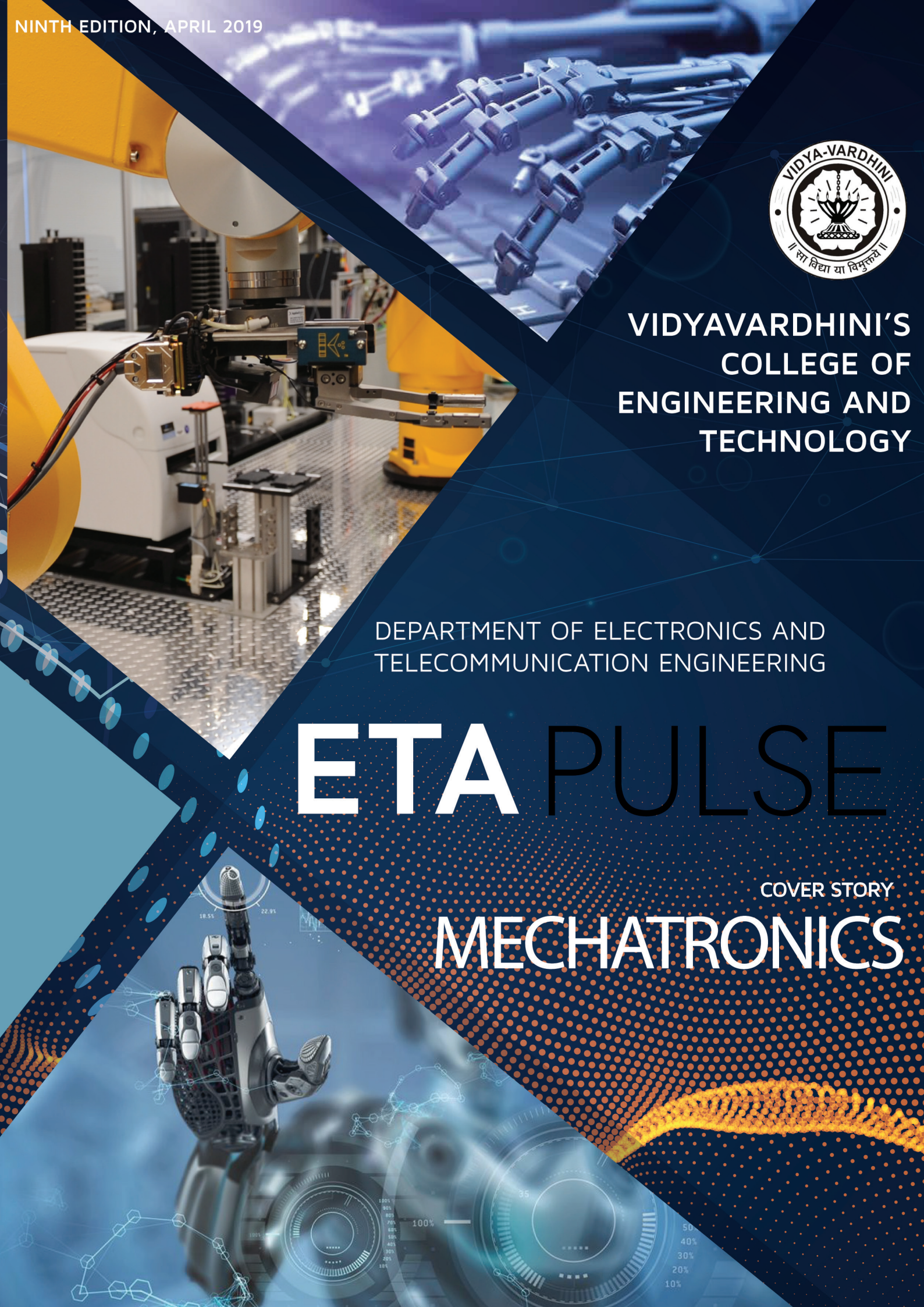VIDYA-VARDHINI
|| सा विद्या या विमुक्तये ||

VIDYAVARDHINI'S COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
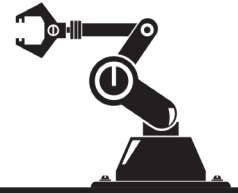
ETA PULSE

COVER STORY

MECHATRONICS

From the HOD's Desk

It is an immense pleasure to see the dynamic progress of ETA committee this year. To top it all, ETA has come up with its ninth edition of "PULSE". The PULSE this year reflects not only the emerging field of MECHATRONICS but also departmental information and student activities. It also provides an insight to the alumni details and their interviews. It has been a remarkable year for EXTC department with outstanding exam results as well as placement in various reputed companies like Infosys, TCS, Feedspot, Hexaware, LTI, Zeus Learning and Cognizant. To accrue further, IEEE students' branch and IETE students' chapter organised events like Product Showcase, FE Quiz, Oscillations and a worth reckoning National level project showcase 'VNPS'. We also arranged seminars and workshops for students and teachers to acquire knowledge beyond their realm of the academic syllabus. We also got accreditation by the NAAC for 5 Years. All this would have been impossible without the great cooperation and understanding between the staff and the students.

I would like to extend my appreciation to Mrs. Ashwini S. Katkar, the staff in-charge of ETA for doing such a great job and entire ETA team for their relentless efforts. I hope they continue excelling and growing by leaps and bounds year after year.

Dr. Vikas Gupta

HOD, EXTC Department
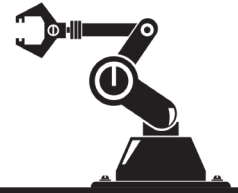
From the Staff In-charge

> **"It's not that we use technology, we live technology"**
> **- Godfrey Reggio**

I am extremely glad and proud to present the ninth edition of 'PULSE' magazine for all the readers. Change is the only constant in the world of technology. With a mission to keep the readers well aware of these changes and technological developments, departmental 'ETA' committee provides a glance to the recent technological advancements in the most precise manner. Moving forward with this trend, two informative and worth-reading newsletters had been published by 'ETA'. Also, the committee had constantly endeavoured to keep the students updated with the latest technology in the field of Science and Engineering.

PULSE'19 is centred around the theme as 'MECHATRONICS' that has been explained well by articles from 'what is mechatronics?' to 'artificial human arms and legs', explaining the journey of mechatronics from the very beginning. The magazine also includes departmental staff and students achievements. Also, I am delighted to witness the progress of students in curricular and extra-curricular activities.

I am grateful and whole-heartedly devote my sincere gratitude to our Principal Dr.Harish Vankudre for his support and our HOD Dr.Vikas Gupta for his immense guidance and motivation. I would like to appreciate the work done by our Secretary, Ms. Kalaksha Gunera and joint Secretary, Mr. Pratik Jadhav and their entire team. I would like to congratulate and thank the whole 'ETA team' for their valuable efforts.

Mrs. Ashwini S. Katkar

Staff Incharge, ETA
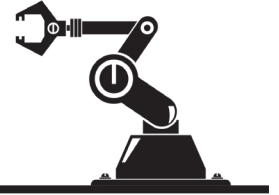
From the Secretary's desk

"Real education lies in sharing of the knowledge that one has"

Following and implementing this vision, ETA committee has always taken great efforts to expand the horizons of knowledge and education. It has provided the students with an opportunity to gain knowledge beyond their academic boundaries. It has enabled the students to not only be technologically updated but also has helped them grow as an effective professional. At the final stage of this captivating year, I take this opportunity to bring to you, PULSE 2019, the annual magazine of the EXTC Department. The magazine itself is a small world of knowledge. It revolves around the theme "Mechatronics", describing the concept, researches, applications and future of the same. It also includes achievements of staff and students, their activities, placement records and worthy alumni interviews.

I would like to offer my sincere gratitude to our respected HOD, Dr.Vikas Gupta and our staff in-charge Prof. Ashwini S. Katkar for their valuable support and guidance. I would like to thank all my dear colleagues for their relentless efforts and support in completing this edition. I wish the entire ETA team to keep working hard and excelling every year to achieve our mission following our vision.

Kalaksha Gunera

Secretary, ETA

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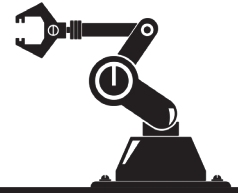
INTRODUCTION TO MECHATRONICS

Mechatronics is a term which is popping up frequently these days but it's not new. If we recognise the first reference to it, when Japanese engineer Ko Kikuchi combined the words mechanical and electronics in 1969 then it's been around 47 odd years.
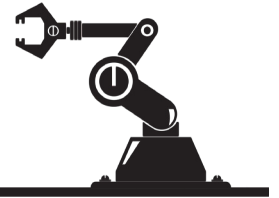
What is Mechatronics?

Mechatronics is a branch of engineering that focuses on designing, manufacturing and maintaining products that have both mechanical and electronic components. Mechatronics represents more than just mechanical and electronics fields. Many engineers refer to a drawing shown by Kevin Craig, perhaps the nation's foremost evangelist of mechatronic design consisting of four overlapping circles: mechanical systems, electronic systems, control systems, and computers.
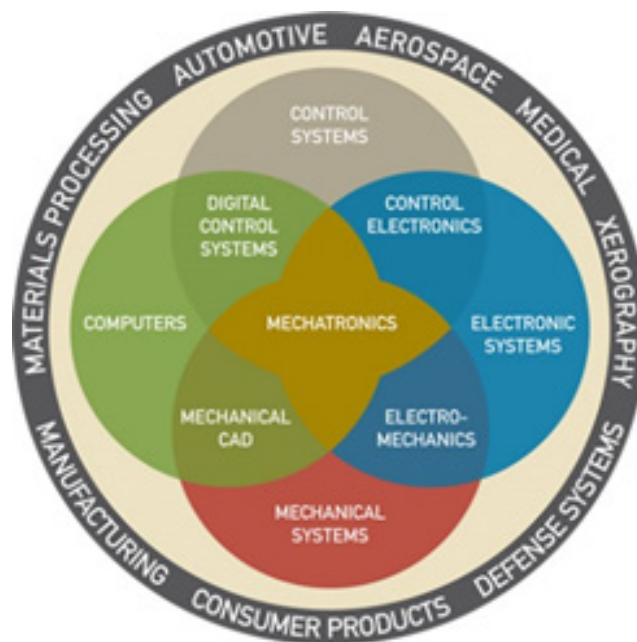
Role of Mechatronics

A mechatronics job is a mixed bag of mechanical, electronic, and computing disciplines; all rolled together in a single outfit to create simple machines that require multiple and complex machines to function. A classic example of a simple machine with complex technologies is a vehicle. The mechanical parts turn other parts; an electrical system provides the necessary energy to power the headlights and the computers and the sensors signal when all the parts should move.

Multi-discipline approach for Mechatronics

So why is it of significant importance now?

Well actually it's always been important but with IoT and the Industry 4.0 movement it's now a go to term which captures all. Mechatronics brings together an integrated approach to engineering which involves electronics, mechanical and computing disciplines. The division between electronics and mechanical engineering is now more blurred, the outcome of this is a more integrated approach to engineering in general. With the advent of Raspberry Pi and Arduino more people are learning to code and looking at wider applications through the open source approach than ever before.

So what is the scale of Mechatronics?

Mechatronics can be seen everywhere around us, from computer hard drives and robotic assembly systems to washing machines, coffee makers, and medical devices. Electronics that control mechanical systems account for much of the value of the average automobile, managing everything from stability control and antilock brakes to climate control and memory-adjust seats. A Mechatronics Engineer is very employable and more in demand than ever before. For here the field is open for Robotics, Aerospace, Motion Control, and whole host of engineering possibilities. Moving forward it won't be long before we are including Augmented Reality as a major part of the engineering mix.
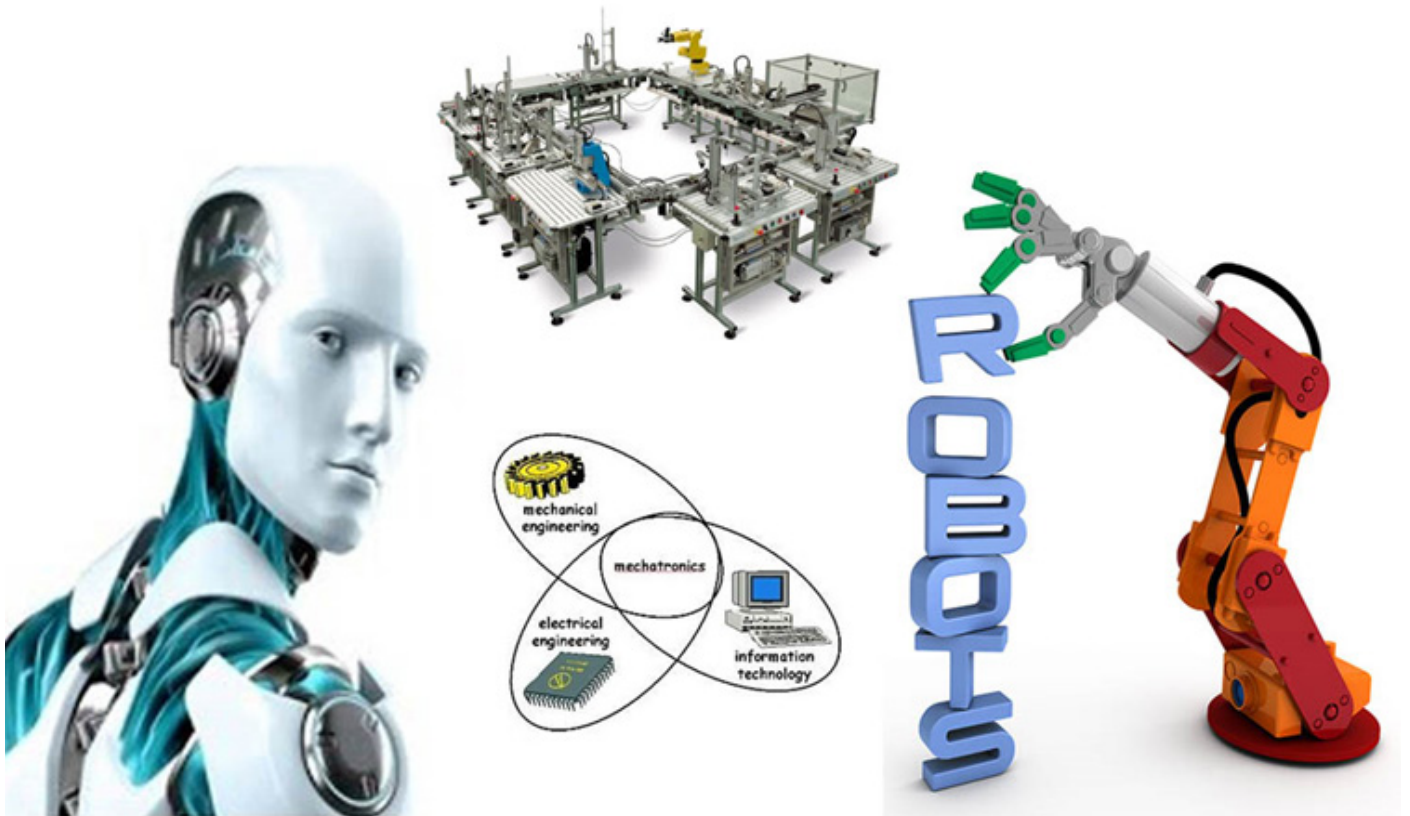
Future of Mechatronics

Our entire modern world revolves around the advancements society has made with electricity. Technological advancements continue to grow and change in ways that will no longer be noticeable by the size of the technology we create, but with the innovative ideas we are able to make into realities. Mechatronics is a field that opens the door to possibilities of new breakthrough ideas that have the potential to change day-to-day life. While technology and the future have been envisioned in a lot of different ways, futurists with tech companies are provided with the tools to see what the world will look like in 10 or 15 years, and of course, there are many technological developments just down the road.

- Pratik Jadhav (BE)

Ref: https://www.asme.org/engineering-topics/articles/mechatronics/mechatronics-and-the-role-of-engineers
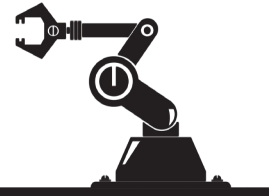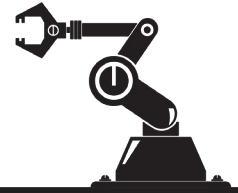
ROBOTICS AND MECHATRONICS

Merriam Webster defines robotics as technology dealing with the design, construction and operation of robots in automation, and a robot is a device that automatically performs complicated, often repetitive tasks. On the other hand, Mechatronics is a superset of robotic technologies. The discipline is a study of interactions between mechanical systems, electrical systems and control theory. It covers a diverse field of electro-mechanical systems, from simple on/off controls to sophisticated robotic systems.

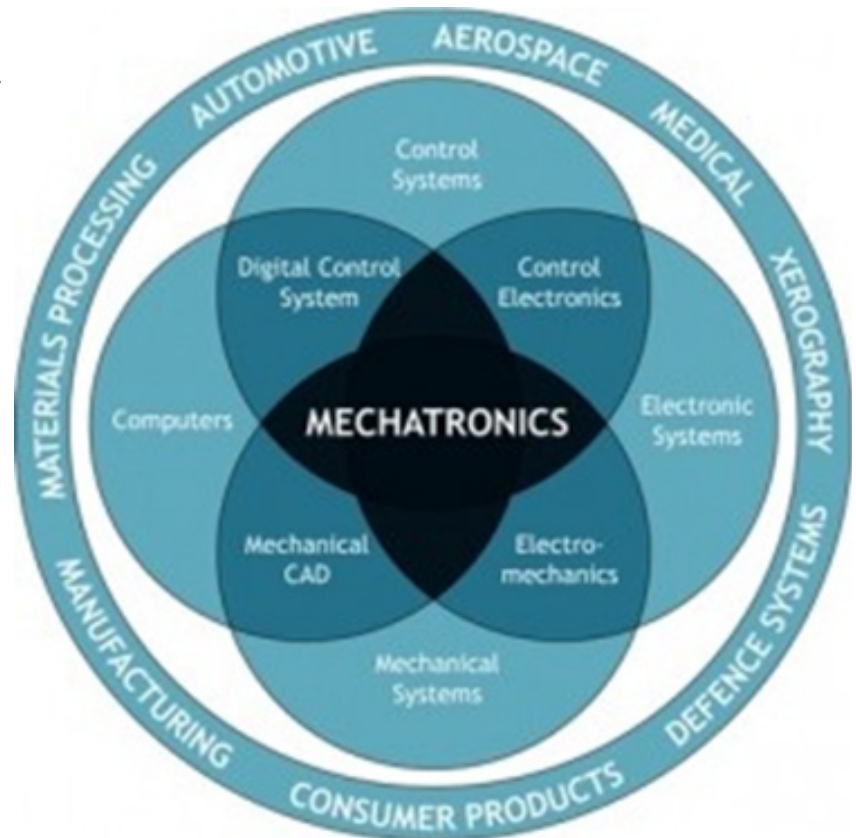The finite difference between mechatronics and robotics is that robotic systems are re-programmable. Robotic technologies include Universal Robots collaborative robots and Otto Motors self-driving vehicles. The meeting point between robotic and mechatronic is automation.

- Sakshi Dhanmeher (TE)

Ref: https://electronics360.globalspec.com/article/13014/robotics-vs-mechatronics-knowing-the-difference
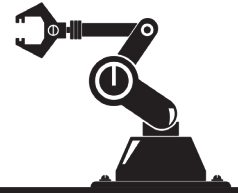
MECHATRONICS AND INTERNET OF THINGS

This article is presented to enlighten the readers with a discussion of the Internet of Things (IoT) in the control and operation of mechatronic systems especially in a manufacturing situation. In a factory environment, there are two additional considerations to the usual systems and software design factors. These are first, company confidentiality and privacy, and secondly the hostile operating environment that causes frequent data outages and communication problems. Both of these are sometimes ignored or down-played by designers and proponents of real-time IoT devices. It is very easy to be swept along in the vogue of commercial cloud-based data repositories, analytics and visualization, and off-site software as part of the factory of the future. Of course, any mechatronic system has the same features and flaws as a factory, which is used throughout as exemplar. The real question is, should designers relegate information services to an unknown mega-source in any real-world mechatronic system be it industrial, medical or transportation oriented? While the cloud may provide a more abstract, secure environment for larger systems, should a remote cloud application take be authorized to take over the controls of a nuclear power plant or be able to handle an aircraft flying under duress or an automobile speeding towards a blocked intersection? Many authors have written on the lights out the factory and the factory of the future, where the whole industrial operation from start to finish is accomplished without human intervention.

- Shrishti Shetty (BE)

Ref: https://www.omicsonline.org/proceedings/aspects-of-mechatronics-and-the-internet-of-things-81951.html

MECHATRONICS AND PRODUCTION ENGINEERING

Mechatronics seems to be some grey area for what does and fall under that umbrella term. In short, mechatronics is a term that applies to a wide variety of engineering fields—including mechanical engineering, electrical engineering, telecommunications engineering, control engineering and computer engineering.
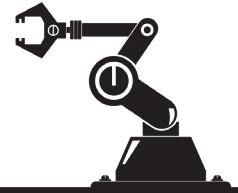
How does mechatronics benefit production?
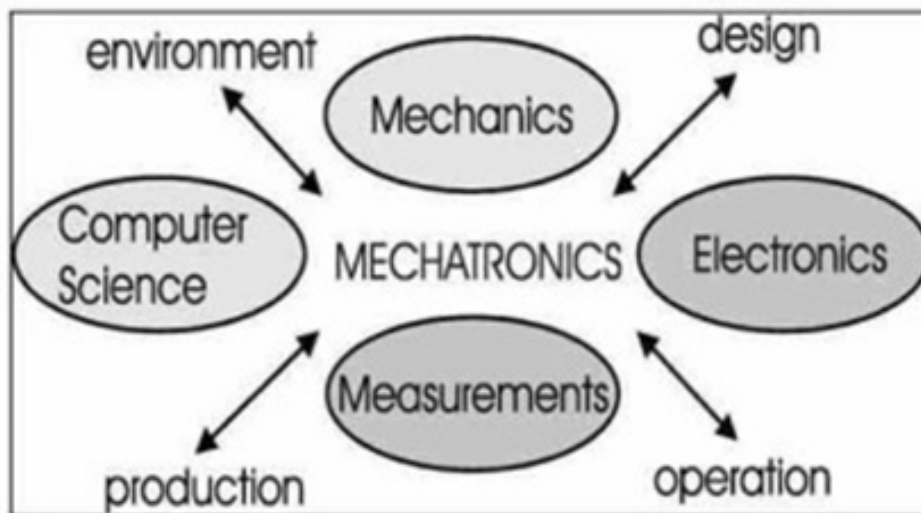
As mechatronics becomes a more obvious and necessary outlet for the engineering field, it will continue to expand the manufacturing market as well. The production field is experiencing a skills gap, as more and more jobs with higher required skills open up and there aren't enough qualified people to employ them. Mechatronics provides the bridge manufacturing needs, by combining engineering in its various forms with technical and mechanical skills. Engineers can use classes in mechatronics to cross over into manufacturing with ease.

In fact many institutions and even high schools are offering introductory or advanced mechatronics programs with this thought in mind. Early exposure is great, as it introduces students to potential fields in manufacturing, electronics and engineering that they might not have considered before.

For example, in New Jersey there are mobile labs that act as training for both county colleges and businesses to use around the state. These mobile labs act as training centers for metal fabrication, electrical systems, precision gauging and mechatronics.

- Jahnvi Mehta (BE)

APPLICATIONS

As the human civilization makes great strides in technological advancements, the industries has experienced a big boost with the introduction of this new automation concept. Mechatronics is becoming a popular way for companies to produce goods with the quality and speed modern consumers have come to expect. Let's take a look at some of the applications of mechatronics:
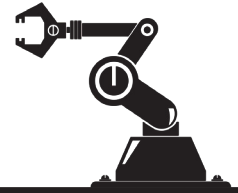
1. MACHINE VISION

Machine vision is the ability of a computation machine to "see." Machine vision is the technology used to provide imaging-based automatic inspection and analysis for such applications as automatic inspection, process control, and robot guidance, usually in industry. Machine vision encompasses all industrial and non-industrial applications in which a combination of hardware and software provide operational guidance to devices in the execution of their functions based on the capture and processing of images. Though industrial computer vision uses many of the same algorithms and approaches as academic/educational and governmental/military applications of computer vision, constraints are different. It attempts to integrate existing technologies in new ways and apply them to solve real world problems.

Where human vision is best for qualitative interpretation of a complex, unstructured scene, machine vision excels at quantitative measurement of a structured scene because of its speed, accuracy, and repeatability. For example, on a production line, a machine vision system can inspect hundreds, or even thousands, of parts per minute. A machine vision system built around the right camera resolution and optics can easily inspect object details too small to be seen by the human eye.
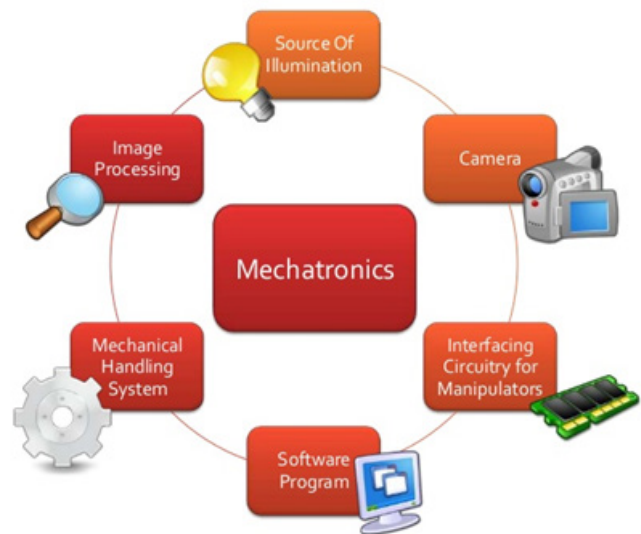
Many alternatives often exist varying from moving products to moving cameras or lasers, all with its specific advantages and limitations. The mechatronics design is a communicating vessel with the optical design and the technical specification of the customer, together with cost; practical feasibility and maintainability determine the design.

Some of the uses:

.   Visual object tracking
.   Object recognition
.   Automated inspection, sorting
.   Pattern recognition

-Remia Ayub (BE)

Ref: https://en.m.wikipedia.org/wiki/Machine_vision
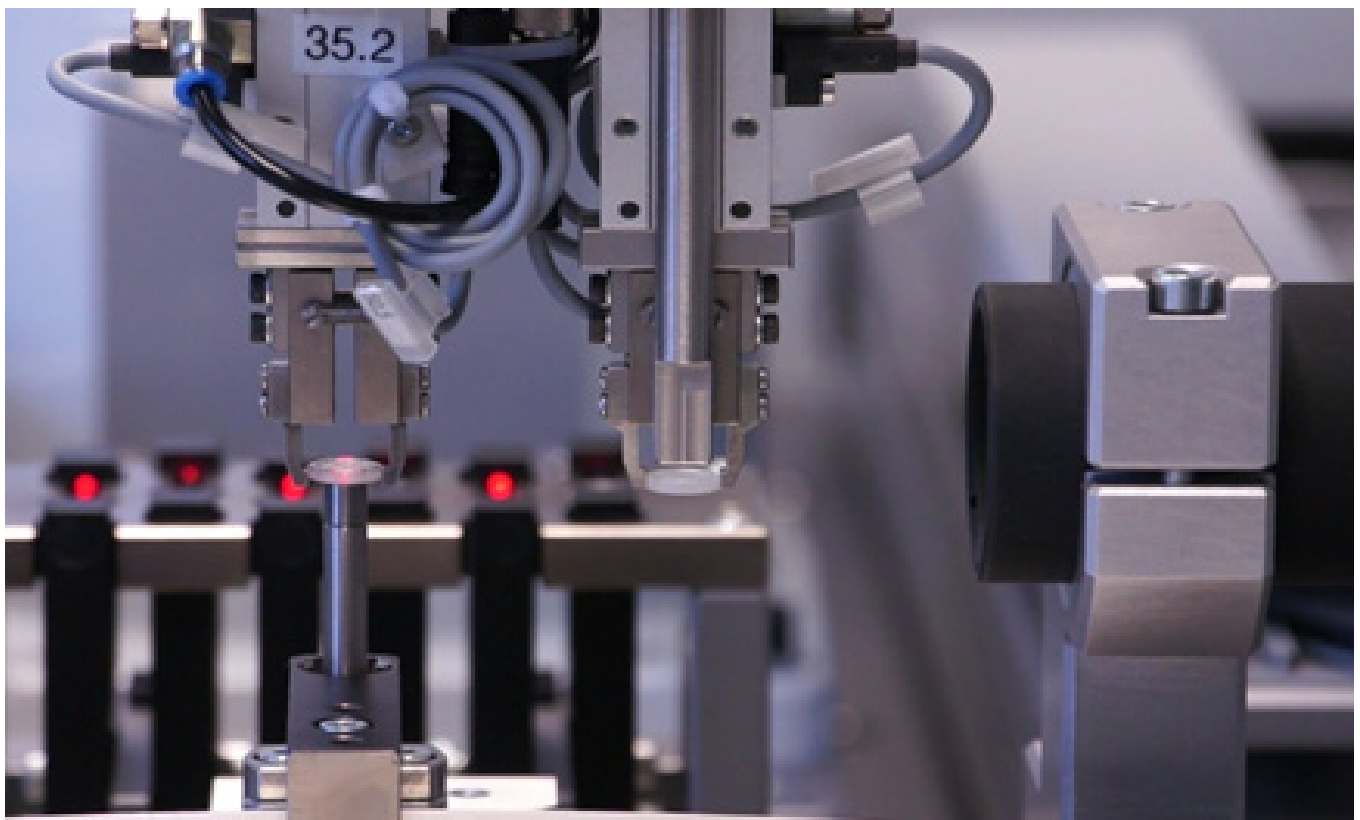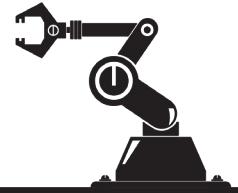
2. AUTOMATION AND ROBOTICS

Automation has been achieved by various means including mechanical, hydraulic, pneumatic, electrical, electronic devices and computers, usually in combination. The benefit of automation includes labor savings, savings in electricity costs, savings in material costs, and improvements to quality, accuracy and precision. Below are some of the most notable uses and benefits of mechatronics in advanced manufacturing:

Saving time: An integrated production line is much faster in operation as compared to a system with different engineering concepts detached from each other. It saves a lot of time when products are imaged, sorted, measured, and recorded as they move in a belt as opposed to doing it in different stages and locations.

Increase in output: A fast system means a good uptick in the production capacity. Mechatronics has made
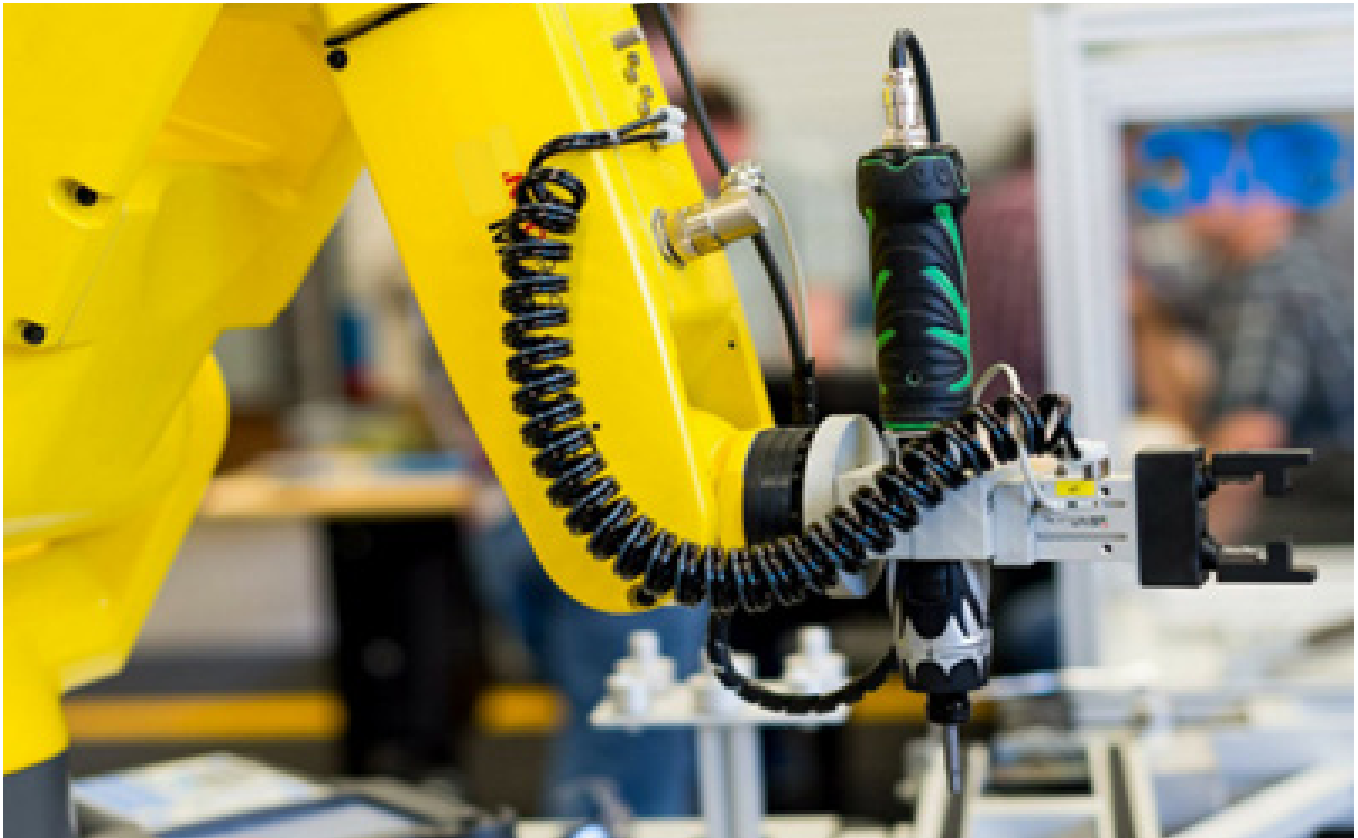
it easy to manufacture mass amounts of products.

It's more cost-effective: When you have an automated production line at work, it means that you have used less manpower. That translates into savings in terms of labor costs. Besides that, an automated system is more efficient in operation, with less technical and input errors.

- Saili Sakpal (TE)
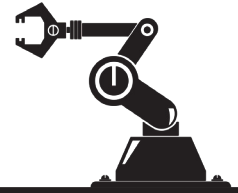
3. SENSING AND CONTROL SYSTEMS

A manufacturing process is only good if the end products come out in the right shapes, sizes, weight, and quality. In that case, installing intelligent sensors, testing and calibration systems at the required points goes a long way in ensuring that. All this falls within the realm of mechatronics.

Sensors represent an indispensable element in modern mechatronic systems. Sensors are applied in mechatronic systems for a variety of reasons. A non-exhaustive list of sensor usages includes: Data acquisition, monitoring and recording

Failure detection and health monitoring
Identification and state estimation
Decision making and control.
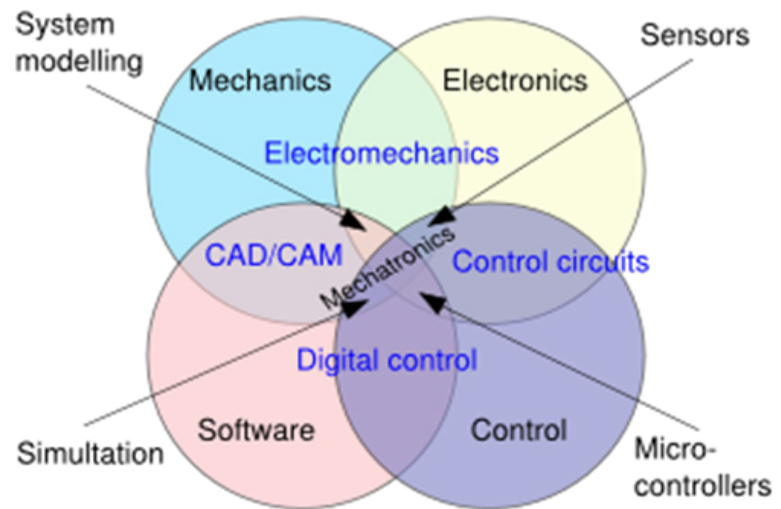
A part from these, Mechatronics is widely used in our day to day lives. Be it contact-free magnetic bearings, digitally controlled combustion engines, robots, automated guided vehicles or other machine tools, mechatronics is present everywhere. Some of its day to day applications

- It is used in home appliances such as dish washer and washing machines.
- It is used in laser optical systems. It is a part of the image and sound processing devices such as sound operators and automatic focusing device.
- Mechatronics is also used in intelligent measuring devices like calibration devices.
- Mechatronics is used in the medical field as well. Many medical applications such as magnetic resonance, ultrasonic probes, and arthroscopic devices use mechatronics.
- It is used in automation like automatic air conditioning systems, security system, and automatic door systems. It is also used in pressure, heat and position control systems.
- It is widely used in aeronautics engineering for unmanned aerial vehicles.
- In the defense industry, it is used for automatically guided vehicles and mine detection robots.

- Omkar Chaudhari (SE)

Ref: https://nptel.ac.in/courses/112103174/module3/lec4/1.html
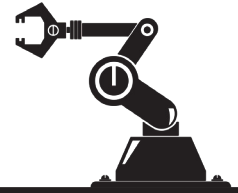
BIO-MECHATRONICS

Bio-mechatronics is the interdisciplinary study of biology, mechanics, electronics and control. It focuses on the research and design of assistive, therapeutic and diagnostic devices to compensate (partially) for the loss of human physiological functions or to enhance these functions.

How it works?

Bio-mechatronics mimics how the human body works. For example, four different steps must occur to be able to lift the foot to walk. First, impulses from the motor centre of the brain are sent to the foot and leg muscles. Next the nerve cells in the feet send information, providing feedback to the brain, enabling it to adjust the muscle groups or amount of force required to walk across the ground. Different amounts of force are applied depending on the type of surface being walked across. The leg's muscle spindle nerve cells then sense and send the position of the floor back up to the brain. Finally, when the foot is raised to step, signals are sent to muscles in the leg and foot to set it down.

1. Biosensors:
Biosensors are used to detect what the user wants to do or their intentions and motions. In addition biosensors receive information about the limb position and force from the limb and actuator.

2 Mechanical sensors:
They measure information about the biomechatronic device and relate that information to the biosensor or controller.

3. Controller:
It relays the user's intentions to the actuators and interprets feedback information to the user that comes from the biosensors and mechanical sensors; controls the biomechatronic device's movements.

4. Actuator:
It is an artificial muscle. Its job is to produce force and movement. Depending on whether the device is orthotic or prosthetic the actuator can be a motor that assists or replaces the user's original muscle.
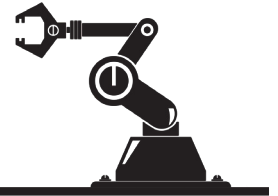
RESEARCHES

Three main areas are emphasized in the current researches are ;
1.Analyzing human motions, which are complex, to aid in the design of biomechatronic devices
2.Studying how electronic devices can be interfaced with the nervous system.
3.Testing the ways to use living muscle tissue as actuators for electronic devices

The demand for biomechatronic devices are at an all-time high and show no signs of slowing down. With increasing technological advancement in recent years, biomechatronic researchers have been able to construct prosthetic limbs that are capable of replicating the functionality of human appendages. Such devices include the "i-limb", developed by prosthetic company Touch Bionics, the first fully functioning prosthetic hand with articulating joints, as well as Herr's PowerFoot BiOM, the first prosthetic leg capable of simulating muscle and tendon processes within the human body. Biomechatronic research has also helped further research towards understanding human functions. Researchers from Carnegie Mellon and North Carolina State have created an exoskeleton that decreases the metabolic cost of walking by around 7 percent.

Biomechatronic devices encompass a wide range of applications from the development of prosthetic limbs to engineering solutions concerning respiration, vision, and the cardiovascular system.

- Kalaksha Gunera (BE)

Ref: https://en.wikipedia.org/wiki/Biomechatronics
     https://www.utwente.nl/en/education/master/programmes/systems-control/specialization/biomechatronics/
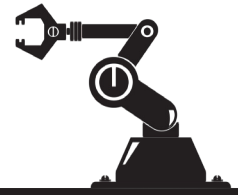
ECO-MECHATRONICS

Eco-mechatronics is an engineering approach to developing and applying mechatronic technology in order to reduce the ecological impact and total cost of ownership of machines. It builds on the integrative approach of mechatronics, but with the aim of only improving the functionality of a machine. Mechatronics is the multidisciplinary field of science and engineering that merges mechanics, electronics, control theory, and computer science to improve and optimize product design and manufacturing. In eco-mechatronics, additionally, functionality should be used with efficiency and limited impact on resources. Machine improvements are targeted in 3 key areas: energy efficiency, performance and user comfort (noise & vibration).

(Among policy makers and manufacturing industries is a growing awareness of the scarcity of resources and the need for sustainable Manufacturing high performance resources (energy, economically in a production. These designed to increase the machine. A consumption lowers environmental more than 80% of impact of a machine energy consumption Therefore, improving efficiency is the way of reducing impact. User comfort exposure of operators to noise & vibrations operation. Since performance and in a machine, they the design phase. interrelation between

development. industries requires machines that use consumables) human-centered machines are the efficiency of reduction of energy energy costs and impact. Typically the total-life-cycle is attributed to its during the use phase. a machine's energy most effective its environmental is related to the and the environment due to machine energy efficiency, noise are combined are integrated into Example of the the 3 key areas: With

increasing machine speed, the machine increases productivity and increases the productivity of the machine.)
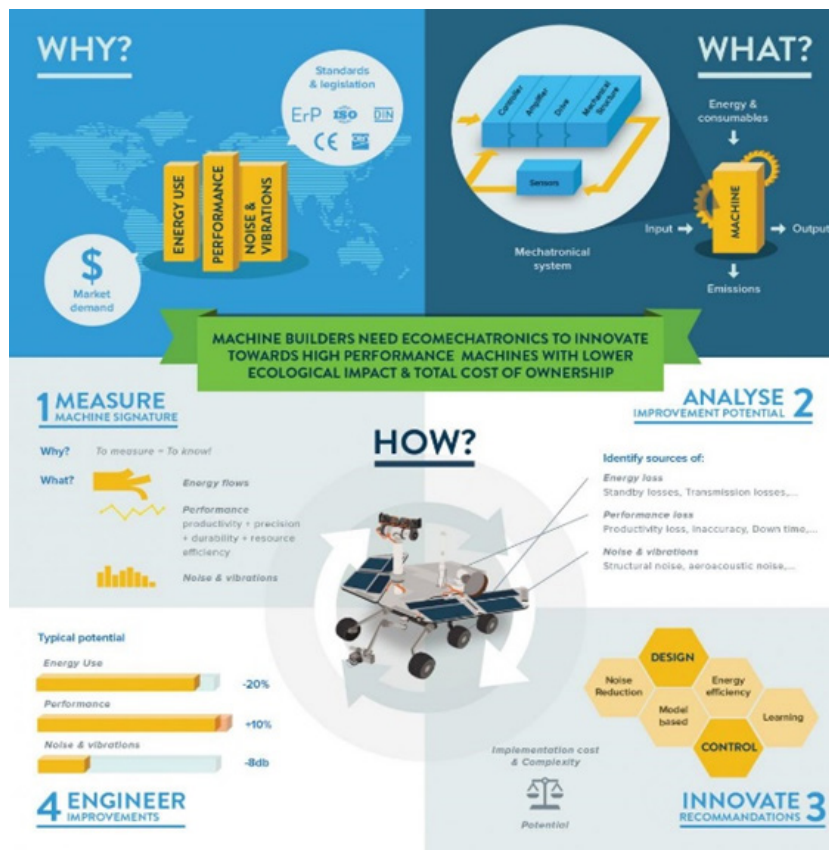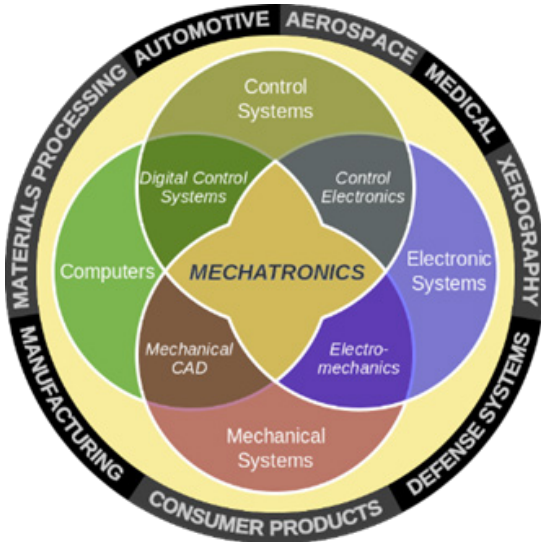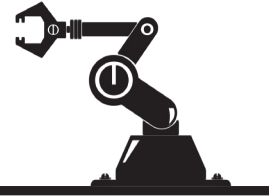
To achieve this goal we can do following approach:

1. We can use machine component which are energy efficient for example in electrical motors depending on application we can change the speed of motor due to which entry can be saved. There are more example like Variable frequency drives Variable hydraulic pumps electrical (battery, capacitor, super capacitor) etc.

2. We can minimize the energy consumption by using machine control. Control signal are optimized for minimum energy consumption Or controlling the power flows and state-of-charge of an energy storage system with the aim of achieving maximum energy benefit and maximum system lifespan.

A few examples are listed below for how this is achieved;

1. Machine components:

Energy efficient electrical motors, Variable frequency drives and Variable hydraulic pumps.

2. Design methods & tools:

Energetic simulations, Hybridization, Vibroacoustic analysis, Multibody modeling and Active vibration damping.
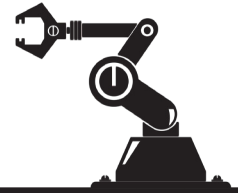
3. Machine control:

Energy consumption minimization, Energy management of energy storage systems, Model-based control, Self-learning control and Optimal machine control.
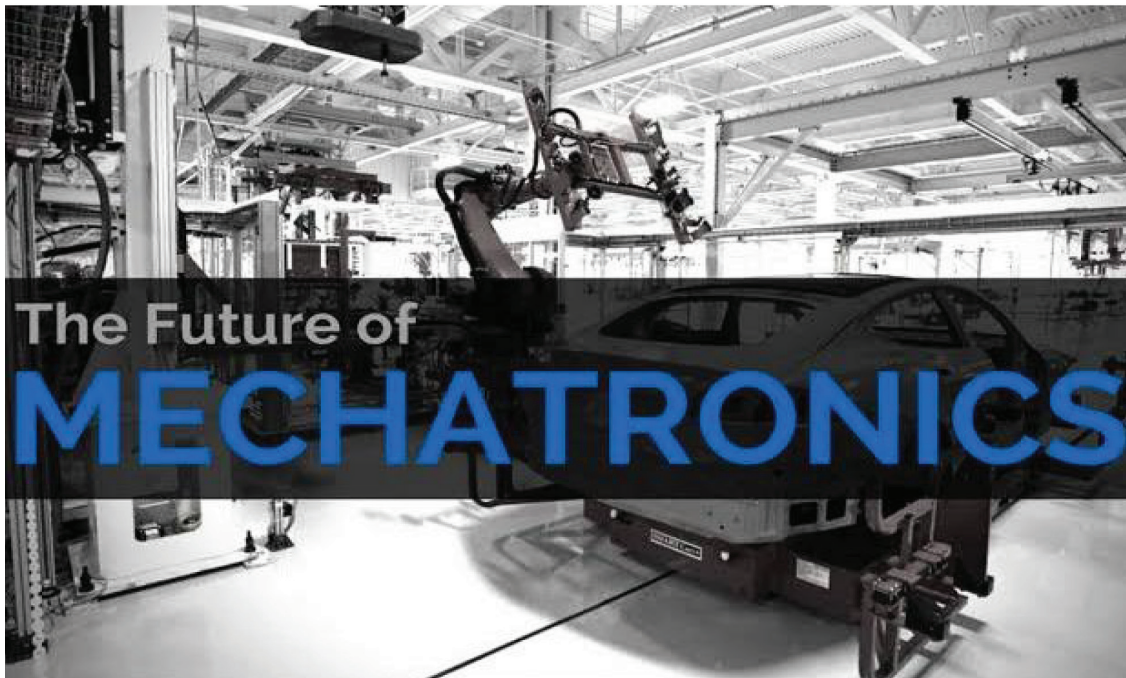

- Avinash Gupta (SE)

Ref: https://en.m.wikipedia.org/wiki/Ecomechatronics

FUTURE OF MECHATRONICS

Mechatronics, like every other field of human endeavour, is undergoing rapid change driven in large part by the availability of increasingly more powerful processor technology.

All of this developing technology is becoming available and relatively inexpensive. This makes it economical to embed easily into anything you want. So the question becomes; *"what would you like to automate today?"* The potential transformation of embedding intelligence into everything is more far-reaching.

Science and technology educators believe that the key to unlocking innovation in coming years is the education of young people in the areas of technology. At a minimum, the increased number of people with exposure to the practical aspects of applied science is necessary in order for society to be able to take advantage of the technology as it emerges.

At the same time, what will actuator technology look like in 20 years after the current generation has had time to re-invent and improve all the basic tools of the mechatronic world? Like being born into the age of cell phones, the generation that comes next will have never known the limitations of today's technology. Whole new products and markets will be created that never existed. Hopefully some of mankind's biggest challenges will be addressed along the way.

- Hemant Chaubey (SE)
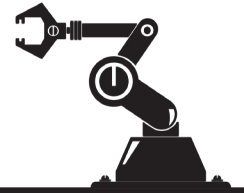
FACULTY CORNER

1. Dr. Vikas Gupta
Ph.D(EXTC)
Area of Interest: VLSI,
Signal Processing,
Digital Communication
Satellite and Radar Comm.

2. Prof. A. Ruperee
Ph.D Pursuing
Area of Interest:
Wireless Communication

3. Prof. S. Jadhav
Ph.D Pursuing
Area of Interest:
Wireless Networks.

4. Prof. S. Khan
ME(Electronics)
Area of Interest: Image
Processing, Microprocessor and
Microcontroller, VLSI.

5. Prof. S. Gosavi
ME(EXTC)
Area of Interest: Speech
RecoginAtion,
Optical Fiber Communication.

6. Prof. S. Supalkar
ME(Electronics)
Area of Interest: Image
Processing, VLSI.

7. Prof. A. Katkar
ME(EXTC)
Area of Interest: Speech
Processing, Computer Networking
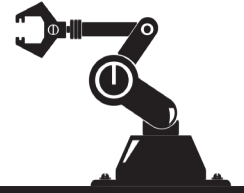
8. Prof. N. Gharat
ME(EXTC)
Area of Interest:
Image Processing.

9. Prof. E. Naik
ME(Digital Electronics)
Area of Interest: Neural
Networks.

10. Prof. T. Shah
ME(Electronics)
Area of Interest: Image
Processing.

NON- TEACHING STAFF

Mrs. Madhu Lade

Lab Technician

Mr. Prabhakar Patil

Lab Technician

Mrs. Bhagyashree Rane
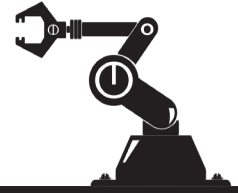
Lab Technician

Mr.Prakash Bhobhate

Peon

Mr.Hemant Patil

Peon

STAFF ACTIVITIES

- Prof. Amrita Ruperee was invited as Speaker on "Scope of Basic Communication System" at L.R Tiwari College of Engineering in 2018.

- Dr. Vikas Gupta was invited as Reviewer on "International Conference on Smart City and Emerging Technologies" ICSCET 18 at UCOE 18.

- Dr. Vikas Gupta was invited as Reviewer on "International Conference on Information Technology and Digital Application " (ICITDA-18) at JECRC ,Jaipur

- Prof. Amrita Ruperee was invited as Judge in "Multivcon W2018 Technical Paper Presentation " in 2018

- Dr. Vikas Gupta attended as Session Chairperson in "4th International Conference on Computing Communication and Automation 2018 ICCCA2018".

- Prof. Amrita Ruperee, Member of LIC committee visited "Theem College of Engineering, Boisar in 2018".

- Prof. Amrita Ruperee, Member of University local Inquiry Committee visited St. John College of Engineering and Management in 2018.

- Prof. Amrita Ruperee was invited as Reviewer on "Manuscript # USC-19-0019 International Journal of Communication System" in 2019.

- Prof. Amrita Ruperee was invited as Speaker on "Recent Trends in Wireless Network" in 2019.

- Prof. Trupti Shah has presented a paper on "Efficient Portable Camera based Text to Speech Converter for Blind Person" at ICISS 2019 organized by SCAD Institute of Technology in 2019.

- Dr. Vikas Gupta , Prof. A. Ruperee, Prof. S. Jadhav, Prof. T. Shah, Prof. S. Khan, Prof. S. Gosavi, Prof. S. Supalkar, Prof. A. Katkar, Prof. V. Gharat, Prof. E. Naik successfully completed and AICTE approved Faculty Development Programme (FDP101x) on "Foundation Program in ICT for Education" conducted by IIT Bombay from September 13 to October 18, 2018.

- Prof. S. Gosavi, Prof. S. Supalkar, Prof. A. Katkar, Prof. E. Naik successfully completed and AICTE approved Faculty Development Programme (FDP201x) on "Pedagogy for Online and Blended Teaching-Learning Process" conducted by IIT Bombay in Jan 2019.
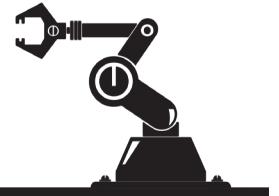
DEPARTMENT EVENTS

PRODUCT SHOWCASE

The students of IEEE VCET SB & VCET IETE SF committees of EXTC department had organized a technical event named Anveshan'2018 dated 28th September 2018. The chief guest as well as principal and Head of EXTC department guided students for their future. Sessions were conducted for drones, 3D printer and humanoid robot.

Also on this auspicious day, ETA (Electronics and telecommunication Association) committee of EXTC Department published its first newsletter of academic year 2018-19 on the topic Quantum Computing.

The product showcase aimed to provide a platform to young budding engineers where they can be exposed to recent products along with test and measurement equipments. The Product Showcase consisted of more than 55 products including sensors, detectors, lights, robots, aircrafts, printers, PLCs & many more brought from 25 companies. The main attraction of this event was aircrafts and humanoid robot. Companies like Siemens, Boson machines, KK

Robotics, GM industries, Rexnord, Fox demotics etc. showcased their products. The companies provided the orators with a one-day training program to explain the history, detailed working & applications about the given product to the audiences.

The Anveshan'2018 was a full day event where an overwhelming response of nearly 300 students & nearly 40 staff members came for the event as audiences/viewers.

F.E. QUIZ

IEEE VCET SB organized an exciting F.E. Quiz Competition for all the first year students on 5th and 6th of February 2019. It was a two day event in which nearly 30 teams participated. The final round was held in seminar hall on 6th February. The students from all the departments were the enthusiastic audience to witness this exciting event.

All the students were at the edge of their seats to know the answers and the participants were very active.

The event concluded with prize distribution ceremony. The winners and the runner up were felicitated by the principal. In the end, principal

shared his words of wisdom and encouraged all the students to take part in such activities. This quiz truly was a learning experience, for both the audience and the participants.
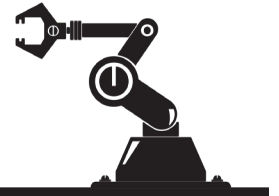
Seminar On Soft Skills And Opportunities Abroad

IEEE VCET SB and UDAAN committee of Vidyavardhini's College of Engineering and Technology organized a seminar on "Soft Skills and Opportunities Abroad" on March 1, 2019. The guest speaker of the seminar was Ms. Olga Krylatova, PR Manager and Event Manager of DISHA International Foundation Trust, since 2018. She is also an IEEE-member of Russian Federation.

Ms. Olga made the students aware about the importance of Communication Skills by conducting various activities which included active participation of the students. Further she explained about the opportunities available for the students abroad.

The seminar conducted was a 2 hr. session where an overwhelming response of nearly 200 students & nearly 15 staff members came for the event as viewers.The event was concluded by the vote of thanks expressed by IEEE VCET SB and UDAAN towards the guest of honour.

Oscillations

Oscillations is an event organized in various colleges of University of Mumbai. It is an initiative started by IETE to encourage students to be creative and innovative. And to make students able to build their original projects, present technical papers etc. Every year, vidyavardhini's college of engineering and technology organizes various technical events under oscillations which has been conducted since last five years. The active participation of students

from various polytechnics and engineering institutes every year proves the oscillations catch phrase 'for the students, by the students' true. Just like every year, this year also we have come up with 'TECHNICAL PAPER PRESENTATION' under oscillations which is the perfect opportuinity to show your technical and research skills. The event is on 16th of March,2018.

VNPS

VNPS is a national level project showcase competition organized by all the committees of VCET. The project showcase gives an opportunity to the students to implement the technical knowledge gained during their course of engineering. It serves as a common platform where all the engineering projects being worked on by students across India are showcased. The students design and implement the project and presented the final outcome of their work. The projects simulate a real-world work environment in a variety of engineering and science fields. The students apply theory and develop practical skills such as teamwork, professionalism and leadership.
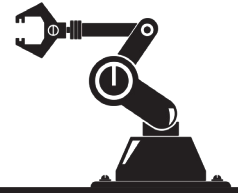
VNPS noticed students coming from different institutions to present their projects based on the practical implementation of the knowledge obtained

in the course of engineering. The enthusiasm, ardor, zeal and energy of the students helped them making engineering all-round experience for them.

OTHER WORKSHOPS AND SEMINAR

Workshop on Python

A workshop on python was organised for the students of third and fourth year from the EXTC dept by VCET IETE-SF. The guest speaker of the event was Mr. Ankur Tiwari and Mr. Manish Singh. The agenda of the seminar was to make the students understand the basics of python and it's real time applications. The students were made to execute the programs under expert supervision which ensured that all the doubts were cleared beforehand.

Seminar on Higher Education in India and Abroad

The IEEE VCET-SB and IETE VCET-SF hosted a seminar on higher education in India and abroad by Mr. Manoj Kansara, Ms. Janhvi Khanolkar, Ms. Shefali Golatkar and Mr. Mahesh Girase. The seminar was important from an aspect of higher studies that is for all those willing to pursue for an education. They mentioned various aspects like education choice, job availability and the most important factor that is why abroad is chosen. The seminar concluded by solving the doubts of students.

Seminar on Scope of Networking

The IEEE-VCET SB and IETE VCET-SF organise a seminar on "Scope of Networking" for the students of the college.

Advantages of German Language

IEEE VCET SB and IETE VCET SF organised a seminar on" Advantages of German language". It was conducted by Prof. Yogesh Pingle of IT dept. of our college. He explained the importance of German language in today's corporate world and about the various exams required to get certified in German language.

Seminar on IoT

A seminar was organised to enlighten students of second and third year of EXTC dept. on the most enthralling topic nowadays in the technology domain i.e. Internet of things (IoT) which was embraced by presence of Mr. Ganesh Mottee. The seminar was marked by the captivating interaction of speaker with the inquisitive students and by sharing his knowledge on the topics related to IoT such as microcontroller, sensors, WiFi modules and GSM module which formed the basis of IoT.

Seminar on Matlab workshop

IETE VCET SF organised a one day workshop on introduction to MATLAB which was conducted by Prof. Trupti Shah. A detailed explanation about the programming in MATLAB was given. The entire session was very interactive and the students have been demonstrated with various programs. The workshop was ended with a feedback session by the students.

Seminar on Arduino

IEEE-VCET-SB committee of EXTC department organised a 2 day workshop on Arduino. The workshop was conducted by 2 experts, Prof. Shaista Khan and Prof. Trupti Shah. Overall students learned the basics of working with Arduino and gained basic knowledge of Arduino.

Seminar on Career Guidance

The students of IEEE VCET SB had organised a seminar on career guidance. The chief guest for the same was Divyaprakash Modi. He made the students acknowledge about importance of setting goals about future. The session has an overwhelming response.

Seminar on Higher Education

The IEEE VCET SF committee organized a seminar on higher education. The speakers of the seminar were 2 experts from Imperial Overseas Educational, Mr. Kaushik Khanra and Ms. Nisha Rao. He told the students about the opportunities for higher education and also guided the students for various competitive exams. All in all the session was really interactive, wherein multiple students cleared their queries.

Inauguration of Oscillations 2019

The IETE SF had organised the inauguration ceremony for Oscillations 2019. Members of IETE attended this ceremony. The guest lecturer of the event Mr. Jobby George. Students found this session much informative and interesting, followed by the queries asked by the students which were precisely answered by Mr. Jobby George.

INTERNSHIPS

(2018-19)

SUMMER 2018 INTERNSHIP:

Total 34 Students in Western Railway, Central Railway, Doordarshan and Siemens.

WINTER 2018 INTERNSHIP:

Total 29 students in Doordarshan, BARC and Securizen Systems Private Ltd.

TEXAS INSTRUMENTS INNOVATION LAB

Inaugration: 1st March 2019

Texas Instruments India University Program is driving the ecosystem of Indian engineering students, educators, and technology towards building a stronger education community which elevates India's reputation as the leading technical force on the world map. By providing students access to the largest and most-advanced analog and embedded processing portfolio, the TI India University Program provides the tools necessary to inspire innovation and take engineering concepts from the book to hands-on experience. Students get a exposure to real industrial products. From teaching materials to design projects, our state-of-the-art technologies fuel the passions of students and educators in university labs all over India. Also the students are provided with hands on training and certification with Texas Instruments.

TOPPERS LIST

B.E. (2017-18)
Dept. Result: 100%

Toppers Name	VII Sem SGPI	VIII Sem SGPI	Avg	Rank
Baurai Anurag	9.07	8.67	8.87	1st
Mhatre Mayuri	8.67	9.06	8.865	2nd
Shetty Nishita	8.22	89.38	8.8	3th

T.E. (2017-18)
V Sem Result: 88.15%
VI Sem Result: 86.84%

Toppers Name	V Sem SGPI	VI Sem SGPI	Avg	Rank
Negi Pratik	9.78	9.96	9.87	1st
Patelia Vrutika	9.59	9.79	9.69	2nd
Akre Sanchit	9.7	9.57	9.635	3rd

S.E. (2017-18)
III Sem Result: 74.63%
IV Sem Result: 72.31%

Toppers Name	III Sem SGPI	IV Sem SGPI	Avg	Rank
Garg Garvit	9.65	9.96	9.805	1st
Dubey Alok	10	9.28	9.64	2nd
Dodiya Mital	9.85	9.36	9.605	3th
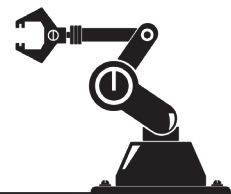
PLACEMENT (BATCH 2018-19)

Till date 3rd April, 2019

Sr. No.	Company Name	No. of Placed Students
1.	Infosys	17
2.	TCS	5
3.	LTI	2
4.	Feedspot	7
5.	Cognizant	1
6.	Zeus Learning	1
7.	Hexaware	4
8.	Robokart	7
	Total	44

STUDENTS ACHIEVEMENTS

1 — BE-EXTC (Tug of War)
- Raj Patil
- Sandeep Karad
- Amit Shrote
- Rohit Kannojiya
- Viraj Jadhav
- Pratik Jadhav
- Yash Lal
- Franklin Nadar

1 — EXTC (Tug of War)
- Raj Patil
- Sandeep Karad
- Amit Shrote
- Rohit Kannojiya
- Viraj Jadhav
- Pratik Jadhav
- Dhananjay Bhavsar
- Amey Prabhakaran

1 — EXTC Girls (Kabaddi)
- Siddhi Thakur
- Shrishti Shetty
- Sonal Khachne
- Jyoti Paswan
- Priyanka Ambekar
- Nikita Joshi
- Komal Saini
- Preeti Rane
- Kirti Deorukhakar

2 — EXTC Girls (Kho Kho)
- Priyanka Ambekar
- Sonal Khachane
- Sonal Burute
- Kirti Deorukhakar
- Vaibhavi Jadhav
- Tejashri Mali
- Siddhi Thakur
- Jagruti Tiwari
- Khushboo Patel
- Sakshi Dhanmeher
- Gauravi Shetty
- Tanvi Patil

2 — EXTC (Football)
- Viraj Rasal
- Manoj Thakur
- Pranjal Kumar
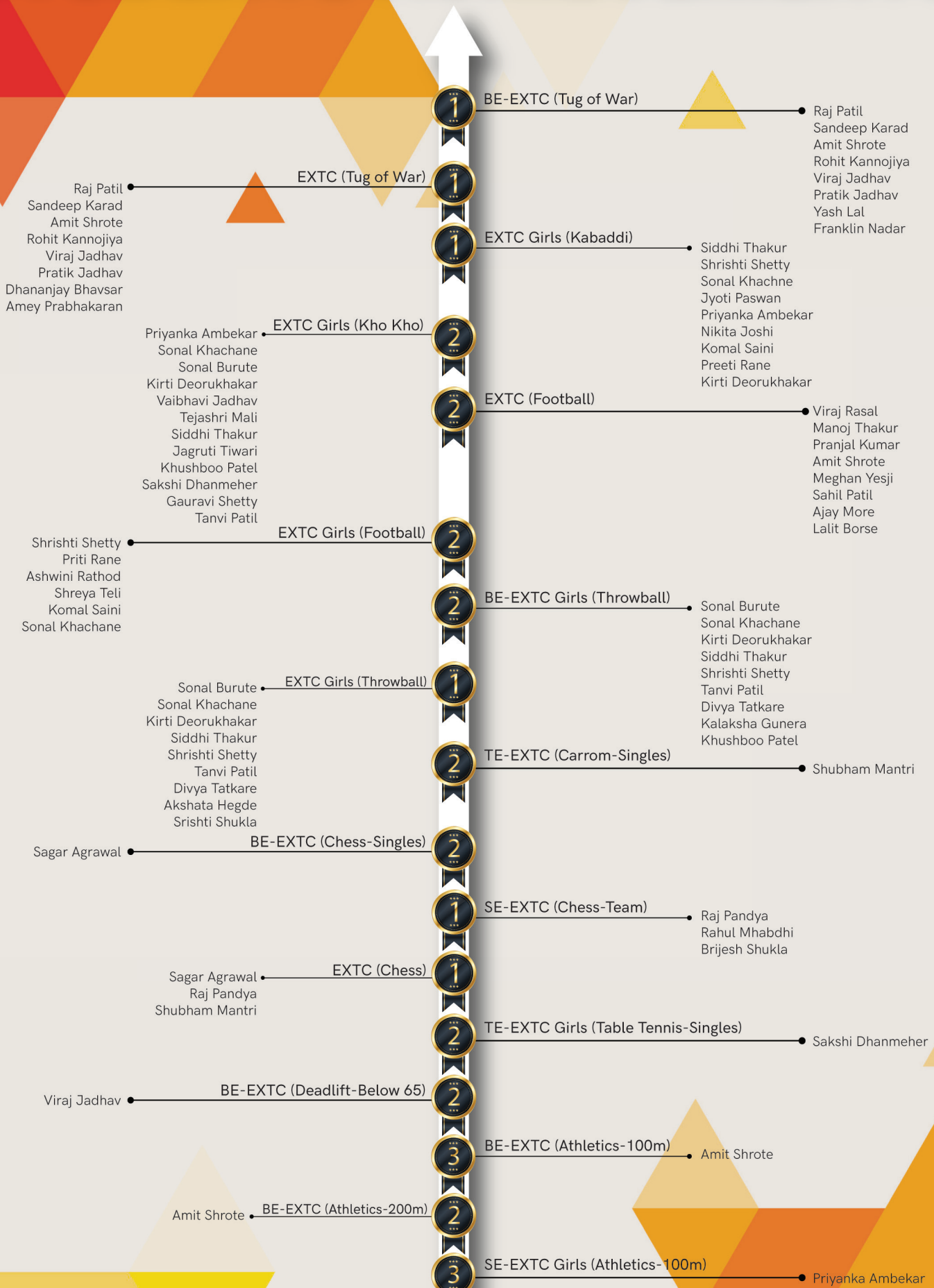- Amit Shrote
- Meghan Yesji
- Sahil Patil
- Ajay More
- Lalit Borse

2 — EXTC Girls (Football)
- Shrishti Shetty
- Priti Rane
- Ashwini Rathod
- Shreya Teli
- Komal Saini
- Sonal Khachane

2 — BE-EXTC Girls (Throwball)
- Sonal Burute
- Sonal Khachane
- Kirti Deorukhakar
- Siddhi Thakur
- Shrishti Shetty
- Tanvi Patil
- Divya Tatkare
- Kalaksha Gunera
- Khushboo Patel

1 — EXTC Girls (Throwball)
- Sonal Burute
- Sonal Khachane
- Kirti Deorukhakar
- Siddhi Thakur
- Shrishti Shetty
- Tanvi Patil
- Divya Tatkare
- Akshata Hegde
- Srishti Shukla

2 — TE-EXTC (Carrom-Singles)
- Shubham Mantri

2 — BE-EXTC (Chess-Singles)
- Sagar Agrawal

1 — SE-EXTC (Chess-Team)
- Raj Pandya
- Rahul Mhabdhi
- Brijesh Shukla

1 — EXTC (Chess)
- Sagar Agrawal
- Raj Pandya
- Shubham Mantri

2 — TE-EXTC Girls (Table Tennis-Singles)
- Sakshi Dhanmeher

2 — BE-EXTC (Deadlift-Below 65)
- Viraj Jadhav

3 — BE-EXTC (Athletics-100m)
- Amit Shrote

2 — BE-EXTC (Athletics-200m)
- Amit Shrote

3 — SE-EXTC Girls (Athletics-100m)
- Priyanka Ambekar

Natyamay — 1

Yash Kumthekar
Vijay Chavan
Ketakee Modak
Siddhi Thakur
Mugdha Raut
Pritesh Chavan
Amit Shrote
Sneha Wayangankar
Prasad Sawant
Shreyas Ubale
Ajay More
Omkar Samant
Rajas Patil

True Pals — 1

Tanvi Patil
Manasi Patil

Dumb Charades — 1

Gauravi Shetty
Ashwini Rathod

True Pals — 2

Manasi Patil
Tanvi Patil

Western Vocals — 2

Franklin Nadar

Instrumentals — 2

Franklin Nadar

Antakshari — 1

Ashwini Rathod
Gauravi Shetty
Shubham Mantra
Omkar Samant

Antakshari — 2

Shrishti Shetty
Divya Tatkare
Siddhi Thakur
Jagruti Tiwari

Popular Vocals — 2

Franklin Nadar
Ajay More

Ad Mad Show — 1

Franklin Nadar
Raj Patil
Sandeep Karad
Lalit Borse
Shivang Sharma

Neon Carrom — 1

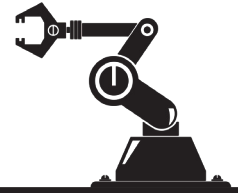Shreyas Ubale

Duet Dance — 2

Kalaksha Gunera
Sagar Agrawal

"A look into the book" Competition — 1

Kalaksha Gunera

Congratulations!

FUTURE SCOPE OF EXTC

Software & Hardware

With a degree in electronic engineering you can find work in a wide range of sectors including aerospace, automotive, IT and telecommunications

One can see that electronics are a part of our everyday life, and the ECE field shows no−signs of slowing down in the near future. This is a blessing for aspiring ECE graduates, as it opens up endless opportunities for them in top-notch manufacturing and IT industries.

Furthermore, it has also been found that the *employment in the ECE sector has amplified significantly* in the last few years.

The reason behind this positive change of wind is the growing nexus between the electronics industry and the digital technology. The application of ECE in fields, such as satellite and mobile communication, digital telecommunication, power electronics, etc. has created amazing career options.

Scope in *software* **based sectors**

Written by Nihal Kumar

Though ECE is more of a hardware related field, with advancements in digital technology it has now become software integrated too.
Thus career opportunities have widened.

Some of the available options are:

VLSI
Today, VLSI devices are found everywhere around us. From our cars to cell phones, household appliances, cameras, medical devices and many other places. This rapidly evolving sector offers exciting opportunities in verification based jobs for those with strong fundamentals in electronic circuit design and hardware description languages.
The VLSI field offers exciting growth opportunities for engineers who are strong in electronic design fundamentals, have an interest in VLSI design and verification and know how to apply VLSI concepts to practice.
VLSI professionals are always in high demand in the fast-changing chip designing industry.
There are over 150 companies catering to this industry, including big names like Texas Instruments, Infineon, Freescale Semiconductor, Cadence, HCL, Intel, Lucent, Motorola, Philips, Qualcomm, , Wipro and TCS, to name a few.

Image Processing
The Image Processing Engineer will develop and test image processing and data classification algorithms for security-related imaging products. The Image Processing Engineer will analyze data and develop methods using machine learning for feature extraction and classification. A critical aspect of this work is visualizing and communicating results.
Candidate should be skilled in C/C++, Python, MATLAB, or similar tools. Experience with machine learning and classification is highly desired as well as experience processing multispectral data.
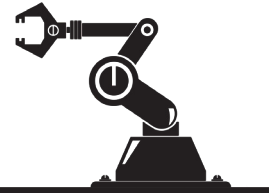
Hardware isn't lagging either.
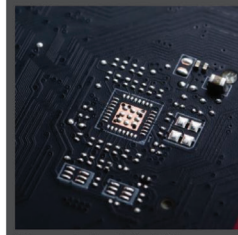
The original field is blooming more than ever before

Conclusion:
The opportunities have Increased with digitalization and for those preferring a desk job while still pursuing ECE field can have their dream jobs.

Scope in *hardware* **based sector**

Written by Nihal Kumar

Hardware is traditional ECE sector. Since the focus has now turned from fossil fuels to renewable sources, demand for electronics and electrical engineers are rising.

There is no dearth of good opportunities for an Electronics and Communication Engineer as they can avail job opportunities in a multitude of industries upon successful completion of their degrees.

Indian Telephone Industries, Civil Aviation, Development Centers in various States, Defense, Railways, Bharat Electronics Limited, D.R.D.O, Telecommunication, Power sector, Hardware Manufacturing, Home Appliance, Television Industry and Research & Development etc. are some of the popular sectors where the services of an Electronics and Communication engineer are required.
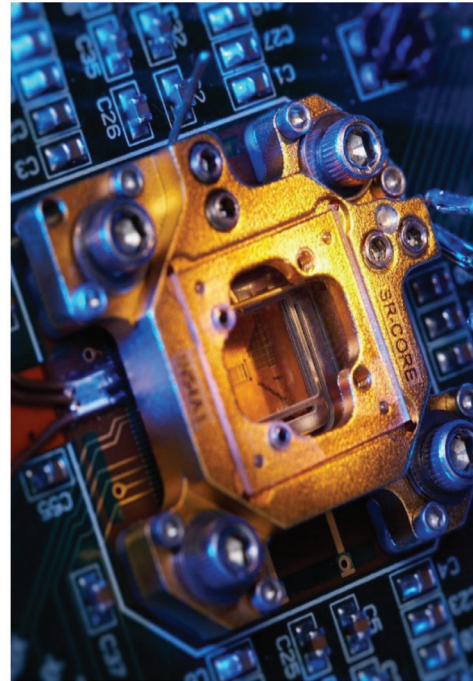
Motherboard

Broadcasting, consulting, data communication, research and development, system support etc., students can work in many such manufacturing and service sector organizations.
 Some popular job profiles for an electronics and communication engineer are –

Telecom
A Telecommunication Engineering Course imparts training to students on various telecommunication devices like mobile phones, cable TV, computer networking, satellites, radar, navigation, aviation etc. India is facing a huge demand for telecommunication engineers due to rapid growth in the field of satellites, internet and mobile telephony. The emergence of electronic media,

telecom industry has become one of the fast growing sectors in every corner of the world.

Power system and power distribution
The operation of large-scale power systems requires more than simply technical knowledge and an understanding of electrical engineering. Though you may not expect to use economics as an engineer, market analysis is important for determining the financial component of running these systems. In large-scale power distribution in particular, companies need to know not only how much power to release, but how much they should charge consumers.

Electric vehicles
Electrical engineers design, develop, test, and supervise the manufacture of electrical components. They are responsible for designing the electrical circuitry that allows a gas engine to charge the battery in a hybrid vehicle and distribute the electricity from the battery to the electric motor. Most of this effort is related to the distribution of power throughout the EV where batteries and motors operate at hundreds of volts. This includes the driving of propulsion motors for the EV.

Conclusion:
A good grasp on commercially available equipment and new advancements is necessary. Other than that, this is a great time to be a part of this sector

Want to work in ECE Core companies? Read more.

Scope in *Core* companies

Written by Nihal Kumar

An Insight Into What You Will Do
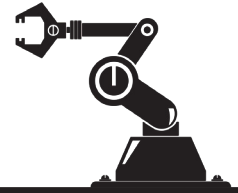
There are ample of opportunities for a fresh Electrical Engineering Graduate to get a Core Job. The only thing which one should know that "In which direction and how one should proceed". Many Graduates think that their CGPA / DGPA is not good enough and get disappointed. I personally want to say them, if you have got talent, nobody can stop you. You just need a focused and planned study. I am here going to describe some of the ways using which one can get core job in India.

How to get into core companies?

Pre-placement: (through Internship)
Internships in private companies are the best opportunities one can get to show his / her talents and skills to attract HR Department to offer them a job prior to final year. Many of the companies release such offers.

Off Campus Recruitment:
Most of the private companies conduct off campus recruitments / walk-ins also whenever appropriate vacancy arises.

One can follow Glassdoor, Linked Jobs, Naukri.com, Monster Jobs, Career Advice & Hiring Resources and many other available online Job portals to know when these firms keep their doors open.
It is worth to mention here that, sometimes one may receive fake calls / mails in the name of these portals from some frauds to loot our money. So be cautious while dealing with this.

Job fair:
One can also attend job fairs whenever conducted, where one can get a chance to pursue core career from private companies. However good companies usually don't participate in Job fairs. One can always start their career in small firm and switch to majors with his / her experience

"With the increasing interdependence of the hardware and software industries, Electronics and telecommunication are steadily evolving as a promising domain for budding engineers."
-Careertoday.com

Wipro Lighting, Texas Instrument, Schnider Electric, Bajaj Electricals, Alstom Corporate, Bharat Heavy Electricals, Havells, Crompton Greaves, Neolex Cables, HBM Power Systems, Exide Industries and Tata Electric are some of the firms that have excellent opportunities for core ECE jobs. Additionally, you'd also find decent opportunities in network communication companies like Siemens, BSNL, Sony Ericsson, Reliance and Nokia.
As a core ECE engineer, you'll able to apply for the positions of Design engineer, Jr. Embedded Engineer or Network Support Engineer. If you manage to bag the jobs, you'll get a chance to work in the field of circuit design, wireless communications, robotics, VLSI, Nano Technology, Embedded Systems, Digital Electronics, Optical Communications, Signal Processing, Control System, Analog Electronics, Networking and so on.

Final Thoughts
Getting your dream job after completing your B.Tech in ECE might initially seem difficult. But if you are persistent and steadfast in your goal, you'll definitely get the kind of job you're looking for. That being said, whether you're applying for government jobs or the private ones, it is really important to check the website of your potential employers.
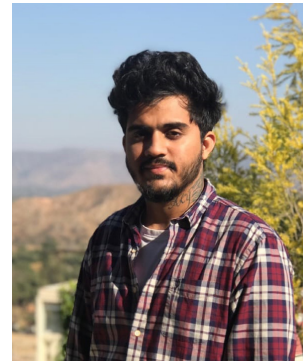
- Nihal Kumar (SE)
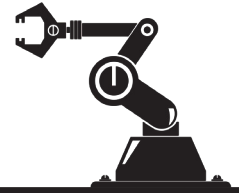
ALUMNI PURSUING HIGHER EDUCATION

Manasi Patil
MS in ECE
Portland State University, Oregon

Yogesh Jain
Pursing PhD in Electronics
IPR, Gandhi Nagar

Akshay Kadam
MMS
Rustomji Bussiness School, Mumbai

Aviraj Jadhav
Pursing PhD in Electrical
IIT Bombay, Mumbai

Sonal Dubal
M. TECH
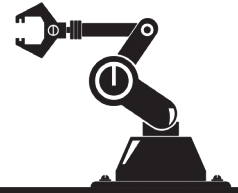St. Francis Institute of Technology, Mumbai

Vatsal Gandhi
MS in IT
Rutgers Bussiness School, USA

Vikarm Sonmore
M. TECH in EE
IIT Kanpur, Kanpur

Congratulations !!!

Shubham Tiwari (2019 batch) for scoring 34.76 in GATE

ALUMNI TALK

**"Be hopeful and keep experimenting.
Once you find what you love, you will never work a day in your life ! "**

....says **Mr. Selvin Furtado** , an alumni of the 2010 batch of our college. Currently he is working as an Assistant Professor at A.P. Shah Institute of Technology. He has done his masters from IIT- Kharagpur. And has a 6+ years of experience in teaching field.

1. We would like to know why did you chose teaching as a profession ?

I started off as an employee of the manufacturing industry, later did a bit of freelancing as an embedded prototyping consultant and finally became a teacher. I started my teaching career with VCET. Later , I managed to secure an offer from Technocrat Plasma System Pvt Ltd (core company) in 2010. Fast forward in time, I had a decent GATE score and there was a vacancy in EXTC Department so I joined as a lecturer. This was when I developed passion for teaching.

2. What sort of projects are you currently working on?

The project I would like to mention is titled as Solar Energy Harvesting for Wireless Sensor Node (WSN). It is currently competing in "India Innovation Challenge Design Competition 2018" (funded by Texas Instruments in collaboration with Department of Science and Technology, Govt. of India) and it is in the quarter final round. We have built a WSN powered by solar which once deployed will constantly monitor the pipeline and immediately report leakage to the Control Centre. We intend to build and deploy a water leakage sensor network for Brihanmumbai Municipal Corporation in near future.

3. What are your views on Mechatronics ?

Mechatronics is a fusion of Mechanical Engineering and Electronics Engineering. Pure mechanical manufacturing machinery is disappearing, while it is a new field which is opening up for core jobs starved electronics engineers. We at A. P. Shah Institute of Technology, Thane have realized this and are designing an extra curriculum course to bridge this gap. We have based our course on Radhika Grover's (Santa Clara University, USA) work, teaching Mechatronics , using popular embedded platform Arduino.

4.What extra-courses are helpful for students after their B.E ?

The current industry trend is slowing shifting to replacing a grey haired domain expert, with metadata, in decision making and teaching computers to understand the data and make those decisions on their own. So, if you have the aptitude and good mathematical skills , I would recommend a course on Machine Learning / Deep learning or data analytics.

5.Lastly , what is your advice to the students ?

I would recommend trying out a few career options you are interested in, maybe you will lose a year or two in the process, but once you find what you love, you will never work a day in your life.

- As interviewed by Amit Kanswal and Ashwini Rathod
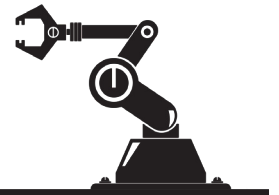
"Success comes to those who believe in being problem-solvers and who appreciate the efforts of others."

... are the words of **Mr. Aniket Sarangdhar** who is a pass out student of batch 2010. Currently, he is working as a UX Designer and has an experience of Software products/services. He has provided interactive data visualization solutions for big data and complex correlations in various industry verticals. He has completed his masters in Interaction Design from IDC, IIT-Bombay. During his master studies, he has worked on various projects such as physical computing, responsive environments, board game design etc.

1. As you are currently working as an UX Designer at CISCO, so can you brief us about the work done by an UX Designer?

At Cisco, I work as a UX Designer for Cisco DNA Center application. It's the dashboard for control and management of intent-based networking solution. As a UX Designer, I need to understand & analyze business needs, market needs, user problems; and provide innovative solutions to transform into a product or features that the user interacts with perfectly. I am also involved in conducting consumer/user research, designing information architecture, design multi-modal user interface and conduct usability testing for effective performance of the product. Simplify complex interactions and user flows and make them accessible, beneficial, intuitive, and easy to use.

2. Your experience with Arizona State University must have been a splendid one, we would like to know about it.

I was in ASU for a very brief period of time, doing courses in specialty areas, like Experiential Media, Research Methods and Human Factors. One of the primary reason of pursuing these courses was to get exposure to fields outside my line of work.

3. Being a Chief Designer at Samsung Electronics surely might have helped you increase your management skills, can you give us some tips over management, so we can enhance ours?

Time management and people skills are key when it comes to project management. However, the secret of successful management is anticipating the upcoming risks and mitigating them beforehand.

4. Masters in Interaction Design from IIT-Bombay might have been an exuberant escapade, we would like to know about the exposure you got over there.

Yes, indeed! Interaction Design at IDC-IITB, strives to create people with expertise who will eventually emerge as leaders to influence the future of interaction design. They focus more on making thinkers than teaching skills. My time at IIT Bombay, I had opportunities to work on real problems during my projects and thesis. 'Swarachakra' was one of such projects which was took Text Input in vernacular languages as a challenge, so that, people can use indic scripts for using interactive technologies in India. Swarachakra is an easy-to-use touch screen keyboard designed for mobile phones and tablets. The application has reached more than 1 million users for 12+ Indian languages.

5. Which are the other less known but worthy courses that can be opted by the students after B.E.?

Interaction Design, Physical Computing, Tangible Interfaces, Bio-mechatronics, Interactive Environments, Sustainability Sciences, are some of the less know yet exciting courses, awaiting to become mainstream in near future.

-As interviewed by
Omkar Samant and Stephen Yogeeswarar

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