to explain. The upshot is that these computers, using quantum bits, can crunch very complex calculations much faster than traditional computers.

This isn’t a good thing. It’s malware that “takes control of webcams, video recorders, and other consumer devices” to wreak chaos on the Internet. “Botnets based on this software are disrupting larger and larger swathes of the Internet—and getting harder to stop.”

AR and VR

We’ve already seen some major steps forward for augmented reality (AR) and virtual reality (VR) technology in 2016. Oculus Rift was released to positive reception, and thousands of VR applications are already on the market. We also saw Pokémon Go as AR games explode with over 100 million downloads. The market is ready for AR and VR, and we’ve already got some early-stage devices and tech for these applications, but it’s going to be next year before we see things really take off. Once they do, you’ll need to be ready for AR and VR versions of practically everything—and ample marketing opportunities to follow.

Machine Learning

Machine learning has taken some massive strides forward in the past few years, even emerging to assist and enhance Google’s core search engine algorithm. But again, we’ve only seen it in a limited range of applications. Throughout 2017, I expect to see machine learning updates emerge across the board, entering almost any type of consumer application you can think of, from offering better-recommended products based on prior purchase history to gradually improving the user experience of an analytics app. It won’t be long before machine learning becomes a kind of “new normal,” with people expecting this type of artificial intelligence as a component of every form of technology.

Automation

Marketers will be mostly pleased to learn that automation will become a bigger mainstay in 2017, with advanced technology enabling the automation of previously human-exclusive tasks. We’ve had robotic journalists in circulation for a couple of years now, and I expect it won’t be long before they make another leap into more practical types of articles. It’s likely that we’ll start seeing productivity skyrocket in a number of white-collar type jobs—and we’ll start seeing some jobs disappear altogether. When automation is combined with machine learning, everything can improve even faster, so 2017 has the potential to be a truly landmark year.

Physical-Digital Integrations

Mobile devices have been slowly adding technology into our daily lives. It’s rare to see anyone without a smartphone at any given time, giving us access to practically infinite information in the real-world. We already have things like site-to-store purchasing, enabling customers to buy and pick up products in a physical retail location, but the next level will be even further integrations between physical and digital realities. Online brands like Amazon will start having more physical products, like Dash buttons, and physical brands like Walmart will start having more digital features, like store maps and product trials.

Monthly update on technology

July: Bitcoin’s big moment

Bitcoin’s future seemed in doubt when there were rival plans mid-year to tackle a slowdown in the amount of time taken to process transactions in the virtual currency. Without delving too deeply into the proposals—you can read up on Bip 91, Bitcoin Unlimited and Segwit2X. If you didn’t—a compromise deal was eventually struck to make the underlying technology, the blockchain, more efficient, but the plan fell apart before it had a chance to be fully enacted in November. That failure didn’t prevent Bitcoin’s value from bubbling higher. When the article in question was published, it was worth about $2,400 per coin.

September: iPhone X exposed

Curiously, a major leak about Apple’s iPhone X ahead of its official launch managed to attract more eyeballs to 9to5 Tech than the actual unveiling of the device itself. Details included the phone’s name, the setup process for its facial recognition technology and the inclusion of its animated emoji characters.
Family Background

Carl Friedrich Gauss was born to a poor parents at Brunswick (now Braunschweig), Germany on 30th April, 1777. His mother Dorothea Benze (1752-1839) had not received any basic education and had served as a maid servant till her marriage. His father Gebhard Dietrich Gauss (1744-1808) was an energetic, strict and conscientious man. He had very humble circumstances and worked at different capacities as a sales assistant, bricklayer and gardener. To meet both ends meal was his prime aim. He had half brother named, Johann Georg Heinrich Gauss (1769-1854) from his father’s first marriage. Gauss had extraordinary capability to solve mental arithmetic problem at a very early age. When he was 3 years old, he pointed out to his father that he is doing mistakes in the distribution of wages among the laborers working under him.

Education

Gauss received his early education (1784-1788) at St. Katherine’s Primary School of his city. He was calculated faster than the best teacher of the school, Mr. Büttner, who acknowledged his talent and spoke to his father to continue his studies. Gauss father agreed and relieved him from the evening job of spinning flax. He believed that a wealthy donor would definitely endorse his talent and provide the financial support to Gauss. At the age of 10, Gauss independently derived the Binomial Theorem. After attending primary school, he sent to Gymnasium (1788-1792) (High school) and admitted directly into the second class because of his ability towards education. Gauss was introduced to Carl Wilhelm Ferdinand, then Duke of Brunswick, who funded his education till his death in 1806. Gauss studied at Collegium Carolinum (1792-1795), Brunswick (now Braunschweig University of Technology) and completed his degree in mathematics. He mastered the books of Newton, Lagrange and Euler, and very much impressed with the principle of Newton and admired by Archimedes. Gauss was matriculated at the Gottingen University in the year 1795 and continued to be a member of that university until the summer of 1798. During his student days at Gottingen, his stay was quite comfortable, as he was availing the scholarship from the Duke, which fulfills his needs. He is not at all serious about his doctorate, which he thought he could do whenever he liked. His prime aim was to collect all his discoveries in the form of comprehensive book with the title Disquisitiones Arithmeticae - Investigations in Arithmetic. The details of it are given in the later part of the article. The book was sent to press in 1797, but due to delay in printing, it came out in 1801 by the grace of Duke of Brunswick, who supported the printing of the book. In between this, on July 16, 1799, Gauss was conferred with degree of Ph.D entitled, “Demonstratio nova theorematum omni functionem algebraicam rationalem integrum unius variabilis in factores reales primum vel secundum gradus resolvi posse” (i.e., New proof of the theorem that every integral algebraic function of one variable can be resolved into real factors (i.e., polynomials) of the first or second degree).
Gauss was an ingenious discoverer and made remarkable discoveries, which gave birth to many new disciplines of Mathematics and Science. These discoveries were kept in a diary contained 146 discoveries and most of the listed discoveries were so short that their meaning is obscure, even though they made miraculous facts. The diary was lost for 40 years after his death. Mathematical historian Eric T Bell said that if Gauss published his discoveries in time, he would advance mathematics by 50 years.

The important contributions of Gauss are as:

(I) 1792: Regular heptadecagon
In 1792, Gauss made his first significant discovery, the heptadecagon. At the time of Euclid, it was assumed that the domain of elementary geometry cannot be extended further. While studying at Göttingen University, he came out with the idea of construction of polygons. Before this, only regular 3, 5, and 15-sided polygons were constructed by using straightedge and compass only. Gauss constructed regular 17-sided figure, called the heptadecagon, by straight edge and compass alone. He developed mathematical formula to construct all regular polygons by using straight edge and compass only, and opened up the doors to the field of Galois theory. Gauss had so proud of this achievement that he wish to have the shape carved out on his tombstone, just like Archimedes tombstone had carved with a shape of sphere inside a cylinder but unfortunately, it was not fulfilled, as the stonemason said it would be difficult to carve the heptadecagon, it essentially looks like a circle. However, in Brunswick, a memorial in the honour of Gauss inscribed with the shape of heptadecagon.

(II) 1801: Disquisitiones Arithmeticae
The book was in Latin and contains the proofs of many of his earliest discoveries, which gave birth to modern number theory. At that time, there was no book on the subject, and Number theory was the favorite field of Gauss. That is what is said that "Mathematics is the queen of sciences and number theory is the queen of mathematics". The book contains 474 pages and 366 articles, divided into 7 sections. Of which, first four contain the results in the discovery of Fermat, Euler, Lagranges and Legendre anticipated by Gauss and the last three sections contain the results obtained from the discoveries of Gauss and have applications with cyclotomy. In 1965, book was translated in German by H. Moser, "Untersuchungen über höhere Arithmetik". In 1986, it was translated in English by Arthur A. Clarke, "Investigations in Arithmetic."

(III) 1809: Theoria Motus Corporum Coelestium in sectionibus conicis solem ambientium
The work Theoria Motus is divided into two books containing four sections each. The genesis of the work is to be found in the discovery of planets Ceres and Pallas. On January 1, 1801, Palermo by Piazzi (1746-1826), an Italian astronomer discovered a new heavenly body, which is very faint and looked like a star but not in a catalogue of star. He observed it for 6 weeks and concluded that it moved 3 degrees across the sky. After that, he was seriously ill with a disease named diarrhoea and by the time he recovered out, he lost it completely. Gauss came out for help and invented new method for calculating orbits to locate the last body, named as Ceres and showed that their path was almost circular. Also, he calculated the distance of the planet from the sun. Ceres was a new class of asteroid and was considered as a dwarf planet. During the process of calculating the location of the last body, Ceres, Gauss developed two very powerful mathematical methods as the method of least squares and the fast Fourier transform. These methods are still applicable in the scientific works almost after two centuries. On the same tons, Pallas was discovered after the discovery of Ceres by means of discovered by Gauss. The work contains the detailed expositions of these methods with an elaborate discussion of problems of celestial mechanics to determine the movement of planets and comets made from observations under any circumstances.

The work is translated in English by C. H. Davis in 1963, "Theory of the Motion of Heavenly Bodies Moving about the Sun in Conic Sections".

(V) 1821, 1823 and 1826: Theoria combinationis observationum erroribus minimis obnoxiae
In 1797 Gauss worked on the determination of the probable value of the unknown and came out with a fact that it is impossible to determine the probable value unless the probability of the error of representing function is not known. If function is not known, then consider such function hypothetically. In general, the probability of an error must be proportional to an exponential quantity of the form \( e^{-x^2} \).

Since 1800, he applied this method in all kinds of astronomical calculations, now known as the method of least squares, which has roots in the calculus of probability as well as the determination of exacitude of the result. The work comprises of three essays was translated in English by G. W. Stewart in 1987, "The calculation of probabilities as the basis of the Gaussian law of error propagation."

(VI) 1828: Disquisitiones generales circa superficies curvas
The theory of curved surfaces was originally the works of Euler, Cauchy, Monge and others from 18th and early 19th century. The parametric representation of the surfaces was given by Gauss through his landmark work in 1822 on the conformal representation of two surfaces on one another and in 1827 by his Disquisitiones generales circa superficies. This work contains 20 articles. He measured the curvature of the surface at a point in terms of \( E, F \) and \( G \) and their differential coefficients of first and second order. In this work, he concluded that, if be the sides of triangle with opposite angles \( c \), be the area of the triangle and be the curvature of the vertices of the triangle ABC, then the angles of a plane rectilinear triangle with \( a, b, c \) as sides are:
In 1831, Gauss applied the concept of mathematical potential theory to real-world situations. He collaborated with young physicist Wilhelm Weber, professor of Physics at Göttingen. Both of them worked together on the idea of circuit laws and magnetoism and made many discoveries as:

[1] In 1822, both Gauss and Weber, together with Jean-Baptiste Biot and François Arago, performed experiments to determine the magnetic field of the earth by using the unit of millimagnetics, grams and seconds. They showed that the earth’s magnetic field can be defined in terms of mass, length, and time. Their work provided driving force for the use of SI units. 

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This is the end of the discoveries of Gauss. The contribution of Gauss to mathematics and the physical sciences requires volumes of books to demonstate. He claimed many more achievements in his paper: 

- He discovered the first US Patent in 1835.
- He discovered the first US Patent in 1835.
- He discovered the first US Patent in 1835.

Teaching

Gauss never enjoyed teaching the students but in his later years, he started teaching students to improve the quality of students. Gauss belonged to a class in which Newton and Euler belonged, they are internationally famous for their own research. Gauss was not a great teacher, his position in the mathematical world is of good research. Lecturing did not suit him, this is the reason he could not build up the group of researchers in Mathematics. He attracted elite students at Göttingen such as Bernhard Riemann and Richard Dedekind, both were pioneers in Mathematics. During his period, Göttingen became the center of Mathematics.

AUTHOR

Dr. Vijay Kumar
Head, Department of Mathematics
ALUMNI INTERACTION

Nikita Pawar, a topper of prestigious Civil Services Examination 2011. She secured 18th rank in her maiden attempt. She is an alumnus of Department of Biotechnology (batch 2006-2010) of Manipal Institute of Technology and Management (CITM) (now Manipal International Institute of Research and Studies). She is working as an IAS officer since 2012. She is presently posted as Secretary in Tourism for Andaman & Nicobar Islands.

Query 1: Hi Nikita, it is a pleasure to talk to you. Let me take this opportunity to tell you how all your professors are proud of you.

Ans. Thank you so much for your very kind words. I am working as an IAS (Indian Administrative Service) officer since 2012. I belong to the AGMUT cadre and am currently posted as Secretary (Tourism), Andaman & Nicobar Islands. My work revolves primarily around managing the work of tourism department, proper implementation of related policies and overall regulation and supervision of tourism activities in the islands.

Query 2: Our blessings on your marriage. Please tell us how you manage the work-life balance?

Ans. Thank you. I believe that it always, for all working people, takes a lot of strength and maturity to strike the right balance between work and personal life. I have been lucky to have found a partner who is an officer like myself and therefore experiences as well as understands the challenges and hard work that our job demands on a daily basis. So, the work-life balance sort of maintains itself for most part.

Query 3: Please share some of your fondest memories when you were studying in Manipal Institute of Technology.

Ans. For me, I think the fondest memories of college are the friendships we forged during this time. The discussions, the laughter, the help & support from classmates (in making the deadline for assignments and practical files). When I walked out of college after 4 years, I was a transformed person and that is something I owe to the love, support and guidance from teachers as well as friends there.

Query 4: What was your favourite hang-out place in campus?

Ans. During our 2nd year, we spent a lot of our time in our labs. We used to spend most part of our days here learning and experimenting together. Another favourite hang-out place for us was the FET Canteen.

Query 5: Are you still in touch with your college friends?

Ans. I am in touch with a few close friends but unfortunately haven’t been able to keep in touch with most of my classmates.

Query 6: Who was your favourite professor in Department of Biotechnology?

Ans. I believe I used to be very studious and disciplined during college. I hope my professors will agree and therefore I had very good equations with all my professors. However, Sarita ma’am (Head of Department) was the one professor who was the most inspiring. Her mother-like tough love and the way she held the department together like a family is something that helped and just me but I believe all our batches tremendously. She showed more faith in our capabilities than we ourselves did and always showered us with unwavering support which gave me the confidence to go after my dreams.

Query 7: While you were an engineering student, you were also studying for IAS examination. How did you cope with the pressure then?

Ans. I started thinking about IAS at the very end of our college days. By this time, the college rigor wasn’t as much as previous semesters and also you tend to get really good at managing your time by your 4th year. As a result, I never felt like I was under any kind of pressure and could manage my preparation well. That I actually got very interested in the IAS examination syllabus and enjoyed studying was like cherry on the cake.

Query 8: Though you have not stayed with Biotechnology, how has your education helped you?

Ans. Of course the technical part of what I learned about biotechnology in college has little correlation with my work but what I found the most crucial were the skills and tools. Teaching and lab work in biotechnology have helped me immensely in my work. Finally, the faith and support shown by my professors helped me realize my true potential and achieve my goals.

Query 9: Tell us about your role model or major influencer in your life.

Ans. Although it may sound clichéd, I would say my parents are my biggest role models. The stories of the struggles they had to go through simply to attain an education have inspired me since a very young age. They are the people who taught me how to stay grounded while I took my flight of dreams.

Query 10: What is your message to our students?

Ans. First & foremost, my very best wishes to all the students & readers. I hope you are thoroughly enjoying college days and with you lots of success and happiness in your future lives. I say, learn and learn not only through books but through people and life experiences. Hear others’ stories and tell them yours. Find your dreams, things that drive you and inspire you and then give it your all. And remember, no matter what you do in future, your education is an asset like no other. Invest in it.
Call for Articles

A hearty thanks to all the students & faculty members who have contributed to the magazine by submitting their technical articles. Due to large no. of submissions, we were not able to publish all the articles. But we will try to publish in the next issue.

Articles are invited for the next issue. The articles should be authored in an original text. Plagiarism is strictly prohibited. We expect articles written at the level of the general audience. Therefore the equations and mathematical expressions within the articles are not recommended. Authors are requested to include a brief biography of 4-6 lines in their articles with high-resolution author’s photographs.

The next issue will be published in November 2018. You can submit your articles on the email id - fetmagazine@manavrrachna.edu.in by 10th August 2018.

Happy Writing!!

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Editor
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