

Volume 2 Issue 1 News Letter (Jan-June 2020) July 5

DEPARTMENT OF MECHANICAL ENGINEERING

AMRITA VISHWA VIDYAPEETHAM
DEEMED TO BE UNIVERSITY
School of Engineering

ACME MECHANICAL ENGINEERING

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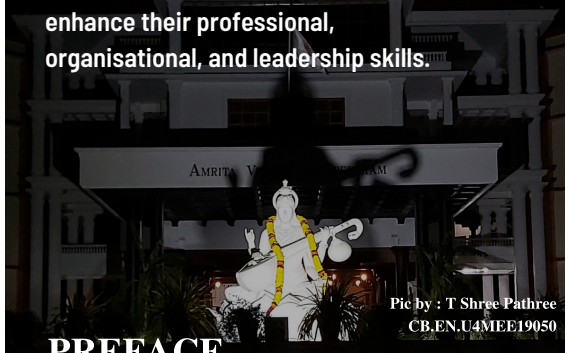
Pic by: Sreelekshmi R
CB.EN.U4MEE19056

ACME

Association of Mechanical Engineering (ACME) is a departmental professional association, formed to organise professional activities like seminars, workshops, industrial and inter-institute interactions, and other technical as well as non-technical events for the benefit of students, to enhance their professional, organisational, and leadership skills.



Pic by : T Shree Pathree
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PREFACE

ACME happily informs the release of the second volume of its second edition NewsLetter '*SANKETIKA*'. This NewsLetter is intended to provide information and announcements regarding all technical and non-technical events/ activities for the benefit of students, teaching and non-teaching faculty and other stakeholders of the department. ACME will be responsible for the contents and release of *Sanketika.*

Vision of the Department

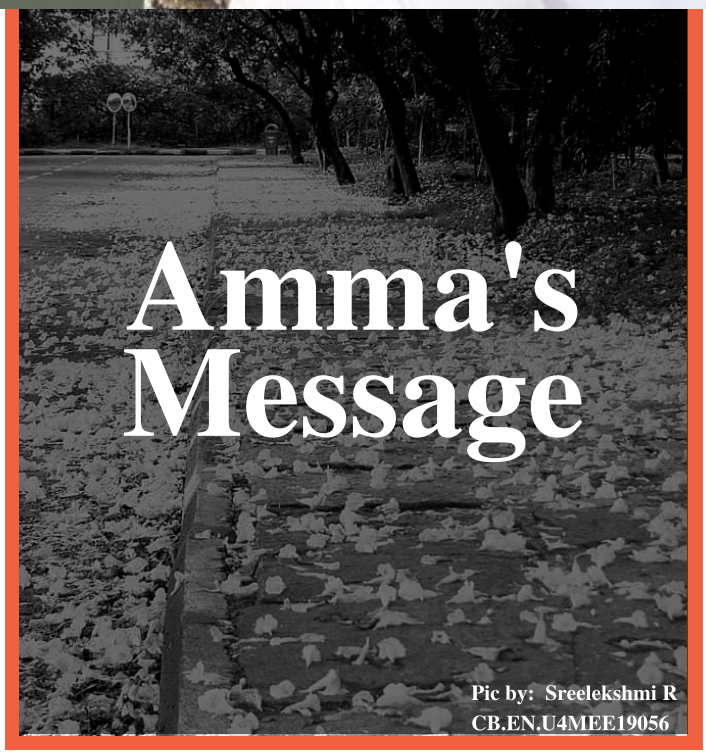
To transform our students into outstanding mechanical engineers with strong domain knowledge and skills, society-centric research intent, and exemplary ethical values, making them the most desired professionals by research institutions, industry and society.

Mission

- To develop in each student, a profound understanding of fundamentals, motivation for continuous learning, and practical problem-solving skills for building a successful career.
- To create and share technical knowledge and collaborate with industry and institutions for the betterment of society.
- To imbibe ethical values, leadership skills, and entrepreneurial skills in students.
- To sustain a conducive environment to involve students and faculty in research and development.

- **Amrita Vishwa Vidyapeetham** (**AVVP**) has secured the prestigious **Institutions of Eminence** (**IoE**) ranking which is awarded by the Ministry of Human Resources Development, Govt. of India
- Established in 2017, the **Institutions of Eminence** scheme provides participating universities with government funding and greater autonomy, with the aim of uplifting them into the top 100 of the world universities
- According to **THE**, Amrita Vishwa Vidyapeetham declared improvements in all the ranking metrics, compared to 2019
- **AVVP** has also secured the 2020 Emerging Economies ranking for one of the best universities in the world, as per the **Times Higher Education** (**THE**) Ranking for World universities
- As per **National Institutional Ranking Framework** (**NIRF**), **AVVP** is one among the top ten universities in the country





Dear Children,

Be courageous. This courage is the true antivirus for destroying this virus (Corona Virus). In Santana Dharma, courage is considered to be the Dhairya Lakshmi (Goddess of Courage). If you have courage, you can overcome any situation. The nature of life is such that the next breath is not in our hands. Living in the present moment with discrimination and awareness determines our true existence and longevity. Hence without losing your mental strength, you should all pray for world peace, peace of mind for all those who are living, and peace of all departed souls.

If living abroad is causing any difficulties for you and if you want to come back to India, please inform us the total number of people who would like to come back, after inquiry and discussion with the Indian government/embassy. We will also try to explore the possible options.

Without losing your mental strength, all my children should follow the precautionary measures stated by the Government. Keep your rooms clean, be calm and don't be afraid. My dear children, fear should never overpower us, be brave. It is said that in our path, both darkness and light are determined by ourselves. Thinking of all my children, Amma feels sad. We need to come out of this situation.

At this moment, everyone is sitting inside their rooms as though we are being held at gunpoint. We should develop the alertness like a soldier at the battlefront.

Three years back, AMMA felt that some crisis will happen in 2020. Therefore, AMMA started white flower meditation. AMMA is not saying that this will eliminate the crisis, however, the practice of this meditation will improve the situation. Amma has earlier narrated the following story. When the ground floor of a 10-story building catches fire and the people living in the top floor are called for help, how will it sound if they replied that the fire is your problem, not ours. In fact, the fire will actually be spreading upwards. In a similar way, others' problems will become our problems. This is what AMMA has said earlier. Therefore, keeping this in mind we should become alert.

The meditation for world peace (white flower meditation) that AMMA created back then- AMMA has been making everyone do it. These positive vibrations will certainly pervade. The current virus is also spreading in the form of negative vibrations. May our sincere prayers and meditation for world peace traverse in the form of positive vibrations and destroy the negative vibrations.

Human effort does have its limitations. Though we may drive our vehicle carefully, if the opposite vehicle carelessly hits our vehicle, we could get into an accident. We only have the right to put forth the effort. To accomplish everything, we need Grace. For that Grace, all my children, you should pray. May my children be bestowed with strength and peace.

- Amma

Amma's Kisses. Don't be sad, Children! Kisses













Workshops Seminars Guest Lectures

Pic by: Anush Naarayan V S
CB.EN.U4MEE19005

An international seminar was conducted on the 21st of January 2020. The Chief Guests and speakers for the event were Dr. Eric Blanco, an Associate Professor, Mr. Pierre Lemaitre Auger, and Professor Giigiin Alpan, from the University of Grenoble, France. The event was attended by 15 faculty members and more than 85 students. The coordinators were Dr. S Thirumalini Chairperson and Dr. M Ramu, Associate Professor.



Self-confidence gives you the power to face any challenge. To develop self-confidence, you need to get into good daily habits, which are what you do on a daily basis in your life in the long term. The daily disciplines are the foundations on which your dreams can be made into reality. Once you instill discipline in your daily life, these habits will enhance your physical, spiritual, intellectual, and emotional energies. With the ideas we're planting daily, you'll be able to meet a New You soon!

Knowledge comes from education. To succeed in any field, we need to continuously learn. Learn the basics, to become an expert. If what you are doing needs better vocabulary, better communication skills, more drive, more patience, new exploration, new frontiers of science and technology, then learn them all. To have a cutting edge in your skills and personality, list down the things you should learn and learn them one by one.





Pic by: Sai Charan Reddy Devarapalli
CB.EN.U4MEE19015

Develop self-confidence. Self-confidence comes with consistent learning. Education makes you confident. Don’t wait for anyone to tell you what you need to learn. No one else has the key to your success; only you have the key. And that key is shaped on the anvil of education!

Dr. Raghuram P
Asst. Professor (SG)

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Pic by: CVS Sai Sri Sharanya
CB. EN. U4MEE19055

Publications

June 2020







Anokha Techfest, the annual event of Amrita School of Engineering, Coimbatore provides a unique opportunity for students to participate in fun-filled and challenging events and workshops. The Department of Mechanical Engineering has conducted various events and workshops for students. The events are MecHunt, Auto Quiz, Design Consortium & Mech Taboo. MecHunt was a treasure hunt game, where all the clues denote the mechanical laboratories on the campus.

Auto Quiz was a quiz event, purely on the automotive sector. Design Consortium was a CAD designing competition. Mech Taboo was a fun event with a twist on the original game of taboo. All the clues were from mechanic terms. ANSYS, Industrial Robotics & Automation, and Welding workshops were conducted. SAE groups - Amrita Racing and BAJA put stalls and participated in the TECH FAIR at Pandhal.


Challapalli Sri Krishna Pranav
CB.EN.U4MEE19012









- Amritotsavam is a cultural event, where all departments are categorized into 4 teams namely Amritamayi, Anandamayi, Chinmayi & Jyotirmayi
- Mechanical Engineering is under Aanandamayi
- Many cultural events like music, dance, fine arts, literature, theatre, and informal
- Anandamayi was selected as the Runners-up with a total of 167 Points
- As a jewel to the crown, the Department of Mechanical Engineering was awarded the first prize in Fine Arts (Rangoli)





Team Torpedo







We are a team of 35 mechanical and electrical engineering students, and we are split into Design, Steering, Suspension, Electricals, Brakes, and Transmission. We start by designing the car by using CAD software like Solidworks and make a prototype of our vehicle. Once we finalize the design, we build the final version and test it rigorously.

We participated in SAE BAJA, Indore and ESI, Pune in 2020. We won the All India 9th place in ESI 2020

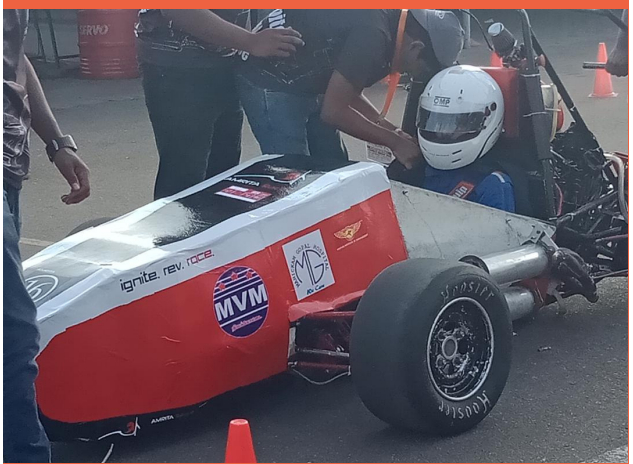








Amrita Racing



A team of 30 mechanical and 2 electrical engineering students, built and manufactured a student Formula style race car. The technical subsystems include a split-up of Vehicle Dynamics, Brakes & Wheels, Powertrains & Electricals, Chassis & Aerodynamics. The non-technical subsystems include Business Plan Presentation and Cost & Manufacturing. We start by designing the car by using CAD software, like Autodesk Inventor, and do the analysis on ANSYS, Lotus, and ADAMS. Then, we make a prototype of our vehicle. Once we finalize the design, we build the final version and test it.

We participated in the FORMULA BHARAT 2020, at Kari Motor Speedway, Chettipalayam, Coimbatore. We were in 21st position overall, 14th in the Business Plan Presentation, 18th in Cost & Manufacturing, and 26th in Design Presentation.

Alumni Corner



The courses taught were good but some are difficult to apply in the real world and require further training in the company to incorporate our knowledge to apply in real-world problems. The placements were okay at best. Mostly only IT companies came for placements. We can try the PSG placement model where they encourage employers to take in the students as interns and then decide to employ them or not. This will give more students the opportunity to experience core company jobs.

Ashwin Ramesh
CB.EN.U4MEE16012

Sports Events

sankalpa

@Amrita

2019-2020

Aadhitya Manoj Kanna S	CB.EN.UMEE 19156	4*400 mts Relay	2nd
Aadhitya Manoj Kanna S	CB.EN.UMEE 19156	4*100 mts Relay	1st
Aadhitya Manoj Kanna S	CB.EN.UMEE 19156	High Jump	2nd
Aadhitya Manoj Kanna S	CB.EN.UMEE 19156	200 mts	2nd
Bharth B	CB.EN.U4MEE17115	Weight lifting(Mysore)	Best Lifter
Bharth B	CB.EN.U4MEE17115	Weight lifting(Coimbatore)	Best Lifting,First (61kg)
Bharth B	CB.EN.U4MEE17115	Power lifting (Coimbatore)	2nd

@Manipal University

04.03.2020 to 07.03.2020

Bharth.B	CB.EN.U4MEE17115	Power lifting	Gold Medal
Aadhitya Manoj Kanna S	CB.EN.UMEE19156	4*100 mts Relay	Gold Medal
Aadhitya Manoj Kanna S	CB.EN.UMEE19156	4*400 mts Relay	Bronze Medal

Our Inter-campus volleyball (women and men) and football (men) matches were held March 2-3, 2020.
We congratulate the following winning teams for their bests during the sports events.

Volleyball (Women)
Winners - Coimbatore Campus
Runners-up - Bengaluru Campus

Volleyball (Men)
Winners - Coimbatore Campus
Runners-up - Bengaluru Campus

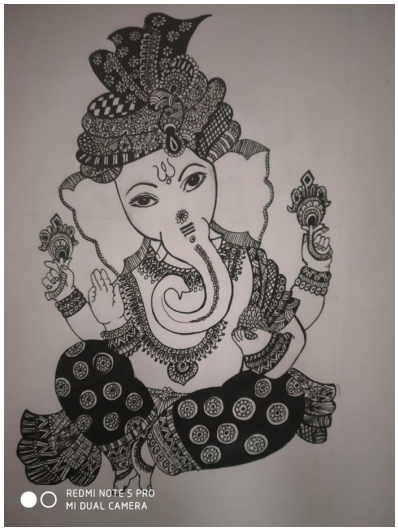
Football (Men)
Winners - Coimbatore Campus
Runners-up - Amritapuri Campus

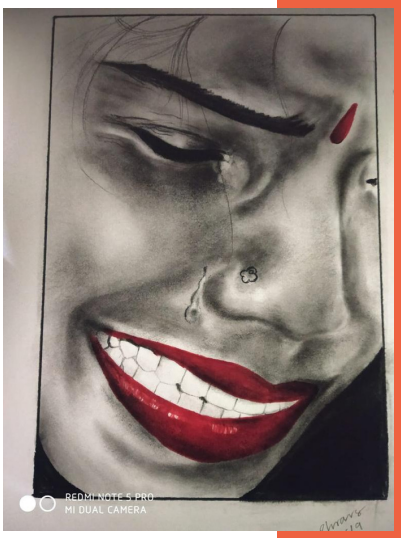




Siddharth	CB.EN.U4MEE19047	Arjun	CB.EN.U4MEE16205
Nandit	CB.EN.U4MEE19028	Karthik	CB.EN.U4MEE16028
Kabilan	CB.EN.U4MEE19120	Amit	CB.EN.U4MEE16104
Vikash	CB.EN.U4MEE17061		
Varun	CB.EN.U4MEE17360		

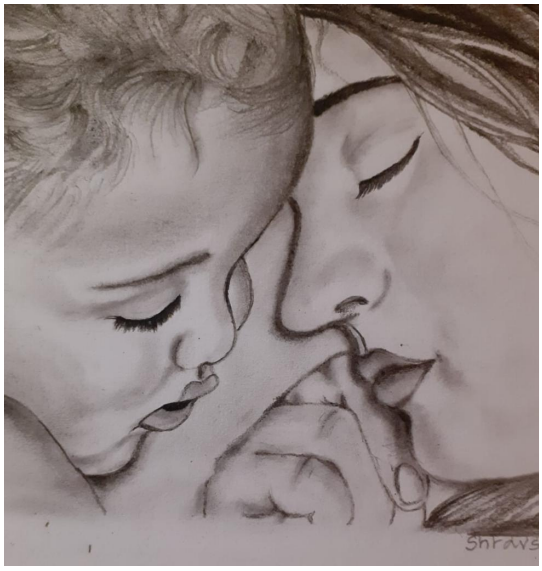
Arts

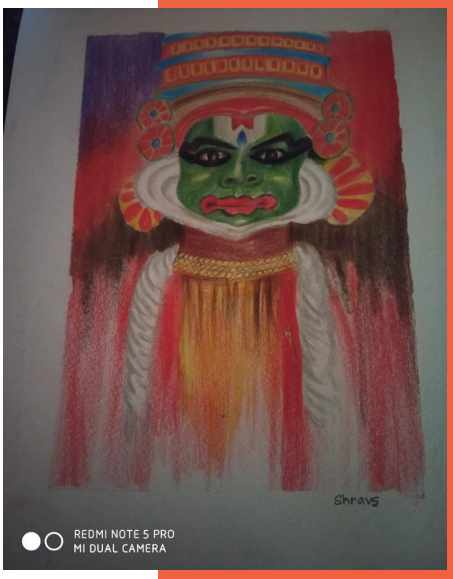




















Shravya Kamath B S
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Harshini G V
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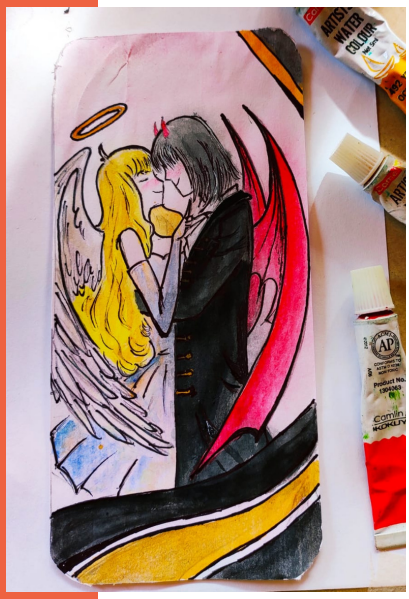
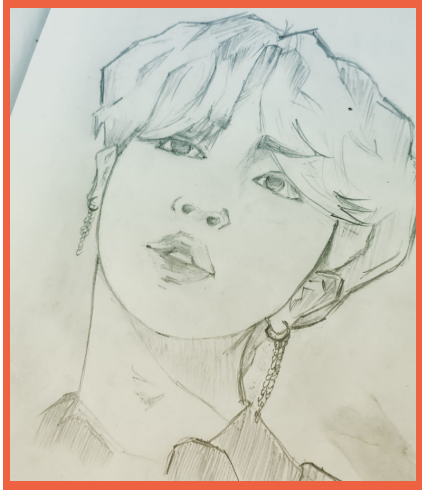
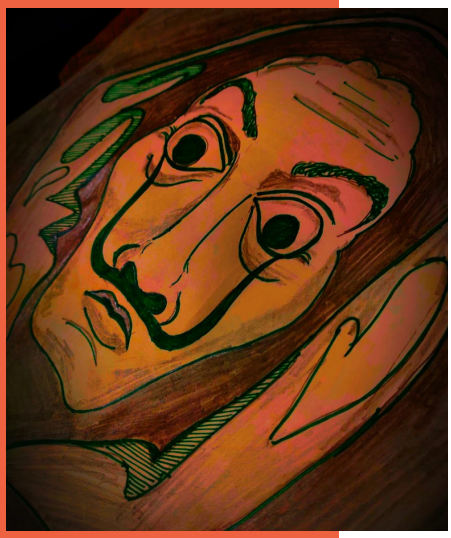
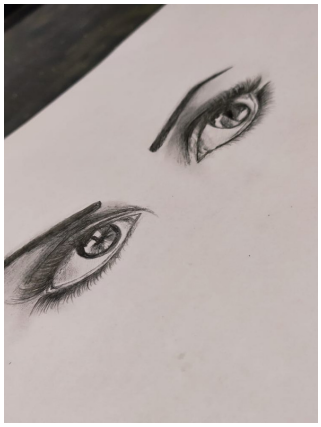


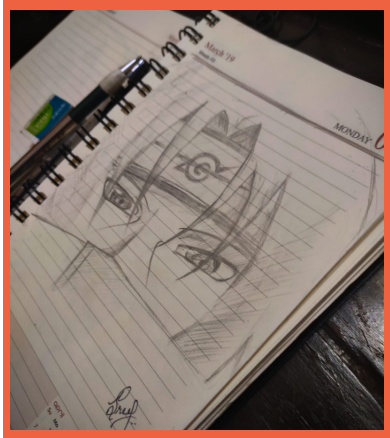


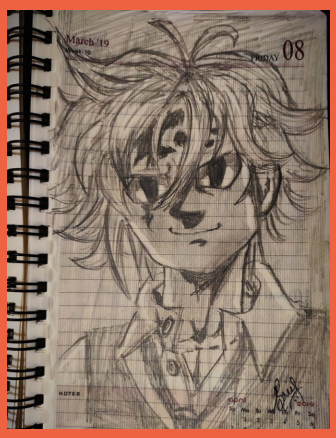


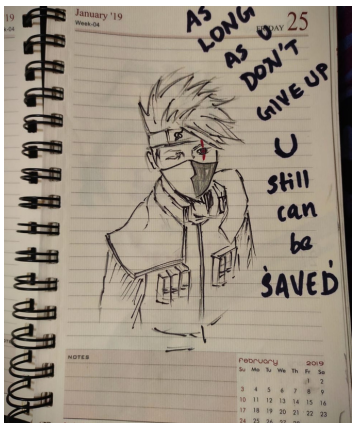










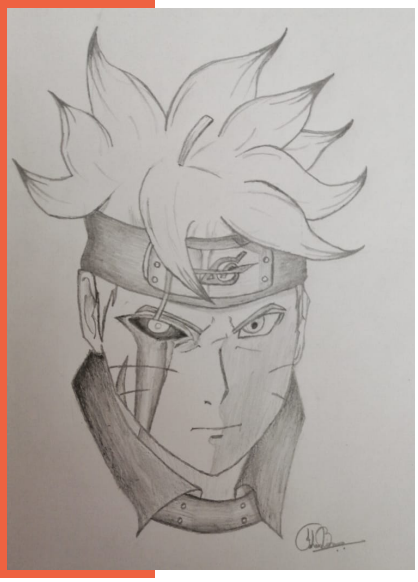


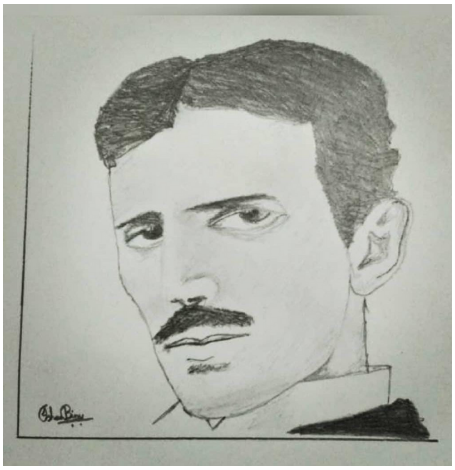


Sreelekshmi
CB.EN.U4MEE19056

sankrutika







Ishan Binu Sainudeen
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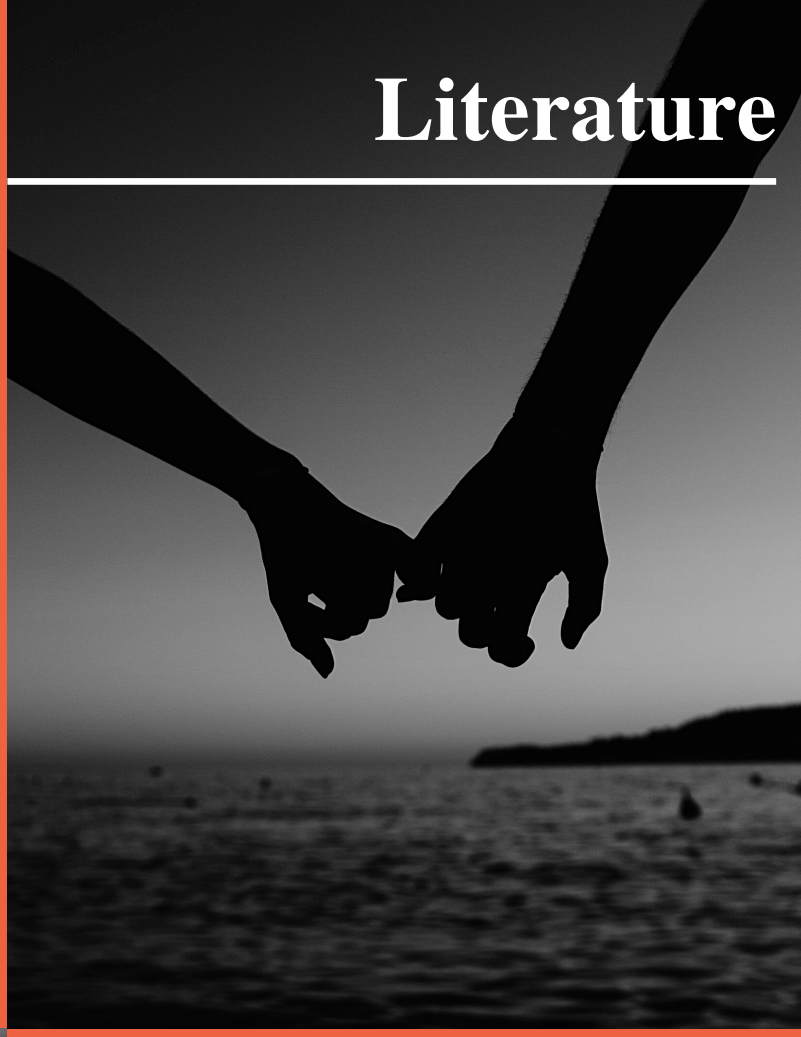


Us

Adorned in the fabric of floral blossom
Her scent seduced the life around
As she twirled in joy unbound
He was lost in her, only to be found
The closer she came, the deeper he fell
Her sparkling eyes, where he'd forever dwell
Caressing her silk, tingled his own
Intoxicated by her, dark had glown
The world vanishes as the two become one
Lifting her by the waist, in the joy they spun
He succumbs to her lips and brings her close
Heavy breathes but lightened souls.
Foreheads meet and fingers intertwine
He whispered, "You're mine and I'm thine.."



The Fall

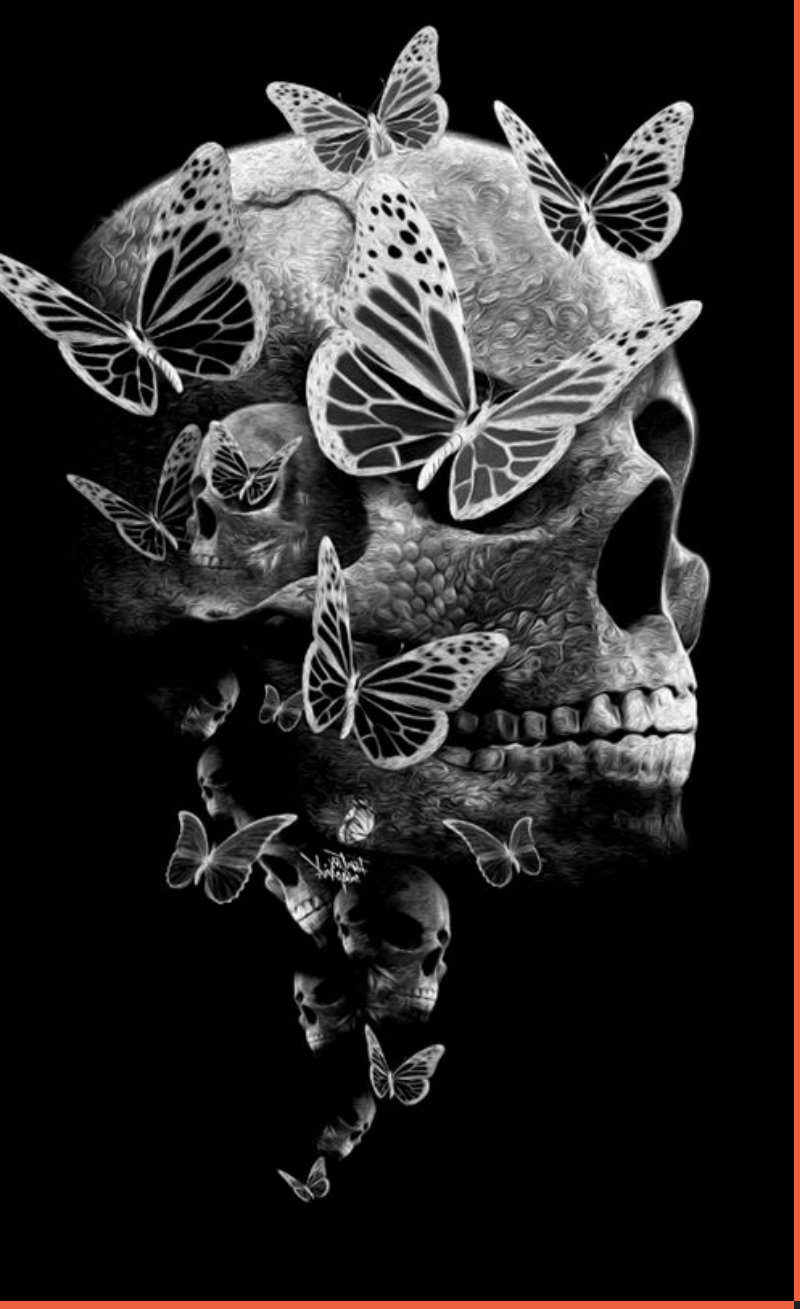
Standing at the edge of the world,
I feel tranquility in the air around me.
Making my body and mind weightless,
Despite the cocktail of emotions to which I'm bound.

The gorge is deep and ever inviting,
And gravity is awing me by her seduction.
But is it right to call me suicidal,
Or am I on the path to self-revelation.

The wind is gentle in pushing me forward.
The cold is tender in weakening my stance.
I close my eyes and I see her face.
Her ineffable smile sends me into a trance.

I wonder what the drop would bring me
Am I an immature teen who believes to fly
Will it cut all strings and set me free
Or am I just a madman who's ecstatically high.

Jeevan S
CB.EN.U4MEE17326



The Beauty of Annihilation

Welcome to this universe,
From whence you were born,
To the day you die.

Like clockwork will be the 'verse,
Bound to fail and burn,
Yet beautiful as they lie.

All things made in two,
Creation & destruction,
Light & dark.

For it may be to you,
The fear of annihilation,
But do not mistake fear with wonder,
For this is the ark.

This is the beast,
Not one of a tale,
But one that will show the mind of God.

Don't worry the least,
There's no chance it'll fail,
For this is God's ballade.

Everything is permitted,
For this is the beauty of annihilation.

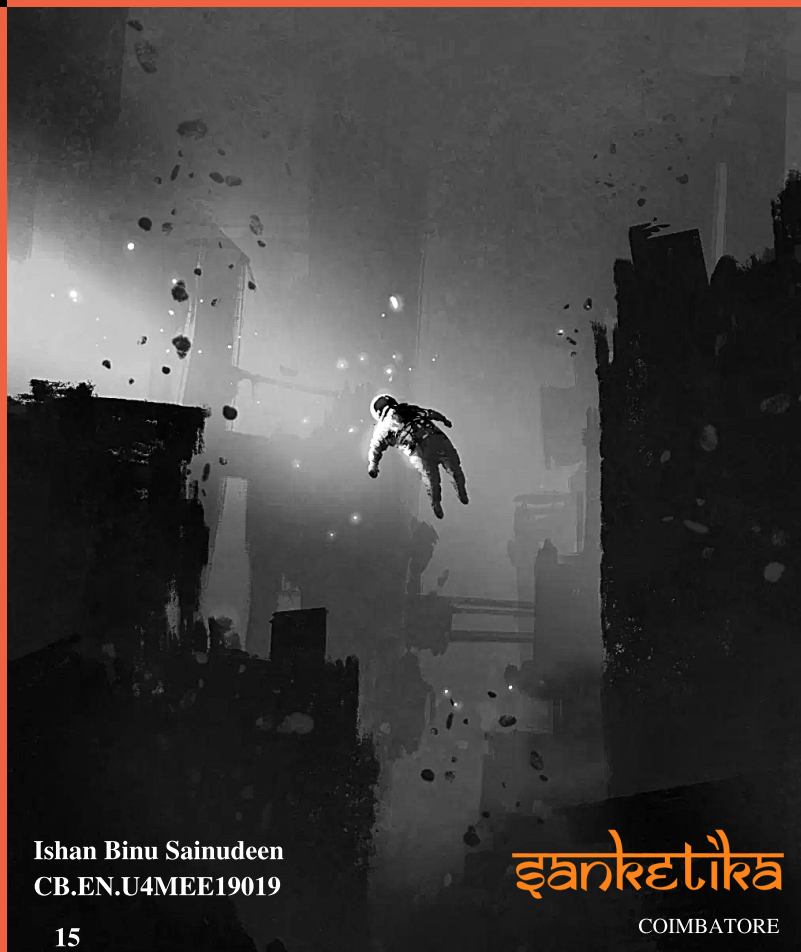
Life is a Mystery

From whence does a mother love her child?
From before or after they arise?
That undying love so great,
That of course it was before.

Is the soul our mind?
Who decided they're alike?
This philosophy might be bait,
But nothing shall swear.

Life as it is,
Love was taught before birth,
What lies ahead teaches everything else.
Is there meaning to this?
Or is that just a selfish human excuse?

Whatever it is,
Whether life's a lie henceforth,
Or if there's a reason like anything else.
Why let it be boring and recluse?



Ishan Binu Sainudeen
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Photography





T Shree Pathree
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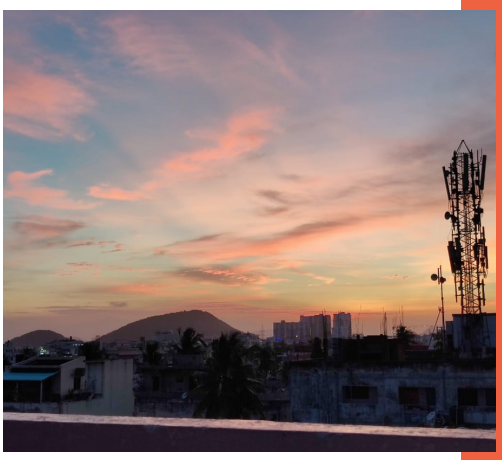
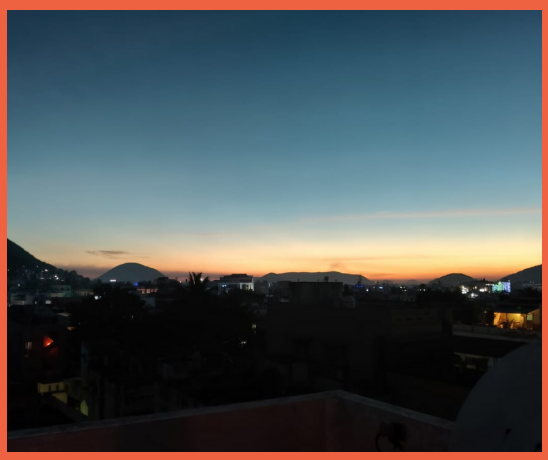


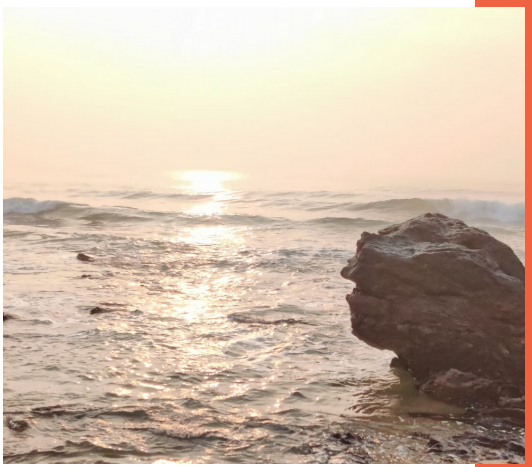



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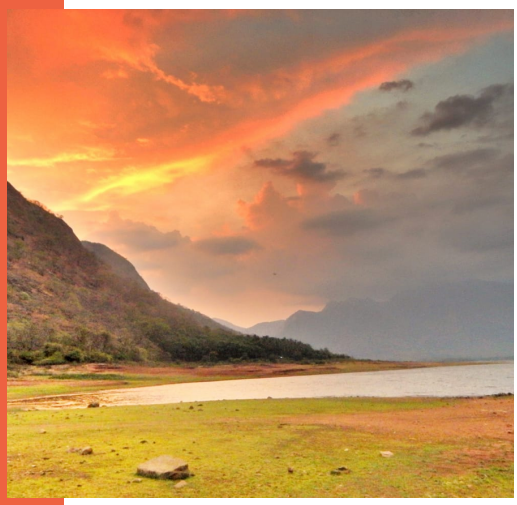
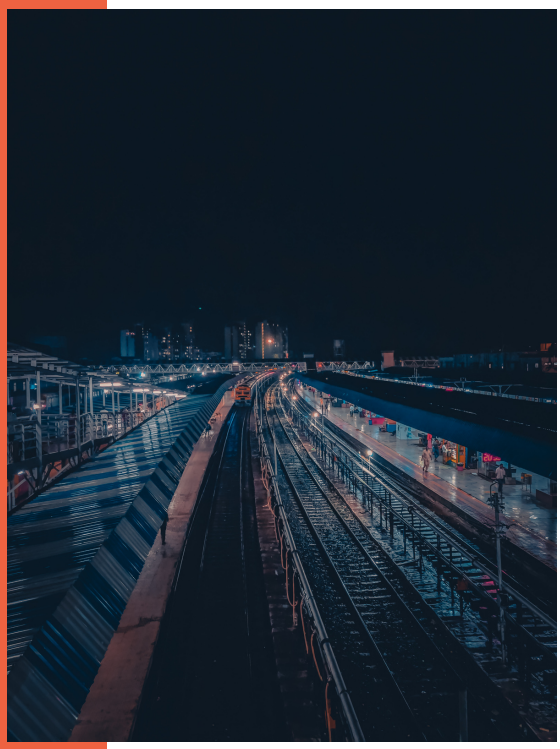


Arun A
Assistant Professor (Sr. Gr.)







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Computational Modeling

– A Necessity of the Present and a Window to the Future

It has been continuously proven since time immemorial that the human mind is a beehive of ideas and innovations, which is also capable of taking superior judgments and providing unique solutions. In the pre-historic times, human beings had naturally evolved these skills being exposed to adverse situations on the planet, and the requirement of such skills for mere survival. However; in the modern era, the exponential growth of science and technology paved way for multi-faceted demands and the need to provide holistic solutions. Therefore, the inherent human capabilities could be converted into practical possibilities only by a professional and seasoned channeling of such ideas.

Professional engineering education and the subsequent skill acquirement help in this smooth transition. However, the lifecycle of a product or a process from the very birth of the creative idea to the finalized product is an expensive affair if let to completely depend upon the experimental or manufacturing trials. Moreover, the lead time involved in this conventional approach would be immensely large since several trial-and-error iterations would be required.

The advent of computer technology in the early 1960s & 70s, and the subsequent Information Technology revolution that followed up in the 1980s & 90s paved way for the development of several virtual simulation software giants, like, Matlab, Mathcad, Ansys, Abaqus, LS-Dyna, Fluent, Adams, Nastran, Pastran, Comsol, Arena, Prosim, Minitab, and so on (with the list never-ending). Such software help in modeling the ideas virtually, drawing in theoretical concepts from fundamental theories like Basic Physics, Fundamental Mathematics, Solid Mechanics, Finite Element Method, Fluid Mechanics, Boundary Element Method, Thermal Engineering, Material Behavior, Engineering Management, Optimization Concepts, Supply Chain Management, Financial Management, etc. Thereby, any original concept could be virtually created and analyzed based on fundamental theories, with added “what-if” studies.

Therefore, before even the first physical prototype is fabricated, the engineers would acquire enough data on what to expect, and what kind of design alterations and process modifications need to be undertaken, for an efficient product output that perfectly satisfies the set design specifications. This is a huge ramification on the costs incurred on the product and process life-cycle. In addition to the capacity of predicting the static or dynamic load-carrying capacity (or functioning) of a product or a system, computational modeling can also predict the service life, failure mode, failure status/structural health with unconditional accuracy. Lately, these capabilities have been used for predicting financial markets and to perform business analytics as well.

The growth of the hardware industry from the second-generation integrated circuit (IC)-based mainframe computers to the third generation minicomputers, and further, to the microprocessor-based fourth generation computers that use VLSI (very large scale integration) technology has, in parallel, boosted the capability and expanded the capacity of computational modeling by leaps and bounds. The developments in the field of networking have further enhanced the speed and quality of computing in the form of parallel computing, grid computing, and cluster computing.

All these advancements have strengthened the lineage of computational modeling, and thereby, improved the speed of offering solutions to real-time engineering problems. As of now, the global computational sector has reached a scenario, wherein there is no major industry in any corner of the world that does not use at least any one type of computational modeling technique. With the passage of time, as the design specifications, product efficiency, and environmental emission controls converge too much tighter tolerance levels, computational modeling would turn out to be the only solution at hand.

The latest developments in the area are multi-scale modeling, micro-structural modeling, etc. that integrates concepts from different levels of a material structure, right from the continuum level to the atomistic or sub-atomic level. Such capabilities can possibly push scientists and engineers to look beyond the physically interpretable concept of universal existence and might even encourage them to challenge the existing underlying hypotheses.

Although the future of computational modeling looks exceptionally promising, the readers should agree upon the fact that such models need to be validated with physical tests or experiments, which is a bare minimum necessity. It is a universally accepted fact that any model that is not validated is equivalent to an unproven hypothesis or a fancy imagination.

After all, a computer is just a machine, and it is the human brain which is a plethora of natural intelligence and ideas that should lead from the forefront, to prevail!!

- Dr. Ajith Ramesh, Associate Professor - Mechanical Engineering
Chief Editor - *Sanketika*



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