MES COLLEGE OF ARTS, COMMERCE AND SCIENCE
DEPARTMENT OF COMPUTER SCIENCE

AAKRITI

Dr. T. G. Janardhan, Principal
Smt. Durgakala Sridhar, HOD

Principal's Message

'News' is often interpreted as information not previously known, noteworthy information about recent events, North, East, West & South and also the plural form of the word new.

Letter is a written message from one person to another.

This is a news letter from the Department of Computer Science. It is a very appropriate coincidence that this letter comes from the most relevant department in the present situation.

The inevitability of the role of computers and internet is unquestionable. It is rightly said that an illiterate person is not he who cannot read and write, but he is a person who does not know computers.

Thus, the importance of the news letter. I congratulate and wish the Department of Computer Science great success in this and all other endeavors.

Contents

Head of the Department Message

Hope this issue of our newsletter finds you healthy, following the principle of "Stay Home, Stay Safe". During the unavoidable lockdown due to COVID-19 pandemic, it is only telecom which is keeping the economic engines on. Not just economy, but even the social sectors like health and education are alive only leveraging the power and enabling nature of the telecommunications. We have been using several computer and mobile applications for educational purposes.

I would like to quote here what IEEE has reiterated "Ongoing AI efforts aim to expedite the development of a safe and effective COVID-19 vaccine, use networks to repurpose drugs for COVID-19, predict antibacterial properties of new molecules, and design machine-readable datasets of scientific literature on the novel coronavirus."

This, though, is a testing time for all stake holders of education, it provides ample opportunity to concentrate and develop in field such as:

Integrated Disease Surveillance Program (ISDP)

Health Management and Information System (HMIS)

Let us consider this as a window for upgrading and updating ourselves.

I invite you to browse through this issue of our E-Newsletter entitled "AAKRITI" and appreciate the efforts put in by our students. Happy Reading!!

Upcoming Events

IT Fest

Poster Presentation

Algorithm Enacting
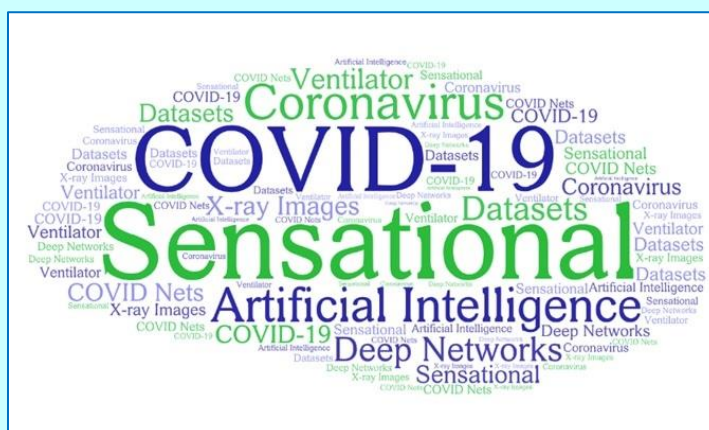
ARTIFICIAL INTELLIGENCE AND COVID-19

The question of how computers can contribute to controlling the COVID-19 pandemic is being posed to experts in artificial intelligence (AI) all over the world. AI tools can help in many ways. They are being used to predict the spread of the coronavirus, map its genetic evolution as it transmits from human to human, speed up diagnosis, and in the development of potential treatments, while also helping policy makers cope with related issues, such as the impact on transport, food supplies and travel.

But in all these cases, AI is only effective if it has sufficient examples to learn from. As COVID-19 has taken the world into unchartered territory, the "deep learning" systems, which computers use to acquire new capabilities, do not necessarily have the data they need to produce useful outputs.

By drawing on data from the field, such as the number of deaths, AI models can help to detect how many infections are in the dark. That data can then be used to inform the establishment of quarantine zones and other social distancing measures.

It is also the case that AI-based diagnostics that are being applied in related areas can quickly be repurposed for diagnosing COVID-19 infections. "Behold.ai", which has an algorithm for automatically detecting both lung cancer and collapsed lungs from X-rays, can quickly identify chest X-rays from COVID-19 patients as 'abnormal'. This instant triage could potentially speed up diagnosis and ensure resources are allocated properly.

The information derived from the news reports will be combined with other data, such as COVID-19 case reports, to give policymakers and health authorities a much more complete picture of how and why the virus is spreading differently in different countries. This is applied research in which we will look to get important answers fast.

AI can also be used to help identify individuals who might be unknowingly infected with COVID-19. Chinese tech company Baidu says its new AI-enabled infrared sensor system can monitor the temperature of people in the proximity and quickly determine whether they may have a fever, one of the symptoms of the coronavirus. In an 11 March article in the MIT Technology Review, Baidu said the technology is being used in Beijing's Qinghe Railway Station to identify passengers who are potentially infected, where it can examine up to 200 people in one minute without disrupting passenger flow." A report from the World Health Organization on how China has responded to the coronavirus says the country has also used big data and AI to strengthen contact tracing and the management of priority populations.

AI tools are also being deployed to better understand the biology and chemistry of the coronavirus and pave the way for the development of effective treatments and a vaccine. Some of the world's best-resourced software companies are also grappling with this challenge. DeepMind, the London-based AI specialist owned by Google's parent company Alphabet, believes its neural networks can speed up the often-laborious process of solving the structures of viral proteins. It has developed two methods for training neural networks to predict the properties of a protein from its genetic sequence. "We hope to contribute to the scientific effort … by releasing structure predictions of several under-studied proteins associated with SARS-CoV-2, the virus that causes COVID-19," the company said. These can help researchers to build understanding of how the virus functions and be used in drug discovery.

The pandemic has led enterprise software company Salesforce to diversify into life sciences, in a study demonstrating that AI models can learn the language of biology, just as they can do speech and image recognition. The idea is that the AI system will then be able to design proteins, or identify unknown proteins, that have specific properties, which could be used to treat COVID-19.

<div align="right">AnantVikramAditya I BSc 'F'</div>

IMPACT OF TECHNOLOGY ON COVID-19 LOCKDOWN LIFE

Technology has always been opening doors to newer opportunities and simplifying life for us. It has broken barriers and helped us re-imagine the world by making life easier and convenient, faster and flexible in so many ways. Nowhere its impact can be seen as clearly as in the context of the present times. The lockdown due to COVID -19, an unprecedented and rapidly spreading contagion, has made most governments and industry react swiftly by looking at alternative means for ensuring minimal risk is caused to protect the economy and markets.

In India too, businesses have had to turn to the use of technology to keep operational. Although technology has been a part of the sector in varied ways, in light of the current situation real estate has been forced to increase its reliance on it. Digital construction has redefined the parameters of construction in a revolutionary way. Instead of brick and mortar, it is using data to control and manage building properties through BIM, Artificial Intelligence (AI), cloud computing, reality modelling, etc. Robotics and Cognitive Automation is being deployed in place of labor to construct at a massive speed, scale and capacity, all at a lessened cost and error. This has helped in to carry on with uninterrupted work without compromising on quality and precision benchmarks and has significantly augmented productivity and operational efficiency. Drones are in extensive use to evaluate and survey sites, especially those with dangerous terrains. They are aiding the developers by expediting the process of mapping terrains and creating 2D and 3D images for precise measurements. These are also being utilized to take images of properties that buyers can view visual information, at economical costs. Given the fact that post COVID – 19 the world will have a 'new normal', real estate companies by embracing these technologies have demonstrated prudence and future readiness. They have shielded stakeholders and consumer interest from jeopardy by adopting sustainable, eco-friendly and energy efficient technology for use. These technology innovations will pave the way for successful planning of construction and project.
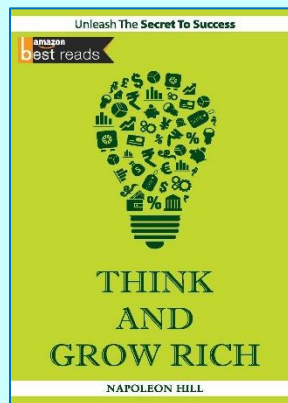
Sanjana R Nadig   I BSc 'F'

A RECOMMENDED READ

Socialization is the prime additive for one's overall growth. But now, the present condition demands us to maintain social distance to be safe from virus. We need to stay at home to escape from this dangerous corona virus. Even though it's for our good, it's hard to accept our present state. Being a student, staying at home for too long period is not an easy venture. Along with studies, we need to be preparing for our upcoming challenges. I am sharing my opinion about a book which helped me to challenge my imperfections. The book named "**Think and grow Rich**" by **Napoleon Hill** is on what am talking about.

This is a book which is suitable for all age groups. A book which can set intentions and show us the power of subconscious.

The 13 main principles mentioned in this book are:

1. Desire
2. Faith
3. Autosuggestion
4. Imagination
5. Specialized knowledge
6. Organized planning
7. Decision

8. Persistence
9. Power of the mastermind
10. The mystery of sex transmutation
11. The subconscious mind
12. The brain
13. The sixth sense

These are observed to be unrevealed steps of fortune. As I see it, am influenced by first and second principle. I feel these are the steps one should follow to be successful. This book made me realize that willpower is the essential ingredient for the costliest dish called success. When we desire for something in life, we should make it happen. Although it won't work out easily sometimes, but we should remember that it may be the test we need to write in order to prove that our desire is more stronger than the complications we face. A positive mind can solve all the problems. These are the lessons which I have learnt from this book. Title itself is the most exciting, "Think and Grow Rich" variety options are waiting outside to fit into the meaning of this title. I felt it in my own way. It is not about growing rich with money; it's about growing rich with inner development through our thoughts. Finally, I would like to end this by quoting my favorite lines from this book.

"Every Failure Brings With It The Seed Of An Equivalent Success."

Nayana S I BSc 'F'

AAROGYA SETU APP: A REVIEW

The *Aarogya Setu* app is a contact tracing app that uses your smartphone's GPS and Bluetooth and alerts you if you have been in contact with a COVID-19 positive patient as you go about your life.

Contact tracing is a physical method of tracking down infected people, then finding everyone who has been near them encouraging those people to stay home until it is clear they are not sick. Given the shortage of medical professionals and the rapid growth of COVID-19 cases, a lot of countries are switching to mobile phone based contact tracing. To give an overview, the smartphone that you carry with you will have an app that communicates with surrounding phones and creates a log of virtual IDs. If you test positive, then everyone in the log of virtual IDs on your device would be informed. Ideally, this will be limited to the region where you encountered the infected person.

How it works:

After getting the right permissions during app download, it poses a bunch of questions to you during the registration phase. The app is available in 11 languages. It requires you to enter details such as name, gender, age, location, mobile phone number and weather you have travelled to any foreign country in last 30 days. You are also requested to enable your Bluetooth and GPS for tracking to be enabled. If anyone has been in your proximity, your phone will store the anonymous Bluetooth digital id generated by that device (provided the Aarogya Setu app is also installed on that phone) and your phone id shall be stored on the phones around you. Additionally every 15 minutes, the latitude and longitude of the user are stored on the device. This information log is uploaded to NIC server along with your Digital ID. Only if you test positive for COVID-19 or if your self declared symptomsindicate that you are likely to be infected or your self assessment result is either yellow or orange. If the assessment returns green, no data is sent to the server.
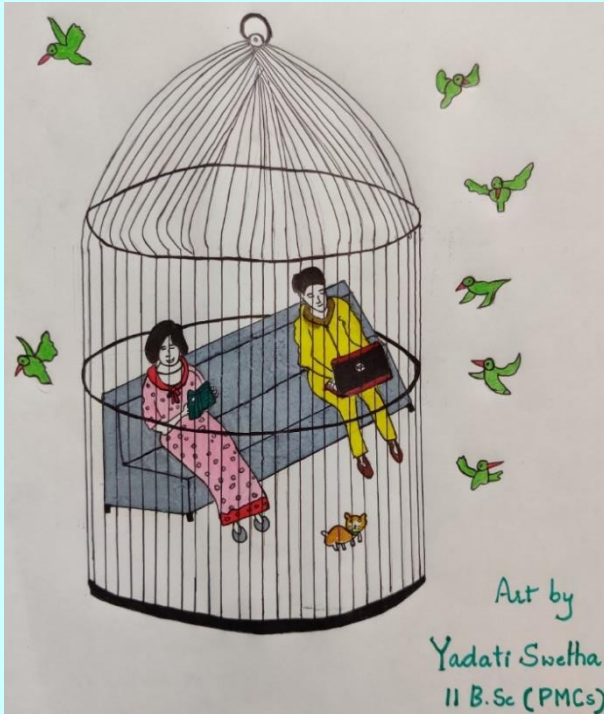
Data will be present on the mobile phone for 30 days at the very least. If you have not tested positive for COVID-19, then the data is flushed after 45 days. If you have tested positive for COVID-19, then the data will be purged after you have been cured.

Apart from all this, there are information packed pdfs about COVID-19. As mentioned earlier, the app also has a self assessment feature which lets you take an online test and determine if you have been exposed. It also lets you know the level of risk. Moreover, it gives statistics about the number of people using the app, took self assessment test, likely to get infected, tested positive etc from 500m to 10 km radius.

On 2nd May, the government made downloading and installing the app mandatory for all its employees and has requested private organizations to ensure that their employees also have installed the app. "It shall be the responsibility of the head of the respective organizations to ensure 100 percent coverage of this app among the employees", the ministry said. It is being used by 12.06 crore people.

Though, recently this app has been put in a state of doubt with many unanswered questions related to data privacy, transparency, data destruction, voluntary usage etc.

Divya TR   I BSc F

ARE WE LOSING OUR FREEDOM?

Art by
Yadati Swetha
II B.Sc (PMCs)

The pandemic Covid-19 has pushed huma unpredictable and unexpected challenges. The one-end it as environment's response towards human irresponsi lifestyle and uncontrolled exploitation of resources. The gave an opportunity for innovation, usage of existin technologies. The internet world wide web and mobile te a helping hand to overcome this.

If the internet and other computer technologies can be extended to more people, we will be able to improve economic growth, reduce the spread of Covid-19. The students will get exposer to internet with experts across the globe.

"We haven't lost our freedom, but it gave an opportunity to do things in a better way."

Yadati Swetha II BSc 'F'

TECHNOLOGY CAN CALCULATE PHYSICAL DISTANCE

- Amarjot, who is an expert in computer software technology and has set up his own software firm, Skylark Labs, has come up with a software that can assist the police maintain social distancing norms. The software can keep a hawk eye on them round the clock either through drones or CCTV cameras
- The system has capability to calculate the physical distance, as set, between two or more individuals and pass on information the police team sitting at the surveillance centre. A camera-enabled drone equipped with this software can detect the movement of human with a range up to 5 km. Similarly, it can be helpful if a CCTV camera is connected to the system

SOFTWARE TO MONITOR
SOCIAL DISTANCING

CAMERAS THAT CALL YOU OUT

The outbreak of COVID-19 Coronavirus, namely SARS-CoV-2, has created a calamitous situation throughout the world. The cumulative incidence of COVID-19 is rapidly increasing day by day and have been causing worldwide health concerns since December 2019 and continues to hit most of the sectors. The Government of India ordered a nationwide lockdown to control the spread of corona virus by breaking the cycle of transmission through social distancing. From 4 May 2020, the lockdown was eased with several relaxations in all zones per Ministry of Home Affair's guidelines. Asserting that the coronavirus will remain with us for a very long time, PM Modi said that we will not let it affect us and continue to fight against the pandemic and the only solution remains wearing masks and maintaining social distancing.

CCTV cameras can now detect if people are violating physical distancing rule on the streets. A CCTV camera installed in Vidyaranyapura's police station limits has been fitted with the first-ever social distance-monitoring AI-based system. This is a joint initiative by the Bengaluru police and Deevia software, a company which works on AI based systems based in Bengaluru. When the camera captures footage of people on the road, it will detect those spots where people are not maintaining social distance. With the audio speakers fitted to the camera, people who are standing too close to each other or crowding at a store, will be called out. The camera announces, " Violation near Honda showroom. Kindly maintain social distance." "Please maintain social distancing near Montessori school. Stay safe." It sends out targeted in both English and Kannada.

At night, the camera is programmed to turn into a curfew monitor after 7 pm. As soon as it detects more than 5 people, in the radius of 150 metres, it announces that people are violating the curfew and need to go back to their homes. Apoorva Ankad, co-founder of Deevia software, claimed that it is the first-ever application which has been developed by them to monitor social distancing in the country. He added, "As part of our contribution towards society, we have given the system free of cost to the police and they must invest in hardware like loudspeakers and CPUs. This software can be adapted to existing CCTV cameras installed by the police in the city." Deputy

Commissioner of Police (North East), Dr. Bheemashankar S Guled said, "As a trial, we first installed it at Vidyaranyapura so far it has met with our expectations." He added that the system will soon be implemented in other major junctions as well.

Siri.G II BSc 'G'

TECHNOLOGICAL BARRIER TO FACE PANDEMIC COVID-19

COVID-19 pandemic has impacted life across the globe. The information technology and other computer applications have successfully helped the human kind to overcome this situation. Though the pandemic is an indirect reflection of environmental degradation and other anthropogenic pollution sources. The lockdown has helped environment to get back to its original state or provided an opportunity to reset. The internet, mobile, computer technologies with data science have become essential to support human and economic activities. The mankind has started a brave fight with integration of technologies in their activities such as Work from home; Video conferencing; Virtual teaching; Telemedicine; Delivery through drones after an initial setback. The progress in technological developments are forming a track to recover economy, helping for more innovations virtually, and helping regulatory in dealing with this outbreak.

A time of crisis is also provided an opportunity for all of us to look into the future with more innovations or improving existing technologies, adjust to possible threats, and build our capacity. The technologies are helping to fight the current health pandemic but also in the future, they provided a path to face such health scares.

As a human if we respect nature by reducing our pollution footprint and focusing on technological advancement can direct us to overcome this panic situation, particularly, India has enormous potential for this to happen, regardless of COVID-19.

Yadati Swathi II BSc 'F'

BUZZ OF ZOOM APP : PROS AND CONS

In recent days, in this pandemic the buzz we are hearing is "The Zoom App". Everyone around world is using this app for their meetings, online classes, webinars etc. Zoom App has become the most favorite and famous tool among people during this lockdown. It has gained a lot of attention because of its user-friendly nature.

Eric Yuan, a former Cisco Webex engineer and executive founded Zoom in April 21,2011 and launched its app in 2013. Although it was founded nine years ago, it has become very popular and is being adopted all over the world in this COVID-19 Lockdown situation. In this article I will be discussing about Pros and Cons of Zoom app.

Pros:
- It is simple and easy to use.
- Screen sharing quality is excellent.
- The app is portable.
- Only the organizer/speaker can mute people, can see all the messages in chats, can create private chat and other participants can only join it.
- Audio and Video qualities are good.

Cons:
- The Cyber Coordination Centre(CCC) of the Ministry of Home Affairs has warned people that the Zoom video conferencing app for meetings is not a safe platform for government and official use ,IANS reported.
- Limit of 40 minutes meetings on free plan.
- When we open the chat box, we will be unable to watch video.
- No HD quality video support yet.
- Zoom Booming : As the Zoom meeting links are accessed publicly by anyone, it paves a way for hackers to attack on the users system or join the chat.

Pallavi K H ,III B.Sc. 'G'

Keerthana P K   III BSc 'G'

QUANTUM COMPUTING

Traditional computers operate on binary bits information processed in the form of ones or zeroes. But quantum computers transmit information via quantum bits, or qubits, which can exist either as one or zero or both simultaneously. Another interesting property of qubits is "Entanglement", which makes all these qubits behave as a single system and properties of other qubits can be changed by changing the properties of a single qubit.

A quantum gate takes in these superimposed inputs, manipulates it and produces another superposition as an output. A quantum computer, which is actually a combination of quantum gates, collapses this output into an actual sequence of 0's and 1's.Superposition enables the parallel processing to happen at a bit level instead of the sequential processing which happens in current computers, thereby drastically increasing the processing power of a computer.

These put quantum computers in a unique position to solve highly complex problems which need to run exponential number of scenarios to find solution to a problem, but take a lot of time if done on current computers. There use in solving problems in the field of protein folding and quantum simulations can lead to major scientific breakthroughs in drug discovery & research and in our understanding of the physical world.

Types of Quantum Computers and Current Development

There are 3 basic types of quantum computers: quantum annealers, analog quantum and universal quantum computers. Quantum annealers are built for specific purposes only. Most famous example of a quantum annealer is D-Wave2, a highly specialized system builds for solving optimization problems and which was bought by Google for $10 million. It is said to be around 3600 times faster than the fastest super computer present.

Analog computer contains between 50 to 100 qubits and are expected to carry a combination of tasks. The universal quantum computer is the most general and the most challenging to build. They contain approximately 100,000 qubits. IBMQ is a project by IBM to develop first commercially available quantum computer.

One of the major challenges in quantum computing is to keep the qubits completely isolated, so they are only being controlled by the laws of quantum mechanics, and not influenced by any environmental factors. Any disturbance to the qubits will cause them to leave their state of superposition also called as decoherence. If the qubits decohere, the computation will break down.

Another challenge is transferring information from the quantum processor to some sort of quantum memory system that can preserve the information so that we can then read the answer. Researchers are working on developing 'non-demolition' readouts ways to read the output of a computation without breaking the computation. This field itself is in very nascent stages. Even programming these computers is a totally different as it is to be done keeping Schrodinger's equation in mind. Lack of a definite value of a qubit makes it extremely difficult to think logically and knowledge required to program a quantum computer is going to be much different than the current requirements.

Despite these challenges there have been some significant explorations in various fields with Quantum Computing. D-Wave2 has proved the idea of quantum computers being used in complex calculations and already the company is exploring the Quantum Machine Learning. There are all the signs of the dawn of the world of quantum computing, and when it will arrive it's going to open a whole new world of unexplored ventures for us.

Kumaran Elumalai III BSc 'F'

STUDENTS NEWS:

I. IT Club conducted interclass competitions for Computer Science students on 4th Oct,2019. Following are the winners of the respective events:
   1. Code war:
      I Place: Ashwitha.S   &   Nithin.K.S of II BSc G Section
      II Place : Pallavi.K.H   &   Sanchitha.K of III BSc G Section
      III Place :   Shilpa Shree.K   &   Vidya Bai.S of II BSc G Section
   2. Power Point Presentation:
      I Place : Naveen & Santosh of II BSc J Section
   3. IT Quiz:
      I Place: Siri.G   &   Nithin.K.S of II BSc G Section
      II Place : Anirudh J Baliga   &   Brinda.S of II BSc F Section
      III Place: Chaitanya   &   Kumaran Elumulai of III BSc F Section
   4. Group Discussion:
      I Place: Pradyumna V of   III BSc F Section
      II Place : K Suresh & Vinay T of III BSc F Section
II. Poster Presentation : This was conducted on 28th Feb 2020 for I BSc F and J sections. The winners are:
      I Place: Nayana S, Niveditha M H & Likitha S of I BSc F
      II Place : Mohit Chakraborty of I BSc F
      III Place: Muskan Zoya & Navyahsree of I BSc F
III. E Poster Presentation on "World Earth Day" on 22nd April 2020 amidst Lockdown. This was conducted for I BSc G section only. The winners are:
      I Place: Ashwini, Sanjana, Ridhi and Varshitha
      II Place: Mahaboob Basha, Chethan and Bharath
IV. Pallavi KH and Sanchitha of III BSc G published a paper on " Ethical Hacking " in MES Bulletin
V. Vijay Kumar Y N of III BSc F secured 1st place in Computer Quiz on Fundamentals conducted by Federal College Of Management, Department of Computer Science on 27 May 2020
VI. Adithi H R, Nikitha Gadaiya and Siri G of II BSc G secured First place in Code name 007 contest conducted by Vijaya College.
VII. Sunil G of I BSc F won 3rd prize in General Quiz at mLAC.

FACULTY NEWS:

I. Smt R. Matheswari has been awarded Ph.D. degree from Bharthiar University.
II. Smt. Sai Sudha C Presented paper in National conference on sustainable Education in the era of Globalization, titled, "Impact of Globalization in India", held at Lal Bahadur Sastry Government First Grade College, RT Nagar on 23rd October 2019.
III. Smt. Sai Sudha C Published a paper on "A Study on Various Classification and Clustering Data Mining Algorithms" in MES Bulletin 2019.

IV. Sai Sudha C Completed 16 weeks Online Annual Refresher Course on "Curriculum Pedagogy and Evaluation for Higher Education", conducted by Swayam Arpit, 2019-2020.

V. Sajini G, "Critique on Cache Transition Techniques for Semantic Graph Parsing for optimizing Search Process using Text Mining ",International Journal of Recent Technology and Engineering (IJRTE), July 2019, ISSN: 2277-3878.

VI. Dr. R. Matheswari, "Quantized Kalman Filter-Based Pattern Matching for Detection and Tracking of Moving Objects", International Journal of Engineering and Advanced Technology (IJEAT), DOI: 10.35940/ijeat.A9839.109119, ISSN: 2249 – 8958, Volume-9 Issue-1, October 2019. B Impact Factor: 5.97(Scopus Indexed)

DEPARTMENT NEWS:

Department of Computer Science organized the following events:

I. Lecture On "TRENDS IN NETWORK SECURITY" by Prof. Shilpa Choudhary of M .S. Ramaiah Institute of Technology, Bengaluru on August 20th, 2019.

II. Conducted a seminar on Oracle Certified Java Professionals(OCJP) by Ravindra ,Ekalavya Academy on 19th Sept,2019.

III. International E-waste Day was celebrated on 11th Oct 2019: E-Waste Management Campaign was continued. A talk to emphasize the proper e-waste disposal by Ms Dakshayani, a freelance Resourcing and Training expert. Moreover, a street play was also staged by our NSS volunteers.

IV. Orientation on "Multimedia Applications" by ILMA Academy ,Bangalore on 24the Jan,2020.

V. Department of Computer Science along with Department of BioTechnology organised a One Day Workshop on "SIGNIFICANCE OF INTELLECTUAL PROPERTY RIGHTS AND INNOVATIONS IN SCIENCE STREAM" on 25th Feb 2020. This was conducted in association with
   a) Karnataka State Council for Science and Technology (KSCST)
   b) Cell for IPR Promotion and Management, IISc (CIPAM)
   c) Department for Promotion of Industry and Internal Trade
   d) Ministry of Commerce and Industry

VI. A talk on the occasion of National Science Day on 27th Feb,2020 by Dr Annapurna Patil of MS Ramaiah Institute of Technology, Bengaluru. This year theme was "Women in Science".

VII. During Lockdown , we conducted a webinar on " Introduction to Microsoft Resources" by Simran Jha of Microsoft on 21 May 2020.

Apart from the above said, we also conducted talk for the final year students, it was a guidance talk delivered by our alumni M. Anand who is currently pursuing MS in NIT Surathkal.

FACULTY MEMBERS:
1. DURGAKALA SRIDHAR
2. SAI SUDHA C
3. SHILPI DHAM
4. R MATHESWARI
5. SAJINI G
6. LAKSHMI S

Contact Us: csdeptmes@gmail.com