

**Vision**

To be one of the premier Institutes of Engineering and Management Education in the country

**Mission**

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

**Objectives**

- To achieve educational goals as stated in the vision through the mission statements which depicts the distinctive characteristics of the Institution
- To make teaching – learning process an enjoyable pursuit for the students and teachers

**Vision and Mission of the Institute****Vision**

To be a premier department of learning in Information Science and Engineering in the State of Karnataka, moulding students into 'Professional Engineers'

**Mission**

- Provide teaching-learning process that develops core competencies in Information Science and Engineering to meet the needs of the industry and higher education
- Create an environment for innovative thinking and self-learning to address the challenges of changing technology
- Provide an environment to build team-spirit and leadership qualities to succeed in professional career
- Empathize with the societal needs and environmental concerns in 'Information Science and Engineering Practices'

**Vision and Mission of the Department****Frank Wang**

“Before, the flying camera technology was limited to the military technology, but now we are able to make it affordable enough for the ordinary people”, says Frank Wang, a Chinese Billionaire who is also the founder and CEO of DJI drones, the largest manufacturer of commercial drones across the globe. What started off as a dream to build a machine that can fly autonomously, eventually led to the beginning of the Drone Era. Frank realized the commercial opportunity that lied in the product he had designed and with the help of his college, Hong Kong University, he founded the company that is today known as DJI. Today DJI is the market leader in the commercial drone market. Frank Wang’s idea of bringing drones to the masses has inspired innovation throughout the world and it wouldn’t be injustice if he is to be credited with the initiator of the Drone Era.

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And many more....



*B. N. M. Institute of Technology*

(Approved by AICTE, Affiliated to VTU, Accredited as grade A Institution by NAAC)

All UG branches - CSE, ECE, EEE, ISE & Mech.E Accredited by NBA for academic years 2018-19 to 2020-21 & valid upto 30.06.2021)

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## Message from the Editorial Team

Greeting from editorial team...!!! Ever since the first airplane took flight over 100-year ago, there have been various innovations in the field of aviation. One such recent innovation is Drone. Essentially, a drone is a flying robot that can be remotely controlled or flown autonomously through software-controlled flight plans in their embedded systems, working in consonance with onboard sensors and GPS.

Drone technology has opened up new paths of innovation for the engineering discipline as a whole. Drones are primarily unmanned and are also embedded with various sensors. This new way of interaction provides us with an efficient way to collect data about physical entities. This finds applications in various real time cases. Not only has this technology introduced a new way to collect data but also has enabled Computer Science Engineers to build better and agile Drone Systems.

Keeping the above prospects in mind, the Department of Information Science has selected Drone Technology as this semester's theme for the bi annual department newsletter Inspire. We hope that this edition of Inspire helps you in gaining insight into drone technology.

## About the Department

The Department of Information Science and Engineering was established in the year 2001 with an intake of sixty students. Since its inception, the department has forged a path of technical excellence and innovative teaching methods. The Department is comprised of highly qualified, research-oriented teaching staff, committed to instill moral values among students, in addition to providing cutting edge technical knowledge. The department has well equipped laboratories with state of the art computational facilities.

The Department regularly organizes technical talks, workshops, industry visits to nurture the core competencies of the students. The students in the Department are multifaceted, securing ranks in VTU examinations in addition to excelling in technical, sports and cultural competitions. The Department is accredited by NBA in 2018 for a period of three years from the academic year 2018-19 to 2020-21.

The Department is associated with professional bodies' viz. Computer Society of India (CSI), Institution of Engineers (IE), Indian Society for Technical Education and BITES. Two students from the Department were part of the team who bagged I prize at zonal level volley ball held at NMIT, Bengaluru held on 15<sup>th</sup> and 16<sup>th</sup> of March, 2019.



Likitha B (1<sup>st</sup> from right in the first row) and Nayana Bhat (2<sup>nd</sup> from right in the first row) of VI Semester ISE were part of the team who bagged 1<sup>st</sup> Prize in the Zonal Level Volley Ball Tournament held at NMIT, Bengaluru on 15<sup>th</sup> and 16<sup>th</sup> March, 2019



Brahma S P of IV Semester ISE (3<sup>rd</sup> from left) was part of the team who won 3<sup>rd</sup> place in TechKirti Innovation Challenge held at IIT Kanpur on 9<sup>th</sup> April, 2019.

A drone was once used to land a bottle of radioactive waste on the roof of the Japanese Prime Minister's Office.

## Drones

An Unmanned Aerial Vehicle (UAV), commonly known as a Drone, is an aircraft without a human pilot aboard. Essentially, a drone is a flying robot that can be remotely controlled or flown autonomously through software-controlled flight plans in the embedded systems, working in consonance with onboard sensors and GPS. In the recent past, these drones were majorly associated with the military. They were initially used for anti-aircraft target practice, intelligence gathering and then more controversially as weapons' platforms.



Drones are made of light composite material to be able to fly as well as maneuver. This is done to reduce the weight and increase its agility even at higher altitudes. They are equipped with different state of the art technologies such as the Infrared Cameras, GPS and Lasers. A drone is controlled by a Ground Control System (GCS) which is also referred to as the Ground Cockpit.

It is in the nose of the drones where all the sensors are present. The rest of the body contains the other drone technology systems as there is no need for space to accommodate humans. Since, the drone is a smaller robot which flies in the sky, a small, light-weight battery should be used in it. A small lithium-metal battery, half the size of a lithium-ion battery, could hold as much charge as a bigger lithium-ion battery. If a drone is equipped with a lithium-metal battery of the same size as a lithium-ion battery, then this would double the flying time of the drone.

Now, we know that drones are made up of light materials for easy flight. But, how do they actually fly?

### Vertical Motion/Lift

Drones use rotors for propulsion and control. You can think of a rotor as a fan because they work pretty much the same. Spinning blades push air down. Of course, all forces come in a pair. It means when rotor pushes down

the air, the air pushes up the rotor. This is the basic idea behind lift. A drone can do three things in the vertical plane: Hover, Climb or Descend.

### Turning/Rotating

A drone turns using a concept called "Yaw". It rotates the nose of aircraft either left or right. All the drone propellers do not spin in the same direction. If they do, the centrifugal force would cause them to just spin out of control. In order to combat that, diagonally opposing propellers spin in the same direction.

### Moving Forward/Backward

In most of the drones, the movement is achieved by using the left throttle stick either to the left or right. Pitch is the movement of drone either forward or backward. Forward Pitch is achieved generally by pushing the throttle stick forward, which makes the drone tilt and move forward, away from you.

### Motion and Speed

The throttle controls the motion of drone up and down by speeding up or slowing down all of the propellers.

I remember the time when drones had just come out. It was only used by the scientists and military bases for gathering information. These days, drones are more of a common sight. Youtuber, Casey Neistat, changed the whole vlogging concept by using this drone technology in his videos. He gave a different dimension to the monotonous vlog videos found on YouTube. Many others were also quick to hop on the bandwagon and used drones to amp up their videos. Earlier, photography and videography were done manually with the help of Cameras, but these days, capturing photos and videos with drones are more frequent than ever. I've seen drones used in marriages, as well.

- Aishwarya Suresh (IV Semester)

## Drone Technology: Flying into the Future

Algorithms and Programming Advances provide exciting possibilities for the drone industry in the next decade.

There are a few pieces of technology that excite tech lovers and the general public like drones. These unmanned aerial marvels ignite the imaginations of people the world over — and the truth is that we are

Researchers have developed drones with no moving parts, but is propelled by ionic wind.

only scratching the surface of their potential. Rather than flying playthings, drone technology is being unlocked for practical uses in aerial data and information management.



While drones have been around for a few years, algorithms and programming are only just now starting to catch up to drone capabilities, presenting exciting possibilities — not only for the next 12- month, but also the next decade.

A new eye in the Sky Drones by design allow researchers to take to the skies and capture visual information. With the right computing power and programming, this translates any landscape into a data point that can then be used in several ways. It's not all that new to pull information from the visual realm — in fact, this is already happening to a large degree when you look at image-based platforms where images and video are converted into 1s and 0s.

Drone technology, however, makes it easier to capture visual information, mine, and utilizes data through enhanced computer models.

This repeated and ongoing visual access can be seen the best out of Canada, where unmanned aerial vehicles are monitoring vegetative health. As reported in October, several industry leaders completed a 4G proof-of-concept mission in Malagash, Nova Scotia, to demonstrate a real-world application of drone technology for a project called the “Digital Vineyard of the Future”.

Global UAV Technologies provided a 4G-enabled, Procyon 800E helicopter drone platform with a specialized multi-spectral imaging payload. The company also provided pilots and engineering support for the project. As a result, the project produced

diagnostic maps used by Jost Vineyards for crop uniformity optimization, irrigation management, harvest planning and plant health information.

- Tejas S (VI semester)

## All about Drones in India

Man was always curious about the concept of flight, that led to several astonishing inventions. Though humans lack the ability to fly physically, they achieved it with the help of their capabilities of thinking. There was a light emerged out of nowhere, many aerial gadgets were invented. Among them, drones stand aloft.

Drones are also called Unmanned Aerial Vehicles (UAVs), with no human pilot onboard, instead either controlled by a person on the ground or autonomously via a computer program.



Today, drones are used as substitutes for human beings in almost every field, performing its exceptional way of handling with well advanced AI and Machine Learning.

These vehicles are now lately designed with the lithium batteries that reduces the overall weight. It means a drone may fly farther and longer on a single charge. For example, a drone surveying acres of crop land may fly for an hour instead of just 20- minute with a standard battery.

### Storyline

During WWII, Reginald Denny created the first remote controlled aircraft, called the Radioplane OQ-2.

The purpose of drone invention initially was actually target killing but later many other researches were

**The first military drone, the predator, targeted Osama Bin Laden.**

conducted to make many productive and constructive tasks.

Now, drones are used extensively over the fields of defence, agriculture, geographical survey, weather forecast. Now, drones can be used for the delivery of food and goods which is predicted to be the best way of delivery even in the major traffic crowded cities like Bengaluru. This is a unique news.

### Indian Drone Laws

According to India's National Aviation Authority, the Ministry of Civil Aviation, flying a drone is legal in India but it's better to be aware of these regulations though:



- ❖ All drones, except those in the Nano Category must be registered and issued a Unique Identification Number (UIN).
- ❖ Drones cannot be flown more than 400 feet vertically.
- ❖ Drones cannot be flown near airports, international borders, Vijay Chowk in Delhi, State Secretariat Complex in State Capitals and Military Installations.
- ❖ Permission to fly in controlled airspace can be obtained by filing a flight plan and obtain a unique Air Defence Clear (ADC) number.

Some of the **mandatory** equipments of a drone in India are:

- ❖ GPS
- ❖ Return-to-Home (RTH)
- ❖ Anti-collision light
- ❖ ID plate
- ❖ A flight controller with flight data logging capability
- ❖ RFID and SIM/No Permission No Take off (NPNT)

### What is No Permission No Take off?

Before every single flight, drone pilots are required to get request permission to fly via a mobile app, which will automatically process the request and grant or reject it. India is calling their system "No Permission, No Take off" (NPNT). If a drone pilot tries to fly without receiving permission from the Digital Sky Platform, he or she will simply not be able to take off.

### Drone Categories in India

- ❖ **Nano** : Less than or equal to 250 grams (0.55 pounds)
- ❖ **Micro** : From 250 (0.55 pounds) grams to 2 kg (4.4 pounds)
- ❖ **Small** : From 2 kg (4.4 pounds) to 25 kg (55 pounds)
- ❖ **Medium** : From 25 kg (55 pounds) to 150 kg (330 pounds)
- ❖ **Large** : Greater than 150 kg (330 pounds)

- Tejas S (VI semester)

### General Atomics MQ-9 Reaper

The General Atomics MQ-9 Reaper (sometimes called Predator-B) is an Unmanned Aerial Vehicle (UAV) capable of remotely controlled or autonomous flight operations developed by General Atomics Aeronautical Systems (GA-ASI) primarily for the United States Air Force (USAF). The MQ-9 and other UAVs are referred to as Remotely Piloted Vehicles/Aircraft (RPV/RPA) by the USAF to indicate their human ground controllers.



The MQ-9 is the first hunter-killer UAV designed for long-endurance, high-altitude surveillance. In 2006, the then-Chief of Staff of the United States Air Force General T. Michael Moseley said: "We've moved from using UAVs primarily in intelligence, surveillance, and reconnaissance roles before Operation Iraqi Freedom, to a true hunter-killer role with the Reaper."

The MQ-9 is a larger, heavier and more capable aircraft than the earlier General Atomics MQ-1 Predator. It can be controlled by the same ground systems used to control MQ-1s. The Reaper has a 950-shaft-horsepower (712 KW) turboprop engine. The greater power allows the Reaper to carry fifteen times more ordnance payload and cruise at about three times the speed of the MQ-1. The aircraft is monitored and controlled by aircrew at the Ground Control Station (GCS), including weapons employment.

In 2008, the New York Air National Guard 174<sup>th</sup> Attack Wing began the transition from F-16 piloted fighters to MQ-9A Reapers, becoming the first fighter unit to convert entirely to unmanned combat aerial vehicle (UCAV) use. In March 2011, the U.S. Air Force was training more pilots for advanced unmanned aerial vehicles than for any other single weapons system. The Reaper is also used by the United States Navy, the CIA, U.S. Customs and Border Protection, NASA and the militaries of several other countries.

The USAF operated 195 MQ-9 Reapers as of September 2016 and plans to keep the MQ-9 in service in 2030s.

**-Sarthak Sureka (VIII Semester)**

## Whizz into the Future

With the immense success of the movie 'Uri: The Surgical Strike', I am sure that drone 'Garuda' is in the minds of lots of people right now. Well, drone technology has taken the world by a storm. From defence, telecommunication, urban planning to disaster management, drones are used in almost every fields these days. "We will never get to the flying cars era. We will get to the era where we get flying drones that haul people" said Thomas Frey, a futurist and a celebrity speaker. Well, it's how the future might look like, we can only wait and see. With this, it's time to think of what the future scope of the drone technology could be,

and what advancements and applications would be there in future.

Drone technology has been used by defence organizations and tech savvy consumers for quite some time. However, the benefits of this technology extend just beyond these sectors. Global drone markets stood at over \$69 billion in 2017 and are projected to grow at CAGR of more than 11% to surpass \$141 billion by 2023. In order to list a few of various fields in which drones are advancing on are:

- **3D mapping:** Pretty soon drones are expected to take over survey through 3D mapping. Drones can take photos to create maps which offer bird's eye viewing. Those map out areas would be more efficient than a surveyor on foot.
- **Disaster Management:** Think of calamities, reaching places that are out of people's reach. They can easily be accessed using drones. With the development of heavy lifting drone, underway drones, can-do better work than helicopters in evacuating and helping people.
- **Data Transmission:** Google acquired Titan Aerospace, has been testing solar powered broad band transmission which aims to provide less expensive, less disruptive internet for all global citizens. This can ensure connectivity even in remote areas.
- **The Skyborg Program:** The US Air Force recently unveiled a conceptual design for an 'Artificial Intelligence' [AI] self-driving drone under its Skyborg program, with the primary goal to deploy a modular fighter like aircraft that can be used to quickly update and help war fighters. It has been planned to launch it in 2023.



- **Delivery:** Drones are considered the future of last-mile delivery for consumer's goods since they would reduce the cost per delivery and delivery time. On 01<sup>st</sup> December 2013, Amazon Chief Jeff Bezos revealed plans for Amazon Prime Air, a conceptual drone-based delivery system. This plan is very close to reality now. Imagine how convenient and fast this will make all the deliveries. This is similar to range delivery by drones that serve medical purposes. Zipline is one such start-up that delivers blood and vaccine supplies to African countries lacking infrastructure.

These are the only a few of the advancements in the field of drone technology. Others also include urban planning, video collection, mining and many more. Drone technology is growing every single day and slowly stepping into space. With NASA's robocraft helicopter that would be used in the mass 2020 mission. With this, drones are not just in passing phase in technology, they are here to stay. The same cost and efficiency benefits that have historically made drones attractive to the military are now applicable to a broad spectrum of business and civil functions. We are just now touching the tip of the iceberg in terms of harnessing the true power of drones. Step-by-step, we will soon be flying off into the future with the help of drones. The only thing, we should be worried about now is the air traffic!!

- Sanjana N Srinivas (IV Semester)

## How Wasps Taught Drone to Pull Harder

A drone, in technological terms, is an unmanned aircraft. Drones are more formally known as unmanned aerial vehicles or unmanned aircraft systems. Essentially, it is a flying robot that can be remotely controlled or fly autonomously through software-controlled flight plans in their embedded systems, working in consonance with onboard sensors and GPS.

In the recent past, they were mostly associated with the military, where they were used initially for anti-aircraft target practice, intelligence gathering and then as weapon platforms. Drones are now also used in a wide range of civilian roles, ranging from search and rescue, surveillance, traffic monitoring, weather monitoring and fire-fighting to personal drones and business,

drone-based photography, videography, agriculture and even delivery services.

The team of Stanford and Swiss Engineers described a new class of micro air vehicles. They dubbed FlyCroTugs to know: "How can light objects manipulate much heavier ones?". They drew inspiration from wasps, which was a novel solution to the problem.

The FlyCroTug design was inspired by wasps' ability to latch onto a surface and drag heavy prey. Since, their wings alone don't provide enough force to move heavier objects, wasps first attach themselves to a stationary object viz nearby tree or just the ground and use that leverage to drag around heavier loads and FlyCroTugs follow suit.

The drones are roughly the size of our hand and weigh just 3.5 ounces. Instead of dragging directly like wasps, the FlyCroTugs used an "end effector" to connect to a target and a cable or tether to pull on it — another strategy found in nature via Pasilobus Spiders. In order to get the drones to stick to something in their surroundings, the team outfitted the fliers with dozens of tiny fishhooks for soft fuzzy surfaces and gecko-inspired adhesive for smooth ones.

Drones are getting more sophisticated day-by-day. It means, we can do even more with them now, though sky is the limit.

-Disha Maru (IV Semester)

## Smart Drones

Drones have grown in popularity in recent years, and new models have been released lately with newer and better features. Drone hobbyist range from skill levels, but there are drones that are tailored to beginners. Some drones are equipped with a memory card that allows the user to record their footage and upload it to their computer. Drones are navigated via their channel control and transmitter; the higher the channel control, the better the user can navigate the drone at a higher speed.

### The Future of Drone Technology

Drone designers and software developers are always unleashing new possibilities. It can be hard keeping up with all the new Drone tech entering the market constantly, So to give you an idea of where we are

currently in the advancement of this technology, Here is a breakdown by generation.

- ❖ Generation 1: Basic Remote Control Aircraft of all forms.
- ❖ Generation 2: Static Design, Fixed Camera Mount, Video Recording / Still Photos, Manual Piloting Control.
- ❖ Generation 3: Static Design, 2 Axis Gimbals, HD Video, Basic Safety Models, Assisted Piloting.
- ❖ Generation 4: Transformative Designs, 3 Axis Gimbals, 1080P HD Video or Higher Value Instrumentation, Improved Safety Modes, Autopilot Modes.
- ❖ Generation 5: Transformative Designs, 360° Gimbals, 4K Video or Higher Value Instrumentation, , Intelligent Piloting Modes. Most would agree.
- ❖ Generation 6: Commercial Suitability, Safety & Regulatory Standards Based Design, Platform & Payload Adaptability, Automated Safety Modes, Intelligent Piloting Models and Full Autonomy, Airspace Aware. This is where we are with current Drone Technology, while some of the higher end professional grade Drones have started to cross into the next generation.

The same kinds of magnetometers, gyros, accelerators, GPS modules and processors as those used in our smart phones are used in modern quad copters. This technology will continue to improve and be part of the next generation of Drones known as “SMART DRONES“.



These “SMART DRONES” will have more efficient motors, better on board processors and software, more accurate sensors and built-in compliance technology for safe, effective flight control that will provide new opportunities in transport and logistics.

Recently, 3DR announced Solo, The world’s first Smart Drone, an all-in-one personal drone whose ease of use and powerful new features kick off a new aerial age. What makes it smart? Not only does Solo have the world’s most advanced autopilot system, but it also runs two 1 GHz computers. This processing power enables Solo to do amazing things that no personal drone has ever been able to do.

The main goal is to have Smarter drones with built-in safeguards, networked together to enable coordination, collaboration and real time data delivery, This will open entirely new fields of drone applications such as automatic delivery of goods or emergency services.

### **Why is this important?**

Next-generation Smart Drones could be fitted with technology that allows them to hook into the cloud-based UTM system, which would provide constant communication, navigation and surveillance, directing drones and warning them of congestion or severe weather ahead. Industrial and agricultural applications are likely to be among the first commercial drone applications that gain traction in the US.

Another growing concern is that of identifying the drone, here’s an idea, Light Cense is a new technology the uses visible color blink sequence to create an identification system. It allows the use of camera devices, like smart phones, to capture the identification code just using an app.

**- Thejaswini B (IV Semester)**

## **All you need to know about Drone Regulations**

With the advent of any new technology that becomes a part of public life, it becomes important to frame regulations governing the use of such technologies, such that its usage is only for public welfare and fair commercial purposes. It would be chaotic situation, were any technology to be used for any purpose, good or bad. The same applies to the usage of Drone Technology. Drones are slowly gaining highlight in

the public domain, with many advantages. But, with all this, arises the obvious threat of using the technology for purposes that do more harm than good. This in context to Drone Technology may include threat to security, intrusion of privacy, accidents, trespassing private property, hindrance to law enforcement, among other things. In such a scenario it becomes important to enact regulations to govern the use of Drones in public spaces primarily.

The DGCA lifted the blanket ban on the use of drones in December 2018. Along with it a few regulations which should to be followed by those operating drones were put into force. The regulations are concerning the Drones themselves and also with those who operated/flew them. Important regulations include:

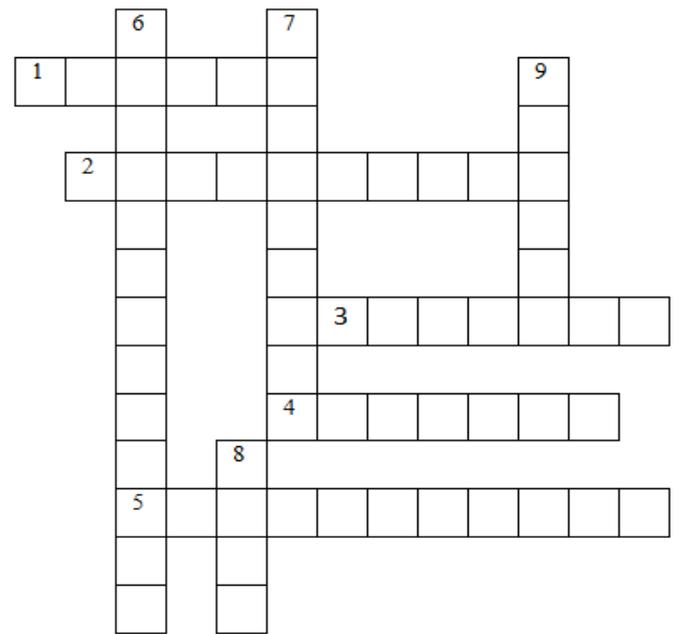
1. A Unique Identification Number (UIN), which is an equivalent of a number plate is required for all drones except drones in the Nano category (weight ≤ 250g).
2. The operators need an 'Unmanned Aerial Operator Permit' (UAOP) if the drone is being flown above 200 feet.
3. Every drone operator has to undergo training at a DGCA approved flying training organization (FTO), has to be 18-year of age and should've studied up to a minimum of class 10 in English.
4. Informing the local police 24-hour prior to flying is a must.
5. Drone operations are restricted to day and within visual line of sight.
6. A distance of 25 km distance must be maintained from the international border, LOC and Line of Actual Control. A drone should not be operated within an area of 5 km from airports, 500-mt from perimeter of strategic locations notified by Ministry of Home Affairs or from a perimeter of military installations/ facilities; within 5 km radius from Vijay chowk.

There are other regulations governing the flying of drones. Violation of regulations may attract fines and DGCA is entitled to cancel the UAOP in cases of serious violation.

If you're looking for research into this domain, beware of the regulations before you test your drone out in the open skies.

**-Rajat M Jain (IV Semester)**

## Crossword Puzzle



### Across

1. First country to develop military drone technology.
2. An aircraft equipped with 4 main rotors.
3. Series of drones developed by DJI for aerial cinematography and photography.
4. The pivoting mount that can rotate about x, y, z axes and provides stabilization and pointing of cameras.
5. Wings of the drone that lift it into the air.

### Down

6. Drones are primarily controlled by \_\_\_\_\_.
7. Tiny, wasp – inspired drone that can pull 40 times its own weight.
8. First smart drone.
9. French UAV, entirely controlled by wireless internet into Smartphone.

Answers:

Number	Word
1	ISRAEL
2	QUADROPTER
3	PHANTOM
4	GIMBAL
5	PROPELLERS
6	GROUNDCONTROL
7	PLCROTIUS
8	SOLO
9	PARROT

**-Samhitha S (IV Semester)**

## FDP on Data Analytics



The Department of Information Science & Engineering organized one week faculty development programme on “Data Analytics” in association with BITES from 21<sup>st</sup> January to 28<sup>th</sup> January, 2019. The FDP was attended by 30 participants including faculties, full time research scholars and PG students, which was organized to enlighten faculty members about most recent developments in the field of “Data Analytics” and to equip the participants with basic skills in using data analytics tools.

## Industrial Visit to Tata Consultancy Services

Industry visit to Tata Consultancy Services (TCS), Whitefield, Bangalore was organized by Department of Information Science and Engineering under “The Institution of Engineers, India (IEI)” students chapter on 05<sup>th</sup> March, 2019. Mr. Sreenivasa Ramanujam, Academic Relationship Manager from TCS spoke about the company. A talk on “IT Employability – Road Map to Success” was delivered by Mr. Vijaykumar B from Banking, Financial Services and Insurance (BFSI) unit of TCS during the visit. Twenty-two students from ISE visited TCS campus.



## IOT-Exhibition



A visit to IoT exhibition was organized by Department of Information Science and Engineering under BNMIT CSI student chapter on 28<sup>th</sup> February, 2019 at KTPO Trade Centre Whitefield industrial area Bengaluru. The three day event included 9 conferences, 18 Training courses and 06 Tutorials in various domains like Block Chain and Distributed Ledgers, Python for Data science, IoT in agriculture, Edge Analytics and Hierarchal Temporal Memory (HTM). 150 exhibitors exhibited their IoT products during the exhibition. 28 students from Department of Information Science and Engineering visited the IoT Exhibition.

## Boot Camp on Virtualization and Cloud

The Department of Information Science & Engineering organized two days Boot Camp on “Virtualization and Cloud” in association with BITES on 23<sup>rd</sup> and 24<sup>th</sup> February, 2019. The purpose of the workshop was to enlighten students about “VMware and Cloud”. The workshop was attended by 60 students of fourth semester from ECE, EEE, CSE and ISE.



## Workshop on Mobile Control Robotics



Two days workshop on Mobile Control Robotics was conducted under CSI-BNMIT student branch on 15<sup>th</sup> and 16<sup>th</sup> February, 2019 in association with Finland Labs and Revert Technology, Gurugram. BNMIT was considered as the Zonal Centre for National Level Workshop-cum-Championship Program. Sixty-Seven students from Computer Science & Engineering and Information Science & Engineering had actively participated in the workshop. The resource person was Mr. Vighnesh Shinde, Robotics & Embedded System Trainer, Finland Labs.

## Technical Talk on the Project Management and Finance

A technical talk on “The Project Management and Finance” was organized by the Department of Information Science & Engineering in association with ISTE(Indian Society for Technical Education), on 11<sup>th</sup> May, 2019. The Chief guest was Mr. Sundareshan S.D. Trainer, Techno-management Project Advisor, VQMI Certified Lead Auditor.



## Technical Talk on “The Foundation of Machine Learning”



A technical talk on “The Foundation of Machine Learning” was organised by the Department of Information Science & Engineering followed by distribution of mementos to distinction holders for III, V and VII semesters in the VTU examinations 2018-19, in association with ISTE(Indian Society for Technical Education), on 27<sup>th</sup> April, 2019. The Resource Person was Mr.Vinuth Tulasi, Member of Technical Staff, Elisity, Bengaluru. The talk was followed by distribution of mementos to distinction holders for III, V and VII semesters in the VTU examinations 2018-19. A total of 104 mementos were distributed.

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## Students' Achievements

### Technical Achievements

- Brahma S P of IV Semester was part of the team that won 3<sup>rd</sup> place in the TechKriti Innovation Challenge (TIC), Annual Technical and Entrepreneurial Festival of Students' Gymkhana, held at IIT Kanpur on 9<sup>th</sup> April, 2019.
- Srikant Kashyap, Prasanna Babu, Eshwar K G, Achyuth S K and Karthik P of VI Semester participated in the Blockchain Workshop and Hackathon held in Hubballi, on 2<sup>nd</sup> February, 2019.
- Rajat M Jain, Kaushal Kumar, Jatin Rajpal and Raghavaendran R of IV Semester won 1<sup>st</sup> place in the Winter IPL 2019, held at BNMIT.

## Sports Achievements

- Naman Chandra, Jayant Joshi and Sreehari G of IV Semester were part of the team that won three matches in VTU Cricket Tournament held at SEA College of Engineering and Technology from 6<sup>th</sup> to 12<sup>th</sup> March, 2019 and won two cricket matches held at RNSIT on 24<sup>th</sup> and 25<sup>th</sup> April, 2019.
- Jayant Joshi and Sreehari G of IV Semester were part of the team that won silver in 100×4 mtr relay held at Chennammanakere Ground on 8<sup>th</sup> May, 2019.
- Jayant Joshi of IV Semester won a bronze in 100-mtr sprint race held at Chennammanakere Ground on 8<sup>th</sup> May 2019.
- Sreehari G of IV Semester won silver in 400-mtr sprint race held at Chennammanakere Ground on 8<sup>th</sup> May, 2019.
- Bharat S of IV Semester won 1<sup>st</sup> place in All India Invitational Karate and Kobudo championship in 70-75 kgs held at Wayanad, Kerala on 1<sup>st</sup> and 2<sup>nd</sup> December, 2018.
- Likhita B and Nayana Bhat of VI Semester were part of the team that won the Zonal Level Volleyball Match, held at NMIT on 15<sup>th</sup> and 16<sup>th</sup> March, 2019.

## Cultural Achievements

- Apoorva Herle of VI Semester won 1<sup>st</sup> place in Western Vocal solo, conducted by Kalabhageerathi, BNMIT on 24<sup>th</sup> April, 2019.
- Vaishnavi T S of VI Semester won 3<sup>rd</sup> place in Light Vocal solo, conducted by Kalabhageerathi, BNMIT on 24<sup>th</sup> April, 2019.
- Hiranmayee S Dixit of VI Semester won 1<sup>st</sup> place in Light Vocal Solo, held at BNMIT on 24<sup>th</sup> April, 2019.
- Harshitha P of VI semester won 3<sup>rd</sup> place in Light Vocal Solo, held at BNMIT on 24<sup>th</sup> April, 2019.
- Sanchana S, Vaishnavi T S, Neha Rajeeva of VI Semester were part of the team that won 1<sup>st</sup> place in Group Dance, conducted by Kalabhageerathi, BNMIT on 29<sup>th</sup> April, 2019.

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**You don't need skills to fly a drone.**

Footer Facts by: Sarthak Sureka, Karthik P and Rajat M Jain