



Yaantrika Newsletter

Department of Mechanical Engineering

Vision and Mission of the Institute

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 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 Department

Vision

- To be premier department for education in Mechanical Engineering in the state of Karnataka, moulding students into professional engineers.

Mission

- To provide teaching-learning process that prepares engineers to meet the needs of industry and higher learning.
- To provide environment for self-learning to meet the challenges of changing technology and inculcate team spirit and leadership qualities to succeed in professional career.
- To instil professional ethics and concern for environment for the benefit of society.

Program Educational Objectives (PEOs)

After 2/3 years of graduation, students will have the ability to:

- Apply principles of Mathematics, Science and Mechanical engineering to design mechanical systems and applications in industry.
- Apply knowledge of Mechanical Engineering to solve problems of social relevance with concern for environment.
- Work with professional ethics as individuals and as team members in multi disciplinary projects demonstrating creativity and leadership.
- Pursue higher education and research in advanced technology.



This edition of Yaantrika from the Department of Mechanical Engineering is dedicated to

Ms. Lila Firoz Poonawalla

who is an industrialist, philanthropist, humanitarian and the founder of Lila Poonawalla Foundation. She is a former Chairperson & Managing Director of Alfa Laval - TetraPak, India. She was awarded the fourth highest civilian award of Padma Shri by the Government of India and the Royal Order of the Polar Star by Carl XVI Gustaf, the King of Sweden.

What's Inside.....

- Technical Articles
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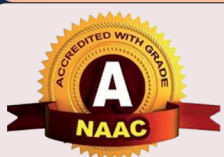
B. N. M. Institute of Technology

An Autonomous Institution under VTU

Approved by AICTE, Accredited as grade A institution by NAAC

All eligible branches - CSE, ECE, EEE, ISE & Mech.Engg. are Accredited by NBA for academic years 2018-19 to 2021-22 & valid upto 30.06.2022

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Editor's Desk

Dear Readers,

Welcome to the December 2021 Issue of 'Yaantrika'

The team of Yaantrika, wishes to give our readers an intellectually stimulating news letter. Our endeavour is to reflect the values and the quality of our esteemed institution.

The present edition of the Newsletter focuses on the activities and achievements of the Department over the past six months along with some interesting articles from our students. We appreciate all those students who have contributed the articles for this issue. It is the attribute of willingness, to put in efforts, share knowledge, concerns and special insights that have made this issue possible. Knowledge is a treasure that appreciates when we share and depreciates when accumulated. So, never stop sharing knowledge and helping others.

Wishing the readers, a happy reading.

Editorial Team

'The Department of Mechanical Engineering has been accredited by the National Board of Accreditation (NBA) for the Academic Years 2018 - 19 to 2021 - 22 and valid upto 30.06.2022'

ABOUT MECHANICAL ENGINEERING DEPARTMENT

The Department of Mechanical Engineering started in the year 2011 with an intake of sixty students. The Department offers undergraduate program in Mechanical Engineering. All the laboratories have been established with state of the art equipment. The Department has a team of dedicated and well qualified faculty members, with a blend of rich industrial and academic experience. The Faculty members with Master's and Doctorate degree, having specialization in Machine Design, Thermal and Manufacturing Engineering are an asset to the institution and to the students. The Department has an R&D Centre recognized by Visvesvaraya Technological University, Belagavi.

The Department has established a state-of-the-art Centre of Excellence in association with Toyota Kirloskar Motor, with the distinction of being the first in the country to have such a Centre of Excellence by Toyota company. The centre has cut sections of Innova and Fortuner Car Engine Systems. The Center of Excellence also has facilities for students to experience hands-on assembly and dismantling of all the engine parts.

The Department has MoUs with Toyota Kirloskar Motors Pvt. Ltd., Mahatma Gandhi Institute for Renewable Energy and Development (MGIRED), Fenfe Metallurgicals, Spectrum Tool Engineers Pvt. Ltd., Maltown Electric Pvt. Ltd. and KareerBanana Consultants LLP for sustained activities in the area of automobile engineering, renewable energy, metallurgical engineering, manufacturing and electrical engineering and career guidance respectively. The Department has initiated a dedicated Industry-Institute-Interaction Cell (IIIC) to encourage budding entrepreneurs with expert guidance and to provide internship opportunities for students.

The Department also offers 'Lathe Operator' course (Automotive Sector) under Pradhan Mantri Kaushal Vikas Yojana (PMKVY) an initiative by Automotive Skill Development Council, Ministry of Skill Development and Entrepreneurship, Government of India.

TECHNICAL ARTICLES

Internet of Behavior

Do you know that the number of Internet of Things (IoT) devices has doubled over the past five years? These are everywhere with us today, from wearable technologies that track your fitness 24/7 to remote access electrical devices in your home. The shift to mobile devices has changed the way we interact with the world around us. The collection of usage data by these IoT devices provides valuable information about users' behavior, interests, and preferences. Thus the concept of **Internet of Behavior (IoB)** was born.

Let's look at what Internet of Behavior is, of what business value it is? and who can benefit from it. In other words, how to turn all the data collected from users' online activities into something useful for the companies. This question is now answered by a new concept: Internet of Behavior (IoB).

What is Internet of Behavior (IoB)?

Many cited 2012 as the opening date of IoB when psychology professor Mr. Gothe Nyman described the possibility of

obtaining detailed data on customers' use and behavior as they interact with the Internet of Things (IoT).

The IoB concept seeks to address how to understand data properly and apply that understanding to create and promote new products from a human psychology perspective. Essentially, companies analyze the data collected from a variety of IoT devices. Businesses then use this data to change consumer behavior. Some of the data companies may record include a person's geographical location, time spent on a particular app, and what time a person wakes up among many other pieces of information. More often than not, the goal of changing consumer behavior is to get them to buy or engage a particular product or service. However, this technology can

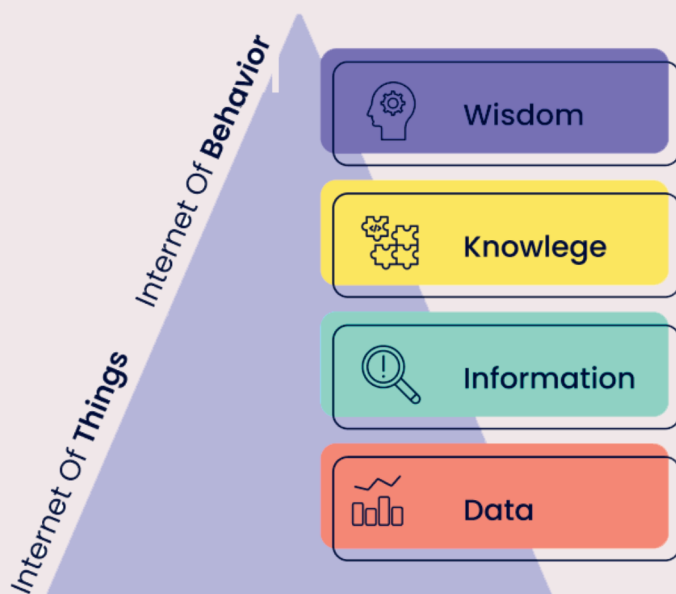
also be used to change the behaviors of other stakeholders, including employees to ensure they are following correct procedures.

The value of IoB

Marketing and psychology from the beginnings of advertising go side by side. Behavioral analysis and psychology have allowed new insights into the data collected by the Internet of Things. IoB can become a powerful new marketing and sales tool for businesses and organizations around the world. This tool will provide a deep understanding of the customers, which is necessary for every business. Using this concept, companies will be able to analyze past performance and predict the future. The data gathered through the Internet of Things will provide the foundation for companies to plan their development, marketing, and sales efforts.

The brand new tool of Digital Marketing

The impact of IoT technology and the Internet of Behavior cannot be overlooked today, as they will influence consumer behavior and the marketing platforms used to gain their attention. Let's take a closer look at how the IoB will boost marketing behavior:



Benefits of IoB



Analyze customer buying habits across platforms



Study previously unobtainable data about how customers interact with devices and products



Gain deeper insights into where a customer is in the buying journey



Provide real-time point-of-sale notifications and target ads



Quickly resolve issues to close sales and keep customers happy

Big data

With the Internet of Things, information can be accessed from multiple points of contact. It allows the user explore the customer journey from start to finish. In other words, the user will be able to see where the customer's interest in the product begins, his path to purchase right up to the point of purchase. This means the user will be able to create more touch points for a positive interaction with customers.

Vast opportunities for marketing research

Marketing research by some companies (such as Google and Facebook) is becoming more comprehensive. We are sure that it has happened more than once when you just talked with your friends about some things, and then you open your browser and see an advertisement for what you just talked about. The algorithms of these companies are configured so that they can anticipate your desires and behavior. This is an example of IoB in action.

Access to consumer lifestyle information

The concept of IoB includes an analysis of consumer behavior on social networks and other platforms to gain information about their daily lifestyle. Data is collected using the IoT devices which will be used by the average consumer like coffee makers, thermostats, home automation systems, wearable devices, etc. All these devices are part of our life, which means they can be used to obtain data on trends in each user's lifestyle, which in turn gives an understanding of how and when certain products or services are used.

Ethical Implications of IoB

IoB is an innovative technology for business; however, the tech does not come without ethical concerns. The majority of worries stem from user and consumer privacy. The controversy surrounds the intrusiveness of the data collected. This is because, the data can be obtained from countless locations where consumers may not even realize they are being tracked. For example, if a consumer is wearing a smart-watch, the data collected by the wearable technology can be highly private information, such as the consumer's heart rate, geo-location etc. Therefore, users may not be aware of all the data the watch is collecting, nor how the data will be shared (or sold) or will be used to influence their behavior. There is also a concern about cyber security. Consequently, hackers and cyber criminals may attempt to gain access to this data.

Conclusion

Internet of Behavior provides companies with cutting-edge ways of marketing products and services, along with influencing user and employee behaviors. This technology is extremely beneficial for businesses since they can optimize their relationship with the consumer based on the collected data. Behavioral data technology continues to evolve. However, with the proliferation of new IoT devices, the debate over what constitutes essential data and responsible use is just getting started.

References:

- <https://gbksoft.com/>
- <https://quantilus.com/>

3D Printing efforts in the fight against COVID-19

Coronavirus disease 2019 (COVID-19) that is SARS-CoV-2, previously called 2019-nCoV, is a kind of human infectious disease caused by severe acute respiratory syndrome coronavirus. Based on the prompt increase of human infection rate, COVID-19 outbreak was distinguished as a pandemic by the World Health Organization (WHO). All around the world, hospitals were overwhelmed by the volume of patients and the lack of personal protective equipment including face masks, gloves, eye protection and clothing. There was an acute shortage of respirators, which led to an unprecedented health crisis. 3D printing which allows three-dimensional renderings is one of the foremost solutions to overcome the limited number of equipment.

Personal Protective Equipment

Protective Masks: The protective mask is a medical device aimed to avoid contracting a virus. Since the beginning of COVID 19, the problem of supplying a protective mask has become one of the main challenges to overcome. Many efforts towards production of masks have been initiated around the world. 3D printing has provided a viable alternative for producing

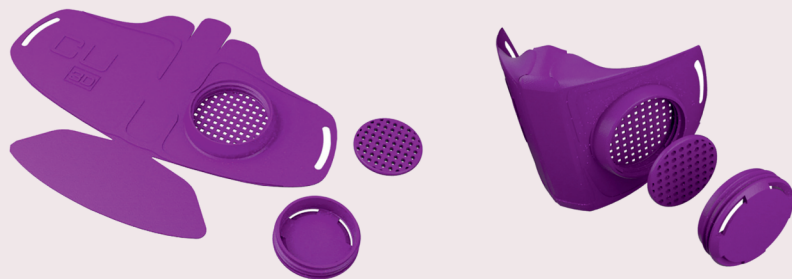


Image: 'NANO HACK' N95 mask developed by Copper 3D

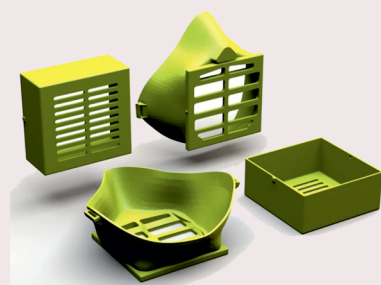


Image: Mask design by Thingiverse user Kvatthro

heating to a temperature of 55°C to 60°C. Another design of the protective mask developed by the Thingiverse user

masks using available materials. One among many such efforts, is an interesting project named 'NANO HACK' which was launched by the manufacturer, Copper 3D. The project aims to produce N95 protective masks using 3D printing technology. Polylactic Acid (PLA) filament is used to fabricate this mask as a flat part. It is designed to be manually assembled into the final 3D configuration after

Kvatthro uses a desktop 3D printer and PLA filament for printing. It is designed with a box for HEPA filter insertion.

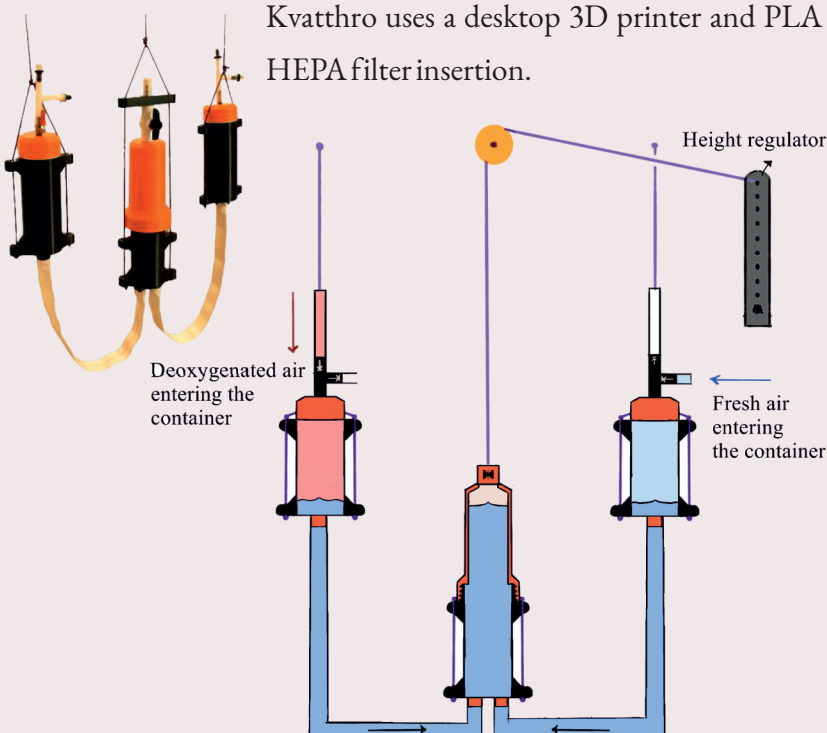


Image: Ventilator design by Farhami et. al.

Ventilators

The ventilation system helps patients to maintain an adequate level of oxygen (>88%) in the arterial blood. Ventilation system is the last hope for the majority of patients who are critically affected by COVID-19. Most of the national health systems did not have the required number of ventilation systems during the pandemic. This situation forced the doctors to make a difficult decision regarding the patients: who should be connected to these devices and who will be disconnected from them. To address the issue many researchers contributed designs that can be produced rapidly

using the 3D printing technology. One such device is the 3D printed ventilation device, designed and developed by Ahmad Faryami et. al. This design features easily accessible components to eliminate the ventilator deficit.

A team of engineers and physicians at the University of California San Diego has developed a low-cost, easy-to-use emergency ventilator for COVID-19 patients that is built around a manual

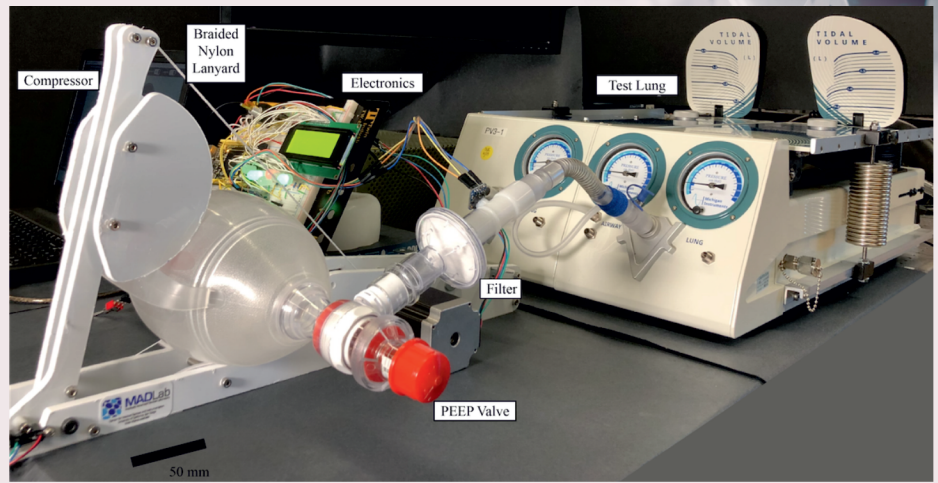


Image: Ventilator developed at University of California San Diego

ventilator bag usually found in ambulances. The team built an automated system around the bag and brought down the cost of an emergency ventilator to just \$500 per unit. The device’s components can be rapidly fabricated and the ventilator can be assembled in just 15 minutes. The UCSD MADVent Mark V is also the only device offering pressure-controlled ventilation equipped with alarms that can be adjusted to signal that pressure is too low or too high. This is especially important because excessive pressure can cause lung injury in COVID-19 patients that often experience rapid decreases in lung capacity as the disease progresses. Most ventilators measure the volume of air that is being pumped into the patient’s lungs, which requires expensive airflow sensors. By contrast, the UCSD MADVent Mark V measures pressure and uses that data to deduct and control the airflow to the lungs. This was key to lowering the device’s price.

Fused Deposition Modeling (FDM)	Adaptors for a variety of medical devices Oxygen valves, Ventilators 3D printed quarantine booths Face masks (eg., surgical and N95 Respirator) Visors/Face shields Screwless hands-free door handle openers Hand sanitizer holders
Selective laser sintering (SLS)	Oxygen valves
Stereolithography (SLA)	Venturi type valves for respirators COVID-19 test swabs 3D printed lung models

Table: Summary of 3D printing technology used in fabrication of medical devices during COVID-19

Conclusion

The COVID-19 crisis has demonstrated the importance of open-source systems which allow rapid development based on the contributions of many people who work remotely. The “citizen supply chain” based on 3D printing has turned out to be a powerful solution for development of cost effective medical equipment. Despite the urgency, healthcare devices must be subjected to stringent safety standards and 3D printed medical equipment are not an exception. However, new developments like bio-printing, antimicrobial polymers etc. are creating multiple avenues for 3D printed medical products.

References:

- Ayca Aydin et.al., <https://doi.org/10.1007/s42247-021-00164-y>
- Soufiane Belhouideg, <https://doi.org/10.1002/hpm.3009>

Yeleswarapu Raghava
VII Semester

Connected Car Technology

Technology is evolving at a rapid pace, and the internet has changed the way people communicate or do their day-to-day tasks. In other words, the world is 'connected', and you can find almost everything on the internet. When everything is connected via the internet, why won't cars do the same? Yes, this new technology is called Connected Car Technology. Connected cars have become the new norm in the automobile industry, and we can only expect it to get better and better.

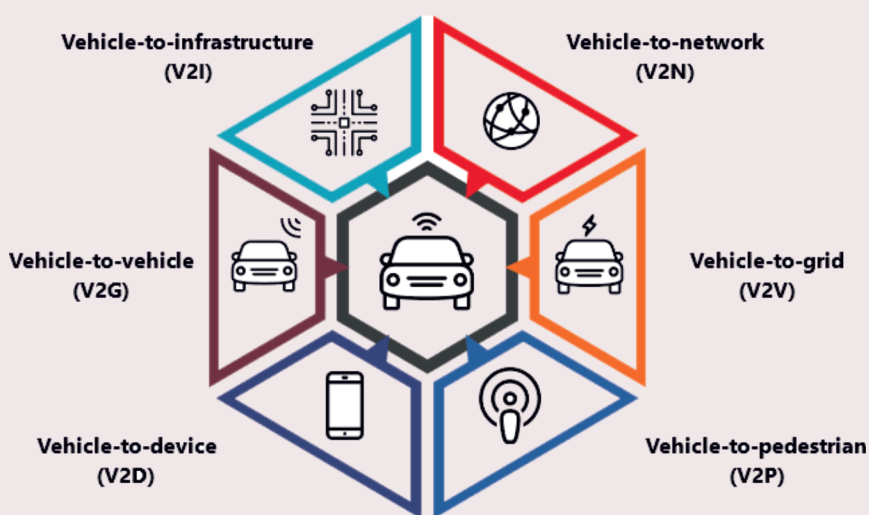
What is a Connected Car?

In layman's language, any vehicle/car which can connect to the internet is called a Connected Car. Usually, such vehicles connect to the internet via WLAN (Wireless Local Area Network). A connected vehicle can also share the internet with devices inside and outside the car, and at the same time can also share data with any external device/services. Connected vehicles can always access the internet to perform functions/download data when requested by the user.



How does Connected Car Technology work?

Currently, automobile companies use two kinds of systems in connected cars: Embedded and Tethered systems. An Embedded vehicle will be equipped with a chipset and built-in antenna, and a Tethered system will be equipped with hardware that connects to the driver's smartphone. A connected vehicle can access/send data, download software updates/patches, connect with other devices (Internet Of Things or IoT) and also provide WiFi internet connection to the passengers. The connected car telematics can also be accessed through connected technology, and it is extremely useful for electric vehicles.



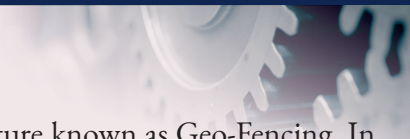
Features of Connected Vehicles

A connected vehicle comes equipped with a host of smart and convenient features. The features of connected car technology improves the overall driving and ownership experience, and also adds a safety net with its advanced security features. Following are the smart features of a connected vehicle:

Internet Connectivity in Cars: A connected car is always connected to the internet via an embedded chipset or SIM card, and it can access the internet, provided there is stable

wireless network coverage. Connected vehicles can also provide onboard WiFi connectivity, download over-the-air updates released by the manufacturer and access other online apps and services.

App to Car Connectivity: Nowadays, car manufacturers provide a dedicated smart phone app that connects with the vehicle through the wireless network. The app allows users to remotely operate the functions of a car such as locking/unlocking the door, opening sunroof, engine start/stop, climate control, headlight on/off and honk the horn. The app will also help to locate the car via the onboard GPS.



Protecting Young Drivers: The connected vehicles come with an important security feature known as Geo-Fencing. In simple words, it creates a geographical boundary on the map and alerts the owner, if the vehicle is driven beyond the set boundary. The geo-fencing can be set via the smart phone app, and this feature will be extremely useful if you are worried about the young/inexperienced drivers.

Vehicle to Vehicle Communication: Vehicle-to-vehicle connectivity technology allows connected vehicles to communicate with each other. The V-2-V enables the sharing of vital information such as traffic movement, road conditions, speed limits and much more. V-2-V technology will be a critical part of autonomous vehicles, which are deemed as the future of mobility.

Security: Connected vehicles come equipped with several critical security features such as real-time location sharing or tracking, emergency SOS calls in case of an accident, roadside assistance in case of vehicle breakdown, and much more. Apart from the onboard safety equipment, these smart safety features come in handy during tricky situations.

Types of Connectivity

A connected vehicle uses different types of communication technologies, and this is where automotive and information technology works hand in hand. Below are the different types of connectivity technologies:

- *Vehicle to Infrastructure (V2I):* This type of connectivity is used mainly for the safety of the vehicle. The vehicle communicates with the road infrastructure, and shares/receives information such as traffic/road/weather condition, speed limits, accidents, etc.
- *Vehicle to Vehicle (V2V):* The vehicle-to-vehicle communication system allows the real-time exchange of information between vehicles. V2V is also used for the safety of vehicles.
- *Vehicle to Cloud (V2C):* The V2C connection is established via the wireless LTE network, and it relays data with the cloud. Vehicle to cloud connectivity is mainly used for downloading over-the-air (OTA) vehicle updates, remote vehicle diagnostics or to connect with any IoT devices.
- *Vehicle to Pedestrian (V2P):* One of the newest systems used in connected vehicles is the V2P system, and it is also for safety purposes. Vehicles use sensors to detect pedestrians, which gives collision warnings.
- *Vehicle to Everything (V2X):* The combination of all the above-mentioned types of connectivity is known as V2X connectivity.

Cars such as MG Hector, Kia Seltos and Sonet, Hyundai Venue etc. are the few mainstream cars providing connected car technology. This will definitely trickle down to lower segments in due course of time.

Surya Ravishankar
V Semester

FACULTY ACHIEVEMENTS

Mr. Hemanth Kumar C. was awarded the PhD degree for his doctoral work titled '*Investigations on the Fatigue Strength of Glass-Carbon/Epoxy Hybrid Composites*' by Visvesvaraya Technological University, Belagavi.

Dr. B. S. Anil Kumar, delivered an invited talk on '*Fluid Power Systems*' at G. Madegowda Institute of Technology (GMIT), Mandya.

Dr. Raghavendra N. was granted an Innovation Patent for '*Fabrication process of Textile Fabric with Multimodal Tactile Sensor*', by the Commissioner of Patents, Australian Government. (Patent Number:2021102841).

Dr. Raghavendra N. was granted the copyright for the work titled '*Image Analysis Device using Deep Learning Data Modelling and Method thereof*', by the Copyright Office, Government of India. (Reg. Number:L-107967/2021).

Dr. D. Shivalingappa registered a design patent for '*Portable Wind Turbine*' with Controller General of Patents, Design & Trade Marks, GoI.

Journal and Conference Publications

Mr. Harish A., Dr. Shivalingappa D. and Dr. Raghavendra N., published a research paper titled, '*Impact of Foreign Object Damage on the Leading Edge of TC11 Titanium Alloy Aeroengine Blade like Specimen*', in the Australian Journal of Mechanical Engineering, DOI: 10.1080/14484846.2021.1953732.

Mr. Madhu P. coauthored a research paper titled, '*Effect of copper oxide nano fluids as coolant on thermal performance of spiral heat exchanger*', published in the IOP Conference Series: Materials Science and Engineering, DOI:10.1088/1757-899X/1189/1/012037.

Mr. Hemanth Kumar C. authored a research paper titled, '*Experimental Study on Rotating Bending Fatigue Behavior of Carbon Fiber Reinforced with Epoxy Composites Using Statistical Analysis*', published in the Journal of Failure Analysis and Prevention, Springer-ASM International Volume 21, 2247–2255 (2021).

Mr. Hemanth Kumar C. published a research paper titled, '*Fatigue life prediction of glass fiber reinforced epoxy composites using artificial neural networks*', in Composites Communications, Elsevier, Volume 26, August 2021, 100812, ISSN 2452-2139.

Ms. Shwethashree B. published a research paper titled, '*A study of Cooling and Characterization of Sputter Deposited solar Selective Absorbers with Metal Interlayers for Solar Thermal Applications*', in International Journal of Innovative Research in Science, Engineering and Technology, Volume 10, Issue 7, July 2021.

STUDENT ACHIEVEMENTS

Academic

Sumukh A. Shenoy, a student of 7th Semester published a paper entitled, '*Nanoparticles as Additives to Biodiesel*' in Journal of Chengdu University of Technology, ISSN-1671-9727, Paper ID: CDU0821-168.

Raghava Y., a student of 7th Semester, successfully completed a certificate course, '*Machine Design*', offered by Dassault Systemes as a part of SOLIDWORKS Associate Program.

Raghava Y., a student of 7th Semester, successfully completed a hands-on course, '*Fundamentals of Artificial Intelligence and Machine Learning*', offered by Vodafone Idea Foundation.

Harsha R., a student of 7th Semester, successfully completed the Coursera certificate course, '*Python Programming Essentials*', offered by Rice University.

Rishab S., a student of 5th Semester, completed the online course, '*Microsoft Excel – Excel from Beginner to Advanced*', offered on online platform, Udemy.

Thara Kiran, Darpan C. Raj, Nikhil R. Prajapat and Chethan Kumar H. R., students of 8th semester won Best Working Model prize in the State Level Student Project Exhibition & Competition (SPEC2021) organized by Professional Bodies Forum, Department of Mechanical Engineering, Bangalore Institute of Technology, Bengaluru, in association with Indian Welding Society held on 20th July 2021.

Non-Academic

Prajwal M. Nayak, a student of 5th Semester won gold medal in the Yoga individual event at the VTU Inter-Collegiate Championship held at Vidyavardhaka College of Engineering, Mysuru on 18th and 19th December 2021.

DEPARTMENTAL ACTIVITIES

Online Faculty Development Program

Department of Mechanical Engineering in collaboration with NewGen IEDC, DST, Govt of India – ED cell B.N.M Institute of Technology conducted an online one week Faculty Development Program on Artificial Intelligence and Machine Learning for Mechanical Engineers from 9th August to 13th August, 2021. A total of 250 registrants participated in the program. The program featured lecture sessions by eminent experts from industry and academia. The topics presented during the FDP included application of AI and ML for Industry 4.0, Deep Learning Techniques for Additive Manufacturing, AI methods for Optimizing Manufacturing Systems, Generative Design, Big Data Analytics, Python Programming, Soft Computing Techniques for Manufacturing Processes, Machine Connectivity and many more. The participants gained an insight into fundamentals of AI and ML applications and techniques to enhance and optimize existing mechanical engineering domains using those capabilities. The FDP was hosted on the Microsoft Teams platform. Participation certificates and the video recordings of the sessions were made available to all the participants.

Data Analysis – Adding Values to Industrial Applications



Shri. Mahadev Prasad S
Program Manager
Check Point Systems
Bengaluru

Machine Learning and Deep Learning Techniques for Additive Manufacturing



Dr. M Priyadarshini
Asst. Professor Senior Grade
School of Computer Science & Engg.
VIT
Andhra Pradesh

Applications of Artificial Intelligence Methods in Optimization of Manufacturing Systems



Dr. S S Mahapatra
Professor
Dept. of Mechanical Engineering
NIT
Rourkela

Generative Design - Augmented Mechanical Engineering



Shri. Sandeep Nagaraj
Design Engineer
Wings & Canards
Lilium GmbH,
Webling, Germany

Practitioners Approach to Big Data Analytics



Dr. Jasma Balasangameshwar
Assoc. Prof. & In-charge Chairman
Dept. of Computer Science and
Technology
Dayananda Sagar University,
Bengaluru

Python Programming – Applied to Mechanical Engineering



Dr. Bharath V G
Assoc. Professor
Dept. of Mechanical Engg.
Brindavan College of Engineering
Bengaluru

Machine Connectivity and its Applications in Metal



Shri. T Narendra Reddy
Scientist
CMTI
Bengaluru

Applications of AI & Deep Learning



Smt. Chaitra N
Asst. Professor
Dept. of Electronics & Comm. Engg.
BNMIT
Bengaluru

Application of Soft Computing Techniques in Manufacturing Processes: Issues and Challenges



Dr. Jagadish
Asst. Professor
Dept. of Mechanical Engg.
NIT
Raipur

AI and ML for Mechanical Engineers



Dr. Ashish Shridhar
Product Specialist
Altair
Germany

Details of invited speakers for the Online Faculty Development Program

Online Training Program on Go-Kart: Design and Development

Department of Mechanical Engineering in collaboration with NewGen IEDC, DST, Govt of India – ED cell, organized a one-week Online Training Program on Go-Kart: Design and Development from 23rd August 2021 to 31st August 2021. The Training was conducted by Mr. Raunak Chaudhary, Sr. Design Engineer, Imperial Society of Innovative Engineering (ISIE-India), Noida. 20 students were selected from 4th and 6th semester to participate in the program. The program aimed at providing an exposure on the design and development of a Go-Kart. Topics ranging from physical structure of a Go-Kart, application of Finite Element Analysis (FEA) for design and optimization of structural members, simulation of vehicle testing, battery selection, battery pack design, steering system, braking arrangements and aerodynamics were presented during the training program.

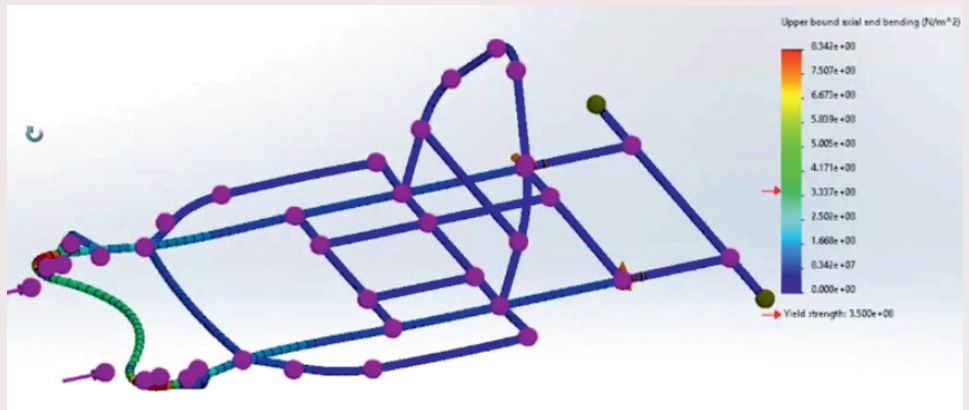


Image: Finite Element Analysis of Go-Kart Frame demonstrated during the training program

Workshop on 3D Printing

A two-day workshop on 3D Printing was conducted on 4th and 5th of October 2021 under the banner of Indian Society for Technical Education (ISTE) Students Chapter. The workshop was intended to provide hands-on training in 3D printing for 5th and 7th semester students. Faculty from the department designed and delivered the content of the workshop. The workshop consisted of 6 instructor guided hands-on sessions. The content delivered included aspects related to fundamentals of Additive Manufacturing, 3D Modeling and 3D Printers. An industrial visit to Hycube Works was organized as part of the workshop. A total of 50 students participated in the workshop. A mandatory assessment test was conducted at the end of the workshop.



*Photo: Students working with the 3D Printer during the workshop
Left Corner: A 3D Printed Model*

Workshop on ANSYS Workbench

A two-day workshop on ANSYS Workbench was conducted on 4th and 5th of October 2021 under the banner of Institution of Engineers (India) Students Chapter. The workshop aimed to introduce the capabilities of ANSYS Workbench to 5th and 7th semester students through hands-on training sessions. The workshop was conducted in offline mode. Faculty from the department designed and delivered the content of the workshop. The workshop consisted of 6 instructor guided hands-on sessions. The content delivered included aspects related to 3D Modeling, Structural Analysis and Computational Fluid Dynamics (CFD). A total of 30 students participated in the workshop. A mandatory assessment test was conducted at the end of the workshop.

Alumni Talk



Mr. Adithya P. Maithreya
Application Development Senior Analyst
(Senior Tableau Developer)
Accenture Solutions Pvt. Ltd., Bangalore

A lecture session on '*Career Prospects for Mechanical Engineers after Graduation*' was organized as a part of Alumni Talk Series in association with Institute of Engineers (IEI) Students Chapter on 18th December 2021. 50 students from 5th and 7th semester participated in the event. Mr. Adithya P Maithreya, an alumnus of 2011-15 batch was the invited resource person. The speaker highlighted the importance of software skills essential for mechanical engineers. He emphasized the career prospects in software development and encouraged students to pursue training courses in trending domains like data science, cloud computing, cyber security etc.

A lecture session on '*Importance of Design Thinking and Problem Solving for Mechanical Engineers*' was organized as a part of Alumni Talk Series in association with Institution's Innovation Council (IIC) on 14th December 2021. 50 students from 5th and 7th semester participated in the event. Mr. Mohan Kumar B S, an alumnus of 2011-15 batch was the invited resource person. The speaker highlighted the career options in Mechanical Engineering domain. He impressed on the students, the importance of application oriented knowledge and software skills essential to succeed in present day job scenario. The speaker highlighted the role of a design engineer in innovative product development.



Mr. Mohan Kumar B. S.
Lead Engineer (Purchase)
Hilger and Kern Manufacturing Pvt. Ltd.
(DOPAG India)

About Ms. Lila Poonawalla (Source: https://en.wikipedia.org/wiki/Lila_Poonawalla)

Lila Poonawalla was born on 16th September 1944 in Hyderabad in the Sindh region of British India. She lost her father when she was three years old and during the partition of India, her family moved to India as refugees to settle in Pune. She did her early education in Pune after which she graduated as the first woman Mechanical engineer from the College of Engineering, Pune in 1967. She started her career as an apprentice at Ruston and Hornsby and later moved to Alfa Laval India, rising to the level of chairperson and later took over Tetra Pak as CEO (after the acquisition of Tetra Pak by Alfa Laval). After her retirement from Alfa Laval, she opened a consultancy firm under the name, Lila Consulting Services Company, and acts as an advisor to several companies; Schlumberger, USA and Arco Safety Equipment, UK featuring among her clients. She is involved with the Quality Circle Forum of India at its Maharashtra Chapter where she is the Chairperson Emeritus. She is the founder director of Pune Citizens' Police Foundation, sits on the board of Ashta No Kai, an NGO involved in the welfare of rural communities, and is the vice president of Pune Blindmen's Association. She is also a member of the Pune Divisional Committee of World Wildlife Fund and the Governing Council of Sanskriti Institute of Management and Leadership.

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