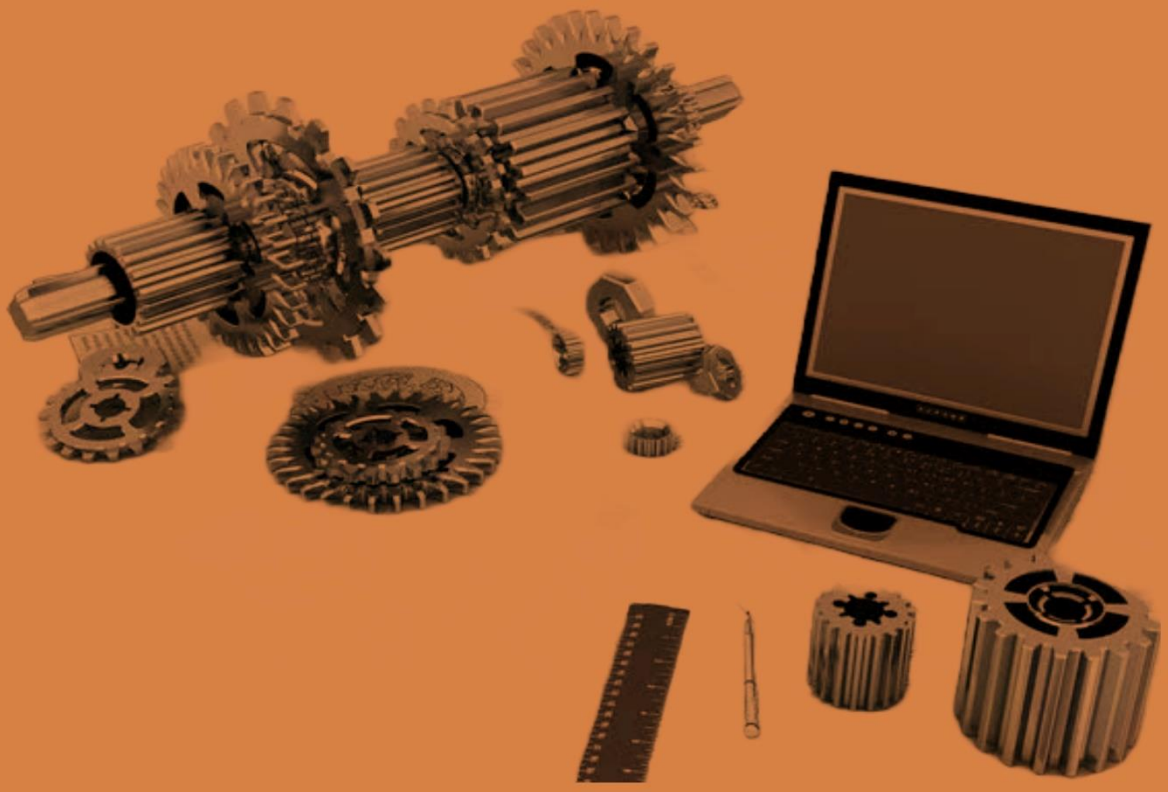
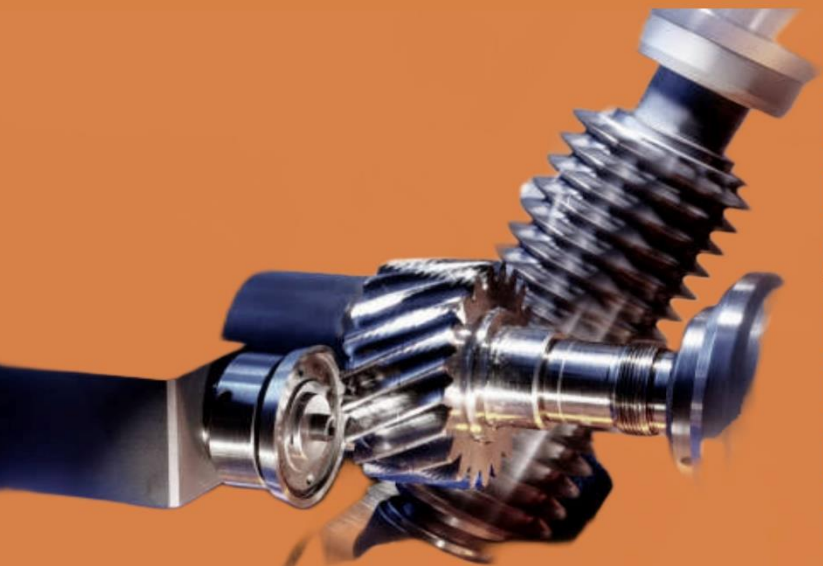
Aditya College of Engineering & Technology

Department of Mechanical Engineering

IGNITO MAGAZINE

DEC-MAY (2018-2019)





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Chairman's Message

I believe in the philosophy of thought, word and deed as eternal which made Aditya what it is today. My thought to set a high bar to the institutions I setup by rising to the challenges of the educational field and get prepared for a life dedicated to the pursuit of knowledge, my word which always reflected my vision and gained the conviction of the heads of the institutes and parents, and my deed which makes my home and workplace as extensions of each other by considering the staff and students as the members of my extended family shaped Aditya

I know the value of a good education, more so because I did not have the benefit of the facilities that make the learning process smooth. I began my career as a lecturer, giving up my desire of qualifying in the Service Commission Examination. Out of my despair was born a strong determination which took the shape of Aditya Educational Institutions. The present-day job market poses fresh challenges that need to be managed innovatively. Global business Incubation centre, Microsoft Innovation Centre, Technical Skill Development Institute, T-hub, Training and Placement Cell, GATE coaching

Vice- Chairman's Message

As a direct product of Aditya, I know how hard my father worked to put Aditya on the academic map of the country during its many stages of expansion, even in the most trying conditions. My master's degree from UTS Australia, the continent's premier university, has given me a better grasp of the educational system. Aditya technical campus in Surampalem was constructed in the aftermath to provide professional education in engineering, technology, management, and pharmacy, with the underlying principle of excellence and quality The campus has made rapid growth since its beginning in 2001 by upholding its unwavering dedication to advance knowledge and educate students in science and technology. The campus' main goal is to make teaching and research more relevant to the real world. The ultimate aim of Aditya is to make the campus the 'first stop' for companies in the recruitment process. Keeping in view the demands of the work environment which is beyond just knowledge and marks, a lot of emphasis is laid on the overall personality development of the students.

Principal's Message

The major issues we confront can't be handled at the same level of reasoning that we used to create them." Albert Einstein is credited with coining the phrase "theory of relativity." Man can only achieve immortality through knowledge. To stay relevant, knowledge must extend or grow. The road to excellence is the world's toughest, roughest, and steepest. Only quality is required and rewarded in our world. To develop new knowledge, available information must be directed by wisdom and intellect. Education's new duty is to promote creativity. The only way to address current and future problems and discover dynamic answers is to think creatively. Technology should be used to aid in the eradication of poverty around the world. In truth, India is home to 40% of the world's poor. Capacity is a result of confidence.

Miracles are the result of one's faith in oneself. At ACET, education aims to develop character, strengthen the mind, broaden the intellect, and foster a culture of problem-solving. The student is placed through rigorous training so that when he leaves the Institute, he can stand on his own two feet.

HOD Message

Dr. T. Srihari, HOD

Mechanical engineering is one of the oldest and broadest engineering discipline, and plays a significant role in enhancing safety, economic vitality, enjoyment and overall quality of life throughout the world.

Mechanical engineers develop state-of-the-art technologies and exhilarating solutions for the mankind. We attempt to provide our students with a cheerful, productive and satisfying experience at all levels of their program of studies to explore the amazing world of mechanical engineering.

Our department has a team of highly qualified and experienced faculty, good infra structure and lab facilities. We are striving hard continuously to improve upon the quality of education and to maintain its position of leadership in engineering and

Department of Mechanical Engineering

The Department of Mechanical Engineering is a pioneer department since the establishment of college in 2011. The department has extensive facilities in terms of faculty, infrastructure & equipment. The department is recognised as a research centre by JNTUK, Kakinada for pursuing Ph.D. programme in Mechanical Engineering. The department has spacious laboratories and well equipped with experimental set-ups as per the requirement of the curriculum. The faculty are very active and encourage the students in fabricating real models viz., Go-kart, Robots, Solar based vehicles and other working models, which are very useful in day-to-day life and teach students with live examples.

The department has an entrepreneurship cell through which it organises lectures by successful entrepreneurs, bank officers, MSME officials to nurture them as successful entrepreneurs in future. To nurture the students to gain all-round development, the department has many clubs like, ‘cultural club’, “We can talk” to improve soft skills and improve their intra and inter-personal skills, interactive skills to make them leaders of tomorrow. The faculty encourages students to participate in competitions like Go-kart at National level and present technical papers in conferences and publish papers in journals

Department Vision

To be a center of excellence in Mechanical Engineering education and research

Department Mission

- *To promote trainings with institutional association*
- *To achieve learning centric infra-structure.*
- *To provide skill-based education with focus on Automotive*
- *To promote innovative ideas through creativity and leadership quality*

PSO'S

PSO1 Mechanical Engineers must be able to analyze, design and evaluate mechanical components and systems using cutting edge software tools as required by the industries from time to time.

PSO2 The ability to work in manufacturing and other sectors operations and maintenance plants.

PSO3 As part of a team or individually, plan and manage activities in micro, small, medium and large enterprise.

Bio-inspired Robots

Bio-inspired robotic locomotion is a fairly new subcategory of bio-inspired design. It is about learning concepts from nature and applying them to the design of real-world engineered systems. More specifically, this field is about making robots that are inspired by biological systems. Biomimicry and bio-inspired design are sometimes confused. Biomimicry is copying from nature while bio-inspired design is learning from nature and making a mechanism that is simpler and more effective than the system observed in nature. Biomimicry has led to the development of a different branch of robotics called soft robotics. The biological systems have been optimized for specific tasks according to their habitat. However, they are multifunctional and are not designed for only one specific functionality. Bio-inspired robotics is about studying biological systems, and look for the mechanisms that may solve a problem in the engineering field. The designer should then try to simplify and enhance that mechanism for the specific task of interest. Bio-inspired roboticists are usually interested in biosensors (e.g. eye), bioactuators (e.g. muscle), or biomaterials (e.g. spider silk). Most of the robots have some type of locomotion system. Thus, in this article different modes of animal locomotion and few examples of the corresponding bio-inspired robots are introduced.

Legged robots may have one, two, four, six, or many legs depending on the application. One of the main advantages of using legs instead of wheels is moving on uneven environment more effectively. Bipedal, quadrupedal, and hexapedal locomotion are among the most favorite types of legged locomotion in the field of bio-inspired robotics. Rhex, a Reliable Hexapedal robot and Cheetah are the two fastest running robots so far. iSprawl is another hexapedal robot inspired by cockroach locomotion that has been developed at Stanford University. This robot can run up to 15 body length per second and can achieve speeds of up to 2.3 m/s. The original version of this robot was pneumatically driven while the new generation uses a single electric motor for locomotion.

Mr. V Surya Prakash
Assistant Professor

Student Technical Events

GO KART

Students of mechanical engineering has participated in Pro Karting championship 2K19 organized by society of innovative minds with Aditya educational institutions, achieved runners prize in endurance test, for which a cash prize of 15000 has been given

GO KART

3D Modelling using CATIA

ADITYA COLLEGE OF ENGINEERING & TECHNOLOGY

Permanently Affiliated to JNTUK, Kakinada, Approved by AICTE, New Delhi, Accredited by NAAC
Recognized by UGC under sec (2f) and 12(B) of UGC Act 1956
Aditya Nagar, ADB Road, Surampalem-533437

CERTIFICATE

This is to Certify that Mr./Ms. BANDARU CHINNA MANIKANTA with roll number 16P31A0309 of Department of **Mechanical Engineering** has participated in certification course on "**CATIA**" organized by Department of Mechanical Engineering, Aditya College of Engineering & Technology, Surampalem from 25TH *February* to 05TH *March* 2019.

Co-ordinator HoD-ME Principal

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Aditya Nagar, ADB Road, Surampalem-533437

CERTIFICATE

This is to Certify that Mr./Ms. BADDANI CHANDU BABU with roll number 16P31A0303 of Department of **Mechanical Engineering** has participated in certification course on "**CATIA**" organized by Department of Mechanical Engineering, Aditya College of Engineering & Technology, Surampalem from 25TH *February* to 05TH *March* 2019.

Co-ordinator HoD-ME Principal

MECHANICAL ENGINEERING

Student Placements

Congratulations

 B Sanjay Babu Krisam Automation	 M Vivekanand Thasmai Automation	 G R Chaitanya Thasmai Automation
 G Ramesh Nandee Networks	 Harshit Kumar Singh Nandee Networks	 M Durga Prasad Nandee Networks
 J Srimantha Raju Kwangjin	 S Rama Sunil Kwangjin	 M Harishchandra Reddy Kwangjin

MECHANICAL ENGINEERING

Student Placements

Congratulations

 G Ramesh GENPACT	 A Balaji NVH India Auto Parts Pvt.	 Suraj Hanuman Singh NVH India Auto Parts Pvt.
 M S A Narasimha Murthy QSpiders | JSpiders	 N Kiran Sai NVH India Auto Parts Pvt. Ltd	 Reddy Manikanta NVH India Auto Parts Pvt.
 P Ganesh Kumar NVH India Auto Parts Pvt	 A Yamanth Surya Tech Solutions	 B Durga Prasad Surya Tech Solutions

Article

Internet of Things

The internet of things, or IoT, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

A thing in the internet of things can be a person with a heart monitor implant, a farm animal with a biochip transponder, an automobile that has built-in sensors to alert the driver when tire pressure is low or any other natural or man-made object that can be assigned an Internet Protocol (IP) address and is able to transfer data over a network.

Increasingly, organizations in a variety of industries are using IoT to operate more efficiently, better understand customers to deliver enhanced customer service, improve decision-making and increase the value of the business.

An IoT ecosystem consists of web-enabled smart devices that use embedded systems, such as processors, sensors and communication hardware, to collect, send and act on data they acquire from their environments. IoT devices share the sensor data they collect by connecting to an IoT gateway or other edge device where data is either sent to the cloud to be analyzed or analyzed locally. Sometimes, these devices communicate with other related devices and act on the information they get from one another. The devices do most of the work without human intervention, although people can interact with the devices -- for instance, to set them up, give them instructions or access the data.

Mr. P Ganesh Kumar
IV Mechanical, Student

Article

Machine Vision

Machine vision (MV) is the technology and methods 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 refers to many technologies, software and hardware products, integrated systems, actions, methods and expertise. Machine vision as a systems engineering discipline can be considered distinct from computer vision, a form of computer science. It attempts to integrate existing technologies in new ways and apply them to solve real world problems. The term is the prevalent one for these functions in industrial automation environments but is also used for these functions in other environment vehicle guidance.

The overall machine vision process includes planning the details of the requirements and project, and then creating a solution. During run-time, the process starts with imaging, followed by automated analysis of the image and extraction of the required information.

The primary uses for machine vision are imaging-based automatic inspection and sorting and robot guidance. The overall process includes planning the details of the requirements and project, and then creating a solution.

After an image is acquired, it is processed. Central processing functions are generally done by a CPU, a GPU, a FPGA or a combination of these. Deep learning training and inference impose higher processing performance requirements. Multiple stages of processing are generally used in a sequence that ends up as a desired result. A typical sequence might start with tools such as filters which modify the image, followed by extraction of objects, then extraction (e.g. measurements, reading of codes) of data from those objects, followed by communicating that data, or comparing it against target values to create and communicate "pass/fail" results.

Mr. N Kiran Sai
IV Mechanical, Student

Batch Toppers

II B.TECH - II SEM MECH A T0PPERS

BURRI SIVA
17P31A0309 8.64 SGPA

CH JAGADEESH
18P35A0316 8.50 SGPA

DAMA SATHEESH
18P35A0320 8.50 SGPA

A N V A CH SANDEEP
18P35A0305 8.14 SGPA

II B.TECH - II SEM MECH B T0PPERS

M SAI KUMAR
18P35A0356 8.36 SGPA

R CHANDRAKALYAN
17P31A0329 8.09 SGPA

K ANAND PRASAD
18P35A0340 8.09 SGPA

K SRINU
18P35A0339 7.95 SGPA

IV B.TECH - II SEM MECH A T0PPERS

S NAVEEN ROYAL
16P35A0310 85.17 %

P P GOVIND RAJULU
15P31A0341 81.17 %

POKALA ASHA
15P31A0346 81.17 %

V ARUN KUMAR
16P35A0312 80.33 %

III B.TECH - II SEM MECH A T0PPERS

PANDI SURENDRA
17P35A0318 8.62 SGPA

MOHAN PATRO
17P35A0313 8.57 SGPA

G V V NAGA SIVA
16P31A0314 8.33 SGPA

KOLA NAVEEN
17P35A0310 8.33 SGPA

III B.TECH - II SEM MECH B T0PPERS

K SHYAM PRASAD
17P35A0330 8.19 SGPA

V SAI VIKAS REDDY
17P35A0322 7.76 SGPA

J H S SIVAMANI PRASAD
16P31A0380 7.71 SGPA

CH NAVEEN KUMAR
16P31A0369 7.48 SGPA

Sports and Games

Students of Mechanical engineering have participated in Badminton and chess competition on the occasion of republic day

Industrial Visits

Students of Mechanical Engineering have visited Hinduja National power coorporation

Article

Nondestructive testing

Nondestructive testing (NDT) is the process of inspecting, testing, or evaluating materials, components or assemblies for discontinuities, or differences in characteristics without destroying the serviceability of the part or system. In other words, when the inspection or test is completed the part can still be used. In contrast to NDT, other tests are destructive in nature and are therefore done on a limited number of samples ("lot sampling"), rather than on the materials, components or assemblies actually being put into service.

These destructive tests are often used to determine the physical properties of materials such as impact resistance, ductility, yield and ultimate tensile strength, fracture toughness and fatigue strength, but discontinuities and differences in material characteristics are more effectively found by NDT.Today modern nondestructive tests are used in manufacturing, fabrication and -service inspections to ensure product integrity and reliability, to control manufacturing processes, lower production costs and to maintain a uniform quality level. During construction, NDT is used to ensure the quality of materials and joining processes during the fabrication and erection phases, and in-service NDT inspections are used to ensure that the products in use continue to have the integrity necessary to ensure their usefulness and the safety of the public.

It should be noted that while the medical field uses many of the same processes, the term "nondestructive testing" is generally not used to describe medical applications.

Test method names often refer to the type of penetrating medium or the equipment used to perform that test. Current NDT methods are: Acoustic Emission Testing (AE), Electromagnetic Testing (ET), Laser Testing Methods (LM), Leak Testing (LT), Magnetic Flux Leakage (MFL), Liquid Penetrant Testing (PT), Magnetic Particle Testing (MT), Neutron Radiographic Testing (NR), Radiographic Testing (RT), Thermal/Infrared Testing (IR), Ultrasonic Testing (UT), Vibration Analysis (VA) and Visual Testing (VT).

Mr. Abdul Arif
Assistant Professor

Article

Heat Transfer in Computers

Computer cooling is required to remove the waste heat produced by computer components, to keep components within permissible operating temperature limits. Components that are susceptible to temporary malfunction or permanent failure if overheated include integrated circuits such as central processing units (CPUs), chipsets, graphics cards, and hard disk drives.

Components are often designed to generate as little heat as possible, and computers and operating systems may be designed to reduce power consumption and consequent heating according to workload, but more heat may still be produced than can be removed without attention to cooling. Use of heatsinks cooled by airflow reduces the temperature rise produced by a given amount of heat. Attention to patterns of airflow can prevent the development of hotspots. Computer fans are widely used along with heatsink fans to reduce temperature by actively exhausting hot air. There are also more exotic cooling techniques, such as liquid cooling. All modern day processors are designed to cut out or reduce their voltage or clock speed if the internal temperature of the processor exceeds a specified limit. This is generally known as Thermal Throttling, in the case of reduction of clock speeds or Thermal Shutdown in the case of a complete shutdown of the device or system.

A component may be fitted in good thermal contact with a heatsink, a passive device with large thermal capacity and with a large surface area relative to its volume. Heatsinks are usually made of a metal with high thermal conductivity such as aluminium or copper, and incorporate fins to increase surface area. Heat from a relatively small component is transferred to the larger heatsink; the equilibrium temperature of the component plus heatsink is much lower than the component's alone would be. Heat is carried away from the heatsink by convective or fan-forced airflow. Fan cooling is often used to cool processors and graphics cards that consume significant amounts of electrical energy. In a computer, a typical heat-generating component may be manufactured with a flat surface. A block of metal with a corresponding flat surface and finned construction, sometimes with an attached fan, is clamped to the component

Heat is removed from the heatsink by convection, to some extent by radiation, and possibly by conduction if the heatsink is in thermal contact with, say, the metal case. A copper heatsink is more effective than an aluminium unit of the same size, which is relevant with regard to the high-power-consumption components used in high-performance computers.

Mr. K Vijay
Assistant Professor