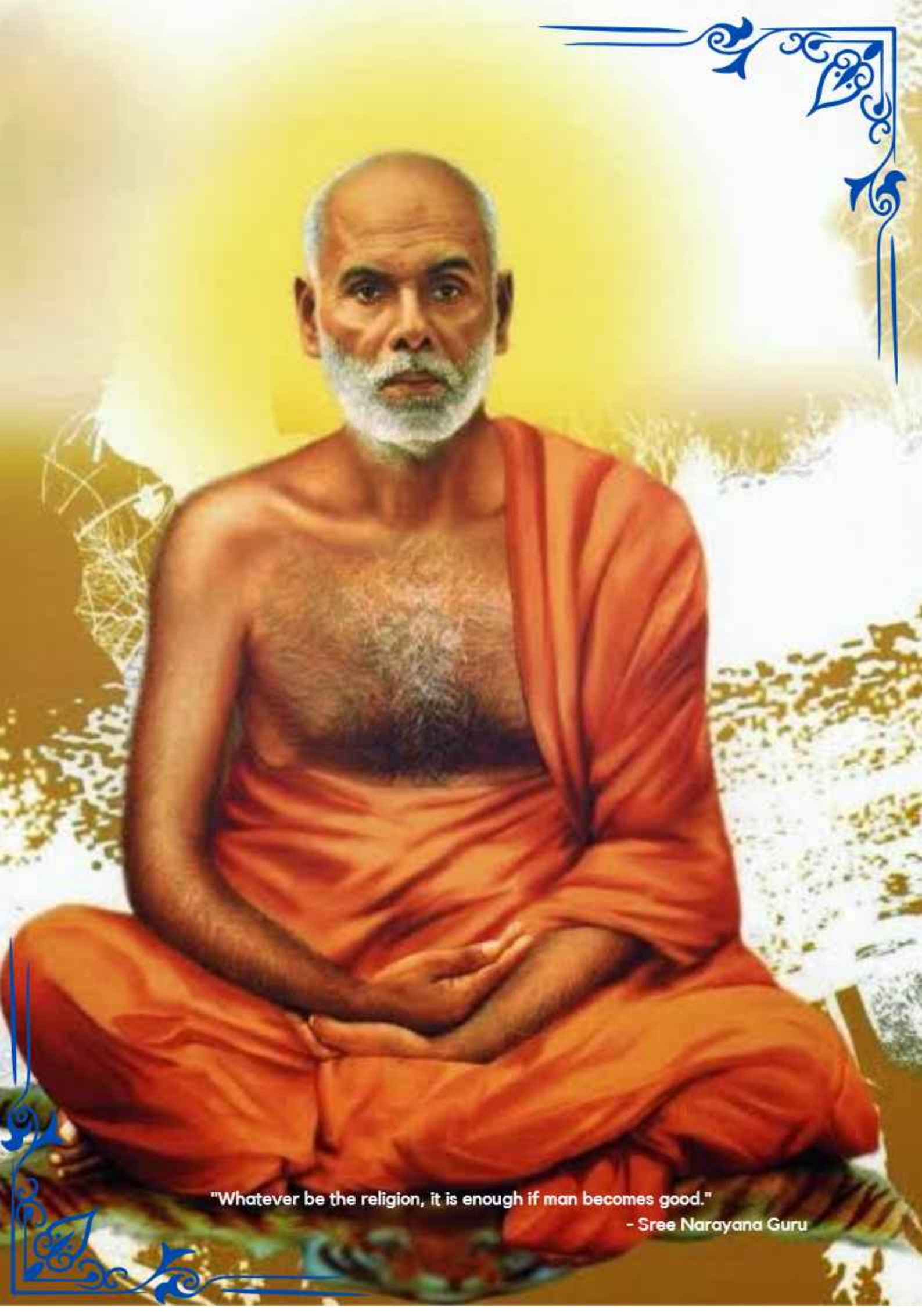
# TECHSTIA

THE WRANGLE OF TECHNOPHILES

VOLUME: 1 ISSUE: 3 DECEMBER 2020


MAHAGURU INSTITUTE OF TECHNOLOGY

A MAGAZINE OF DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING


"Whatever be the religion, it is enough if man becomes good."
- Sree Narayana Guru

## ABOUT THE DEPARTMENT

We, the students and faculty of Computer Science comprise of the biggest department on campus. Striving toward creating an excellent ambience for budding engineers, coders, most importantly, innovators. We are driven forward by self-motivated goals. New ideas, research and scholarship flourish in our laboratories. This is just the right place for leaders and innovators of tomorrow to emerge! The Computer Science and Engineering department strives towards building progress that not only concentrate on logic and design, but also in inculcating soft skills such as team-work, leadership and self-confidence. The programs intend to train students in advanced core courses that have been the foundation of our field, as well as emerging technology that are being used in latest revolutionary concepts, such as Artificial Intelligence, Virtual Reality, and so on.

## DEPARTMENT VISION

- To provide quality education, research and development with human values to mould globally competent and qualified computer science and engineering professionals with creative skills.

## DEPARTMENT MISSION

- Provide the quality education through value added course, theory and practical session for developing creative and innovative problem solving skills.
- Promote learners in entrepreneurship activities, placement and higher studies.
- To inculcate ethical and professional values and encourage moral values of social commitment among students.

EDITORIAL PANEL

- Chippy T (Staff Editor)
- Ajith Sagar Z(Student Editor)
- Aparna Sreekumar (Student Editor)

# MESSAGE FROM THE PRINCIPAL

Dear Students,

I am pleased to address the readers of Techstia, the magazine of the Computer Science department at Mahaguru Institute of Technology. As we come to the end of the year 2020, I am proud to look back at the numerous achievements of our institute and our students. The Computer Science department has always been a vital part of Mahaguru, consistently producing outstanding graduates who have made us proud. The department has been at the forefront of innovation, providing our students with the latest technologies and best-in-class infrastructure to keep up with the ever-evolving field of Computer Science.

I would like to congratulate the editorial team of Techstia for their excellent work in keeping our students informed about the latest happenings in the world of Computer Science. The magazine provides a platform for students to showcase their talent and creativity, and I urge all students to actively participate in the various events and activities conducted by the department.

Despite the challenges posed by the pandemic, the Computer Science department has been successful in organizing several events and competitions, bringing together students and faculty members from different parts of the country. The department's commitment to providing a holistic education, one that focuses on academic excellence and personality development, has been commendable. I would like to extend my heartiest congratulations to the Computer Science department for their numerous achievements in the year 2020. From organizing national-level events to winning several competitions, the department has made us proud and has established itself as one of the leading departments in the country.

In conclusion, I would like to wish the Computer Science department and the editorial team of Techstia all the very best for their future endeavors. Mahaguru Institute of Technology is proud of its association with the department, and I am confident that it will continue to excel in the years to come.

**DR. K KRISHNAKUMAR**
PRINCIPAL

# MESSAGE FROM ACADEMIC DEAN

Dear Students,

As the Dean of Mahaguru Institute of Technology, it gives me immense pleasure to address the readers of Techstia, the e-magazine of the Computer Science department. I am proud to look back at the numerous achievements of our institute and our students in the year 2020. The Computer Science department has always been a vital part of Mahaguru, consistently producing outstanding graduates who have made us proud. The department has been successful in providing our students with the latest technologies and hands-on experience, enabling them to tackle real-world challenges. I would like to take this opportunity to congratulate the students and faculty members of the Computer Science department for their unwavering dedication towards excellence. The department has been at the forefront of research and innovation, contributing significantly to the field of Computer Science.

Despite the challenges posed by the pandemic, the department has been successful in organizing several events and competitions, bringing together students and faculty members from different parts of the country. The department's commitment to providing a holistic education, one that focuses on academic excellence and personality development, has been commendable. I would like to extend my heartiest congratulations to the Computer Science department for their numerous achievements in the year 2020. The department has been successful in organizing national-level events and has won several competitions, making us proud.

In conclusion, I would like to wish the Computer Science department and the editorial team of Techstia all the very best for their future endeavors. Mahaguru Institute of Technology is proud of its association with the department, and I am confident that it will continue to shine in the years to come.

**DR. ARUN ELIAS**
ACADEMIC DEAN

# MESSAGE FROM THE HOD

Dear Students and Faculty Members,

It's immense pleasure to present the magazine for the year 2020-2021. Computer Science and Engineering department is the dynamic and vibrant department with the blend of young and experienced Faculty. Department places emphasis on all the important aspects of computers such as Computer Networks, Mobile Communication, Algorithm Design, Operating System, Advance Database Systems, Theory of Computation, Computer Graphics and many more.

Department takes the initiative to improve the soft skills, analytical capabilities and verbal communication of the students so that they can face the competition in the corporate world confidently. To meet the objectives, department pays special emphasis on teaching and hands on practical work. Students exhibit their innovative ideas, skills and potentials as final year project. I wish them all success.

**SUMA S G**
HOD

## MESSAGE FROM THE STAFF EDITOR

Dear Readers,

We hope this message finds you well. On behalf of the staff at Techstia, the e-magazine dedicated to computer science and engineering, we would like to express our gratitude for your continued support and readership. As the field of technology continues to evolve at a rapid pace, our team remains committed to providing you with the latest insights, trends, and innovations in the world of computer science and engineering. Whether it's exploring emerging technologies, discussing breakthrough research, or showcasing inspiring projects, our goal is to keep you informed and inspired.

We understand that the world of computer science and engineering can be complex, but we strive to present information in a way that is accessible and engaging to both experts and enthusiasts alike. Our team of talented writers and editors work tirelessly to deliver quality content that educates, entertains, and sparks your curiosity.

We also value your feedback and encourage you to share your thoughts, ideas, and suggestions with us. Your input helps us improve and tailor our content to meet your needs and interests. Together, we can create a vibrant community where knowledge is shared and ideas flourish. Lastly, we would like to extend our appreciation to the researchers, academics, and industry professionals who contribute their expertise and insights to Techstia. Your contributions are invaluable in keeping our readers informed about the latest advancements and trends in the field.

Thank you once again for your continued support. We look forward to bringing you more exciting content in the coming months. Stay tuned and keep exploring the fascinating world of computer science and engineering with Techstia!

**CHIPPY T**
STAFF EDITOR

## MESSAGE FROM THE CHIEF EDITOR

Dear readers,

At Techstia, our mission is to be your ultimate source of knowledge and inspiration in the dynamic world of computer science and engineering. We strive to provide you with top-notch content that reflects the latest advancements, trends, and insights in the field. Our dedicated team of writers, editors, and contributors works tirelessly to bring you articles, features, and interviews that captivate your imagination and expand your understanding.

**AJITH SAGAR Z**
CHIEF EDITOR

We recognize that computer science and engineering are vast and diverse disciplines, encompassing a wide range of topics and technologies. Therefore, we are committed to delivering content that is both comprehensive and accessible, catering to readers with varying levels of expertise. Our goal is to empower you with the information you need to stay informed, excel in your pursuits, and make informed decisions.

Your feedback and engagement are of utmost importance to us. We value your opinions, suggestions, and ideas, as they enable us to enhance the quality and relevance of our content. Feel free to reach out to us with your thoughts, and let us know how we can better serve your interests.

## MESSAGE FROM ASSOCIATIVE EDITOR

Dear readers,

Techstia is your go-to source for the latest happenings and insights in the world of computer science and engineering. Our dedicated team works diligently to curate a diverse range of content, including articles, tutorials, industry spotlights, and thought-provoking discussions. Our aim is to provide you with a comprehensive and engaging reading experience that caters to your interests and fuels your passion for the field.
We understand that the rapidly evolving nature of technology can be both exciting and overwhelming.

That's why we strive to present complex concepts in a simplified manner, making them accessible to readers with varying levels of expertise. Our goal is to empower you with knowledge and inspire you to explore new frontiers in computer science and engineering.

**APARNA SREEKUMAR**
ASSOCIATIVE EDITOR

Your feedback is highly valuable to us. We encourage you to share your thoughts, suggestions, and ideas, as they help us improve the magazine and tailor our content to better serve your needs. We are dedicated to fostering a community that thrives on collaboration and knowledge exchange, and your input plays a vital role in achieving that.

# TECHSTIA

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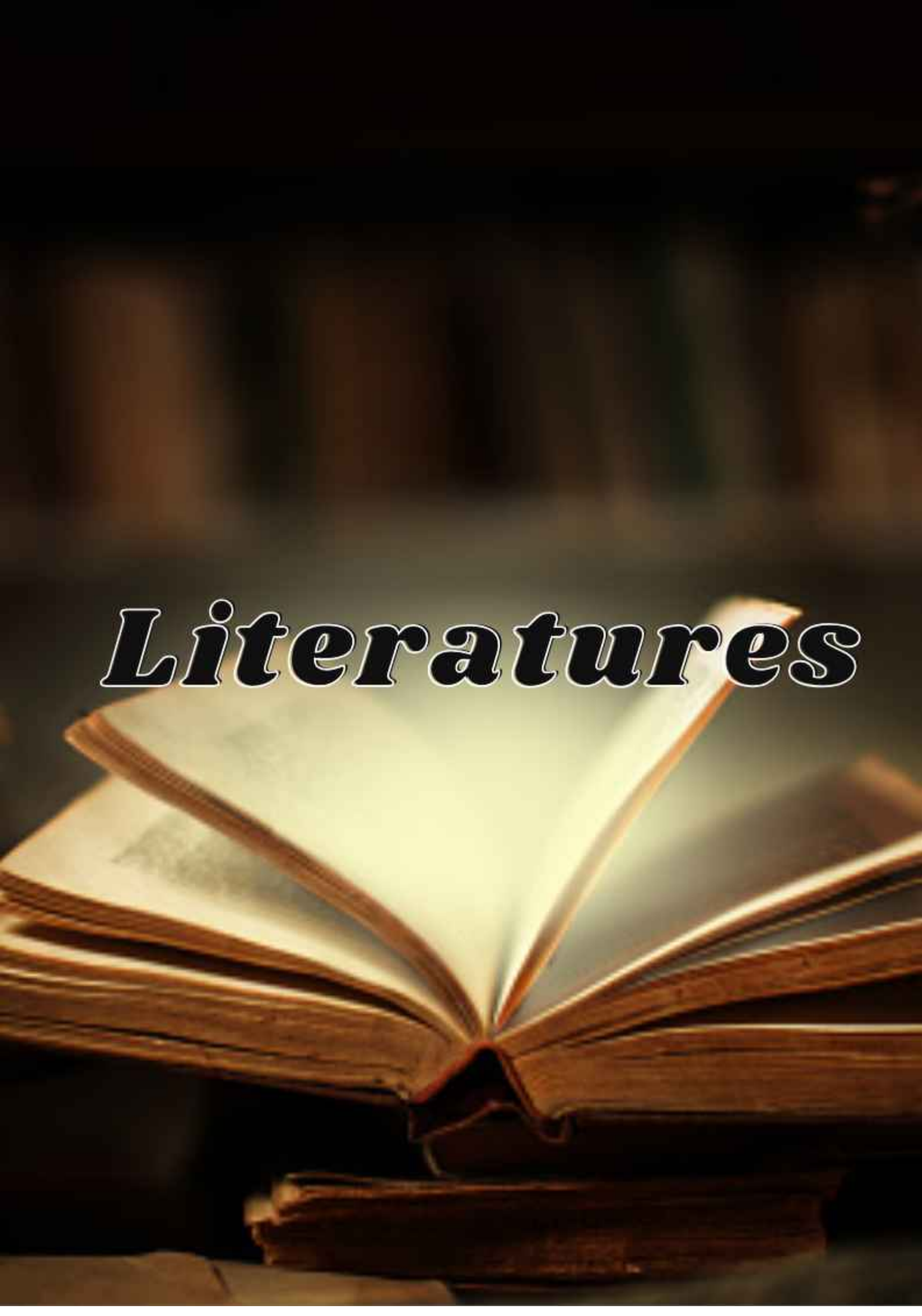

Literatures

# THE WAVES

*The breaking of a wave cannot explain the whole sea.*
*Vladimir Nabokov*

*It was a bright sunny morning and I was all excited to join my team in a short time for a one day trip. Finally, after long time of hustling with portions and examinations we had decided to take a break from our busy schedule.*

*For some, there was no tension of packing Bags and lunch of their little ones. And for some others, there was no worry of students coming with queries.*

*As decided we all met at the designated place on time. The journey started by Thanking the almighty and after a short breakfast everyone involved themselves in various fun games, chit chat and music.*

*Only when the Bus stopped, it dawned upon us and we could feel the gentle breeze of water and calm and shining WAVES.*

*We were rightly at God's own country!!! The welcome drink from oyster opera resort was the perfect thirst quencher for our parched throats. The scenery around was spectacular and everyone were smitten by the beauty of Mother Nature. The place was aptly surrounded by backwater on one side and beach on the other.*

*After the supervisor explained us about the To-do list, I made myself comfortable over a hammock and the rest were busy with the swing, chit chatting, and some just soothing their mind and body feeling the nature inspiring their soul. A calm, composed and relaxed feel was evident on everyone's face.*

*We enjoyed swimming, rain dance, yummy, elaborate and sumptuous lunch.. Oh my god it was just so lip smacking and finger licking delicious!!!!!*

*After a heavy lunch we were taken on a boat ride across the island and what caught my immediate attention were THE WAVES.*

*Some time back I had just thought that calm waves were so relaxed and shining from far. They looked so much at peace, but when we were right in the middle of the waves, I could actually feel that the waves can actually turn the boat upside down if they tend to get wild and nasty and unpredictable....*
*Isn't this almost a perfect Simile to our present lives? I can envisage this situation and compare this to our life and the problems revolving around our life.*
*We always feel that we have endless problem and others lives are pretty good and comfortable. But the truth of the matter is that, only those who are in the epicenter of their problems can judge and define the gravity of the same. And only when we closely observer this, we realize and reality dawns upon us that everyone are learning to surf in their own waves and overcome respective tides. Each wave washes parts of us away and deposits treasures we never imagined.*

*Life is an ocean and Problems are like waves. You can either see yourself as a wave in the ocean or you can see yourself as the ocean. In the waves of change, we find our true direction. We need to rise up every time we fall just like the waves do.*
*We can't definitely stop the waves from rising, but we can for sure learn to surf. Think twice. It's easy to comment and be judgmental about others but it's difficult to get into their shoes and even walk the steps tread the paths they have undertaken.....*

*Leave the worries and LIVE the waves.*

Salma K
S3

# Phosphenes

*– Ever thought what it'd be?*

*No... no... it's not chemistry, unlike graphenes. Phosphenes are entirely different. It comes from two Greek words, phos (light) and phainein (to show).*

*It is a sensation of a ring or spot of light produced by pressure on the eyeball or direct stimulation of the visual system other than by light. Now, when you have got to know what phosphenes are, there's something interesting regarding them too. Scientists call Phosphenes as, 'The sensation of light that's not actually caused by light'. The phenomenon can be a result of eye trauma, compression or inflammation of the optic nerve or friction against the retina.*

*Although it's really nice to see them, main reason would be that they are colourful and geometrical, but sometimes you need to be careful as the persistence of this phenomenon may indicate a more serious underlying issue calling medical attention.*

*How do I see Phosphenes? Well, that's pretty easy, you need not go anywhere neither you require anything. All you need to do is, simply close your eyes and wait for some time until you get to see a pattern of beautiful dots, usually purple, green or yellow. Now gently press your eyes, I repeat, gently...so that you get to see some more beautiful patterns, maybe that looks like waterslide nets or like the tracks of a rollercoaster. Apart from these, there are other patterns too, spirals, targets, honeycombs, checkerboards, hangings, approaching or leaving dot trails and many many.*

*Phosphenes need not be formed only by applying pressure on or by rubbing your eyes. They are induced by mechanical, electrical or magnetic stimulation of the retina or visual cortex.*

*Many meditators and the ones who ingest psychedelic drugs have complained about phosphenes too. Phosphenes or 'seeing stars', can also be seen when you sneeze, laugh, cough hardly or when you get a mighty blow on your head. People suffering from Low Blood Pressure have also witnessed this phenomenon, and can be seen seconds before you faint.Phosphenes can be seen when you are into your laptop or a smartphone for a long time and then you take your sight off from the screen.*

*If we cannot see anything without light, then how phosphenes are visible to us? What does it mean by 'light without light'? Why only geometrical patterns and why not some random patterns like TV static noise? There are many questions pertaining to phosphenes.Phosphenes are generally referred to as 'Closed-eye Hallucinations', which occur due to constant activity between neurons in the brain and your vision. When you rest, your retina still continues to produce electrical charges, and as a result we are able to see phosphenes. Still going in depth with the reason, it can be explained that our eyes don't turn off when we close it, but instead creates very weak signals that mimic light. People with damaged retina, the ones who have never seen light in their life cannot witness Phosphenes. A lot of research in the area of phosphenes is still live and there are many myths and facts regarding phosphenes.*

*Frankly asking, "Did you ever before know, that the colourful patterns, you see after closing*

*your eyes are called as 'Phosphenes?". Hope, this was didactic*

Sandra Sunil
S3

# TIME

*TIME IS WHAT EVERYONE WANTS THE MOST BUT ITS USE HAS DEFINITELY BEEN THE WORST How INSANE IS IT THAT WE KILL TIME INSTEAD OF WORSHIPPING IT LIKE A SHRINE??*

*OFCOURSE WE CAN'T OWN TIME TIME IS NOT A POSSESSION BUT WE MUST USE TIME WISELY OR ELSE WE MAY FALL INTO DEPRESSION!!*

*TIME IS THE EQUIVALENT OF MONEY BUT CAN'T BE BOUGHT, WHAT AN IRONY!! TIME GIFTS US A BUNCH OF MEMORIES THAT WE REWIND OVER CENTURIES*

*BUT IT'S HARDWORK WHICH MAKES ONE A BRAND JUST REMEMBER, DON'T COMMIT A CRIME PATIENCE AND TIME COME HAND IN HAND BY NOT MAKING THE MOST OF TIME!! -*

# LIGHT

*What is the use of dazzling light Being the fastest in the universe? If only a hint of darkness can shadow it And declare its win by its presence.*

*Isn't darkness the absence of light? Then what about the existence of darkness? Did darkness really defeat light? As it always flees at the arrival of light.*

*The truth is you have to experience the darkness to appreciate light Likewise, it's necessary to embrace failures In order to taste the fruit of success.*

Devika Saha
S5

# JUST THINK IT

DON'T TRY TO TEST GOOD
PEOPLE
BECAUSE IF THEY GET HURT
THEY NEVER TALK BACK
INSTEAD OF THAT
THEY JUST LOG OUT OF YOUR
LIFE.....

# POSITIVENESS

I AM A TYPE OF GIRL
WHO LOVE MODULUS BECAUSE
NO NEGATIVE THINGS EXISTS THERE &
EVERY THING WILL BECOME POSITIVE
SO TRY TO LOVE MODULUS
SURELY YOU WILL BECOME SUCCESS

THINK POSITIVE & BE HAPPY

**Devu J**
**S7**

# PEACE IN PIECES

*My eyes believed all those beautiful lies*
*I let it remain untold, I stayed unheard*
*Having all the reason to walk away,*
*I stayed*
*And having every reason to stay, you*
*walked away*
*I stood there, waiting for you where we*
*first met*
*That alley you called heaven, now remains*
*in ruins*
*The hate that blossomed into love,*
*Has again turned into hate*
*My life has come a full circle*
*And yours just remained unchanged*

# NEVER TOLD STAY

*You can stay, but far away*
*For I know we will meet someday*
*When it won't matter anymore*
*and our hearts grow cold*
*Those wounds filled, memories erased*
*eyes dry and the heart won't sway*
*But would you stay happy, knowing you*
*were wrong*
*All of a sudden, you fall out of love*
*and I should remain strong?*
*What did falling apart even mean?*
*Someday I was your everything*
*and the next day, nothing!*
*Even though you are far away*
*You will still stay*

**Akhila P P**
**S7**

# Anything For Love

*The dust which gets blown away by the wind now seeks to be a persistent sediment in a stream. The soul which has sought for daylight presently admires the moon and the stars. The person who had settled for a joker now aspires to be the jack of all trade. An isolated soul which had set sail for no man's land now seeks for a bay of hoards. The habitats which had been accustomed to the dry and harsh desert conditions presently desires to be a part of grassland ecosystem. The tiny and calm lagoon presently seeks to be a part of the vast and fierce ocean. In this world full of obstacles I prefer to be the pebble which sticks on to your shoes causing irritation but tends to stay throughout the journey filling the void left by dejection.*

## HOPE

*The diminutive rays of hope which keeps the Inuit longing throughout the year,*
*The oxygen which generates the hope to ignite the burning desire,*
*The hope in the eyes of an indigent to live another day,*
*The hope in the thoughts of an executioner to have a crimeless world, The lending hand of hope which illuminates the depressed soul,*
*The hope of a soldier to have a peaceful world,*
*The hope of every women to have a world free from all the stereotypes,*
*The hope of freedom in the eyes of imprisoned animals,*
*The last leap of hope to attain success,*
*In the world full of uncertainties be the ray of hope in someone's life.*

**Adarsh S**
**S5**

# HOSTEL DAYS!!!

*It's a journey which started with loosing friends whom we had known for decade. Slowly as time passed by we came out of our comfort zones and started making new friends. From being friends to being partner in crime for all mischiefs, we all grew up. This place was something which a clueless man would go for. It had no shortage of specimens which can't be found even in a lab or museum.*

*From those early to bed & early to rise to those night watchman who had never seen day light,*

*From those ever wandering soul to those faces which we had rarely seen,*

*From those who study all day to those who rest all day,*

*From those who had many goals in life to those who were clueless,*

*From chefs to comedians,*

*From having store facilities in hostel to having whole supermarket in a room,*

*From playing football in the rain to playing indoor cricket midnight,*

*From hungry night cravings to those delicious maggi ,*

*From studying in the name of group studies to waking up learning half a module,*

*From witnessing a whole laundry of clothes being washed at a go to witnessing a herd of buffaloes splashing water at each other,*

*From studying scattering of atoms to witnessing scattering of friends after banging warden's door ,*

*From bunking classes to watch movies, roaming around malls and cities,*

*All we needed was a reason to spend time with our friends.*

*The festivals celebrated in India is way less than that celebrated in hostel in the form of birthdays.*

*It is a special occasion where the one whose festival is to be celebrated gets lot of wishes & gifts in the beginning and ends up eating all types of hot sweets from different parts of India,*

*We all knew a place which was built to accommodate a few people but was treated as a health center to cure all the game addicts. From hating hostel food to finishing off the special homemade sweets in seconds, we all had a similar taste.*
*From having the best of times creating countless memories there was a time where we had to wave goodbye to all those wonderful years. The only thing which we could do to relive all the moments was to hold onto the photos and videos which we had documented in this wonderful journey.*

*Hostel Life :*
*" It is a journey which started with disappointment of loosing old friends but ended up with even more disappointment of loosing those who have a special place in our heart "*

**Dhanyamol S**
**S5**

# “Happiness"

## - is our choice not the result

What is happiness all about? Have you ever told yourself anytime like I am not happy today, for various reasons? Each person describes happiness in their own way some feel happy in having a beautiful life partner or a beautiful house or a good career etc. and once they get all that they wished for the question is are they happy...

Yes, life may be difficult for individuals who have yet to reach success. Which means they're dissatisfied? Set a border of expectation, with both positive and negative outcomes, and be prepared for both scenarios and only then you can balance your thoughts accordingly. Happiness is solely dependent on your mind- set.

However, as humans, we keep an eye on other people's lives and measure our satisfaction in comparison to theirs, by doing this we will only find sadness, if we seek happiness from other people's lives and then strive to live our lives in accordance to theirs people live unhappy throughout.

According to psychologists, goals and desires have an impact on happiness. People who are fast reaching a goal have higher levels of happiness than those who are approaching a goal more slowly, However, research suggests that having relevant goals is linked to happiness. People may be protected from the negative impacts of temporary setbacks by the sense of purpose that these goals provide.

Alan Cohen rightly said – "Be happy with what you have, be excited for what you want". Which means happiness is all about having the positive vibes of present situation and going along with the flow of life. Dreaming and reaching that goal is wonderful but what if we have not met our desires and failed? We will be shattered and disappointed.

Come on, don't make a mess of your life; cherish every little thing you have since you never know what tomorrow holds, so be happy and spread that pleasure around.

Krishnapriya
S7

# അവൾ

എൻ പെൺകിടാവേ നീ എത്ര വേദനകൾ സഹിക്കുന്നു
നിൻ അശ്രുനാളങ്ങളിലൂടെ നിന്റെ ആനന്ദം നീ കണ്ടെത്തുകയാണോ?
നിന്റെ ത്യാഗവും വേദനയുമാണീ ലോകം
നിന്റെ സൃഷ്ടികളാണി മാലോകർ.

കുഞ്ഞുനാളിൽ സൂചിമുനകളാൽ നിൻ അദരം നിറഞ്ഞു
ബാല്യത്തിൽ കൂടപിറപ്പിനോട് വഴക്കിട്ട് നിൻ ഹൃദയം പിടഞ്ഞു
യൗവനത്തിൽ ആർത്തവത്തിന്റെ കഠിനമായ വേദനകൾ
പിടിച്ചടക്കി  നീ നടന്നു.

യുവതി തൻ വേഷത്തിൽ നീ അടുക്കളയെന്ന രസതന്ത്രശാലയിൽ
കയറി പുകയും, ഗന്ധങ്ങളും, പൊള്ളലുകളുമേറ്റ്
നിൻ കണ്ണുകൾ വിതുമ്പുന്നത് ആരും ഗൗനിച്ചില്ല
അമ്മയെന്ന മഹാ പദവി നിനക്ക് ചാർത്തിയപ്പോഴും
പേറ്റ് നോവെന്ന മരണ വേദന നീ അനുഭവിച്ചത്
ആരും ഓർത്തില്ല.

വൃദ്ധയായ നീ ഇന്നു നിൻ കൊച്ചുമക്കളിലൂടെ സന്തോഷം
കണ്ടെത്തുമ്പോഴും
നിൻ വേദനകൾ ഇന്നും ഒരു നൊമ്പരമായി തങ്ങി നിൽക്കുന്നു.

Reshmi Raj
S5

# കാറ്റ്

എങ്ങുനിന്നോ വന്നവൾ
എങ്ങോട്ടോ പോയവൾ
കാൽപ്പാടുകൾ അവശേഷിപ്പിക്കാതെ
നിമിഷനേരത്തെ ഓർമ്മകൾ
സമ്മാനിച്ചെവിടേയ്ക്കോ മറഞ്ഞവൾ.

മുറ്റത്തെ മാവിലെ മാമ്പഴം പറിയ്ക്കാൻ
ബാല്യത്തിലെന്റെ പങ്കാളിയായവൾ,
കാരണമില്ലാത്ത കണ്ണീർത്തുള്ളികൾ
കാരണം ചോദിക്കാതെ
ഏറ്റെടുത്തവൾ.
യാന്ത്രികതകൾ കൊന്ന മനസ്സിനെ
തൊട്ടുണത്താൻ,
അനുവാദം ചോദിക്കാതെ വരുമ്പോ
ളവൾക്കൊരു അഹങ്കാരിയുടെ ഉന്മാദമാണ്.

പേമാരികൾക്ക് ഭയാനകത കൂട്ടുന്ന
ആഹ്ലാദവും ആക്രോശവും മിന്നിമായുന്ന
കാടുകളുടെയും നാടുകളുടേയും കഥകൾ പേറി
പൂവുകളുടെയും കായ്കളുടെയും സുഗന്ധം പേറി
ഒടുവിലെന്റെ അവസാന നിശ്വാസവും പേറി
ഉലകം ചുറ്റുന്നവളോടെന്തോ അടങ്ങാത്ത പ്രണയമാണ്.

Pooja Shibikumar
S3


Articles

# GENERATIVE DESIGN FOR AUTONOMOUS VEHICLE

**Moving towards level 5 autonomy:**

Autonomous vehicles will require an extensive system of advanced sensors, on-board computers, high-speed and high-bandwidth data networks, and wiring to connect it all. This complex network of cameras, radar, LIDAR sensors and electronic control units (ECUs) will be responsible for detecting and interpreting the dynamic environmental conditions to inform real-time driving decisions. This means gathering, processing, and distributing gigabits of data every second to enable the algorithms and ECUs to respond to a rapidly changing driving environment.

The complexity and criticality of the electrical and electronic systems required for autonomous driving will dramatically increase the challenge of vehicle design and engineering. This is due to the extensive testing and validation required to ensure the safety of these systems. Most estimates predict that autonomous vehicles will require billions of miles-worth of testing to ensure their safety. Manufacturers will need to incorporate the lessons learned through simulated and real world testing into their autonomous vehicle designs to remain competitive.

A car with level two autonomy, for example, may feature active cruise control, a lane departure warning system, lane keep assist, and parking assistance. In total, this car requires about seventeen sensors to enable its driver assistance systems.

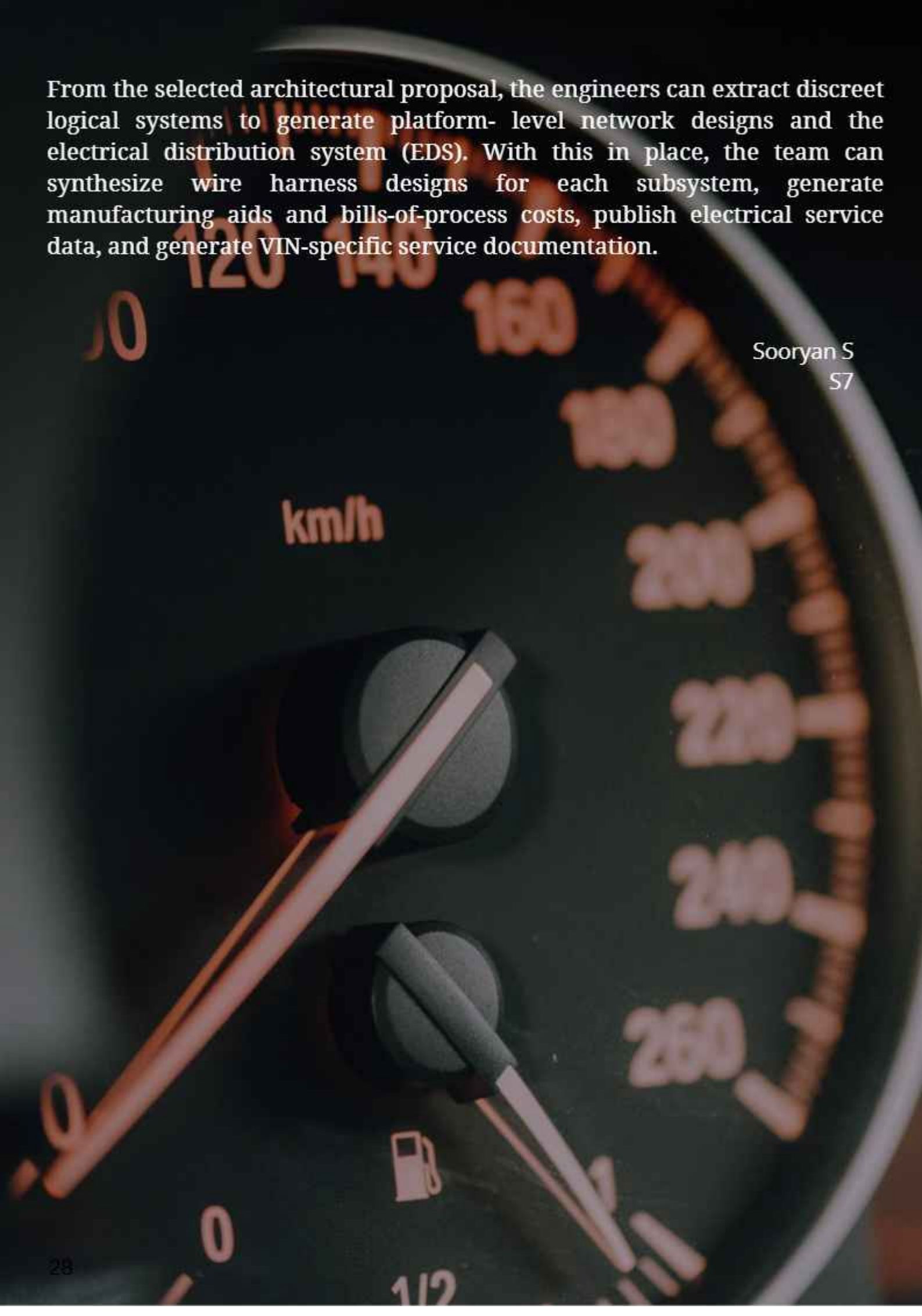
These sensors consist of ultrasonic, long-range radar, short-range radar, and surround cameras to monitor the vehicle's environment. Furthermore, the computations performed by this car's automated systems are relatively primitive. The lane keep assist system, for instance, is only tasked with monitoring the vehicle's position relative to the lines of the road. Should the driver begin to stray, the system will notify the driver or take corrective action, but ultimate responsibility for control of the vehicle lies with the driver.

A level five autonomous vehicle will have complete responsibility for control over the driving task, requiring no human input. As a result, a level five car is projected to have more than thirty additional sensors of a much wider variety to cover the immense number of tasks an autonomous vehicle will need to perform. On top of the ultrasonic, surround camera, and long- and short-range radar sensors of a level two car, level five will require long range and stereo cameras, LiDAR, and dead reckoning sensors. The increase in sensors will increase the amount of wiring needed in the harness and the necessary computational resources to handle the gigabits of data being produced by the sensors.

**GENERATIVE DESIGN AND ENGINEERING:**

A generative design flow begins with functional models. A functional model represents the functionality of the electrical system to be implemented, without specifying how it should be implemented. It accounts for aspects such as communication networks, power sources, and components. These models may be captured in a variety of formats such as spreadsheets, ysML files, and MS Visio diagrams.
Design teams then normalize these various functional models into a unified format within their electrical systems design environment, such as Capital. Once normalized, the engineers can generate potential architectures for the E/E system logic, networks, hardware, and software. Valuable company IP is integrated automatically into these proposals through the design rules that govern proposal generation. At this stage, the electrical engineers can rapidly generate, assess, and compare multiple architectural proposals,optimizing the design from the initial solutions presented.

From the selected architectural proposal, the engineers can extract discreet logical systems to generate platform- level network designs and the electrical distribution system (EDS). With this in place, the team can synthesize wire harness designs for each subsystem, generate manufacturing aids and bills-of-process costs, publish electrical service data, and generate VIN-specific service documentation.




Sooryan S
S7

# Google Fuchsia OS

Fuchsia is a capability- based OS currently being developed by Google. It first become known to public when the project appeared on GitHub in Aug 2016 without any official announcement .In contrast to prior Google developed OS such as Chrome OS & Android ,which are based on Linux Kernel.

Fuchsia is based on a new microkernel called Zircon. Fuchsia is written in C,C++,Go ,Rust and Dart. It is open source model. Google's intentions with the OS, including the possibility of it replacing Android. Fuchsia's user interface and apps are written in Flutter , a software development –kit allowing cross-platform development abilities for Fuchsia's ,Android & iOS.Flutter produces apps based on Dart, offering apps with high performance that run at 120 frames/sec. It also offers a Vulkan-based graphics rendering engine called "Escher", with specific support for 'Volumetric soft shadows'.

The OS is even used in driverless car by Google. Zircon is derived from "Little Kernel", which was developed by Travis Geiselbrecht, a creator of the New OS kernel used by Haiku. Thus, it is the future OS going to replace Android OS.

Nidhin S
S7

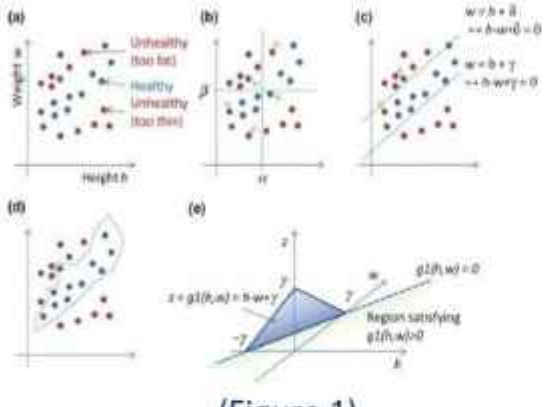
# PATTERN RECOGNITION: AN OVERVIEW

Pattern recognition is the automated recognition of patterns and regularities in data. It is a tough problem for computers, although humans are wired for it. And it is becoming increasingly important in the age of automation and information handling and retrieval. *The field of pattern recognition is concerned with the automatic discovery of regularities in data through the use of computer algorithms and with the use of these regularities to take actions such as classifying the data into different categories.* The general processing steps of pattern recognition are pre-processing, feature extraction, and finally the classification. Several methods were used for each step of pattern recognition such as segmentation and noise removal in pre-processing, Gabor wavelets transform for feature extraction, Support Vector Machines (SVM) for classification, and so forth.

- **Machine Learning Approach**

Machine learning (ML) is the scientific study of algorithms and statistical models that computer systems use to effectively perform a specific task without using explicit instructions, relying on models and inference instead. It is seen as a subset of artificial intelligence. Machine learning algorithms build a mathematical model of sample data, known as "training data", in order to make predictions or decisions without being explicitly programmed to perform the task. Pattern recognition is closely related to artificial intelligence and machine learning, together with applications such as data mining and knowledge discovery in databases (KDD), and is often used interchangeably with these terms. In machine learning,

pattern recognition means the assignment of a label to a given input value. An example of pattern recognition is classification, which attempts to assign each input value to one of a given set of classes. However, pattern recognition is a more general problem that encompasses other types of output as well. Other examples are regression, which assigns a real-valued output to each input; sequence labelling, which assigns a class to each member of a sequence of values; and parsing, which assigns a parse tree to an input sentence, describing the syntactic structure of the sentence.




(Figure 1)

Figure 1 is an example of 'Classification in pattern recognition.'

(a) Patterns to be classified to two classes, healthy and unhealthy.

(b) Classification by using two features independently. The patterns with a green arrow are to be misclassified.

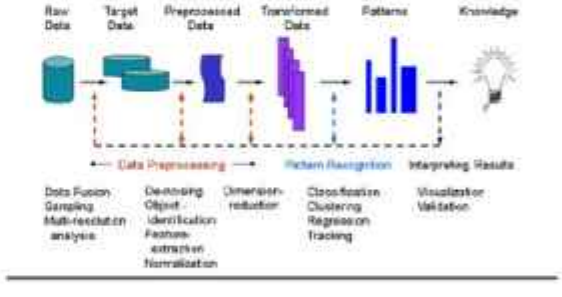
(c) Linear classification. The classification boundary is plotted by dash lines. In this case, the classification is done considering the dependency between height and weight.

(d) Nonlinear classification. Classification boundary can be an arbitrary curve.

(e) A linear discriminate function for the linear classification of (c)

## ➢ Pattern Recognition System

A pattern recognition system can be regarded as a process that allows it to cope with real and noisy data



A pattern recognition system mainly includes three mutual-associate and differentiated processes. One is data building; the other two are pattern analysis and pattern classification.
Pattern analysis' task is to process the data, such as feature selection, feature extraction, data- dimension compress and so on. The aim of pattern classification is to utilize the information acquired from pattern analysis to discipline the computer in order to accomplish the classification.
The Classification of Pattern Recognition System:

- Rule based system
- Classical fuzzy System
- Bayesian system
- Neural networks system
- Fuzzy neural networks systems

➢ **Features of Pattern Recognition**

Pattern recognition completely relies on data and derives any outcome or model from data itself. Pattern recognition system should recognise familiar pattern quickly and accurate. Recognize and classify unfamiliar objects very quickly. Accurately recognize shapes and objects from different angles. Identify patterns and objects even when partly hidden. Recognize patterns quickly with ease, and with automaticity.

➢ **Applications of Pattern Recognition**

Engineering: Speech Recognition
Civil Administration: traffic analysis
Economy: Stock exchange forecast
Geology: Classification of rocks In its broadest sense pattern recognition is the heart of all scientific inquiry, including understanding ourselves and the real-world around us. And the developing of pattern recognition is increasing very fast, the related fields and the application of pattern recognition became wider and wider.

Ajeesh P
S7

# SOCIAL ENGINEERING AWARENESS

Social engineering is the term used for a broad range of malicious activities accomplished through human interactions. It uses psychological manipulation to trick users into making security mistakes or giving away sensitive information. The attacker first studies his victim by gathering information about them from various sources. This background information is then used against them by gaining their trust and making sure it happens in a way that the victim will not be able to identify it as an attack. The main goal of the attacker might be access to some sensitive information like bank details or confidential data regarding a firm etc.


Social engineering is an attack that cannot be easily identified or rectified as real humans are involved and their actions cannot be predetermined. This is also different from virus attacks as it does not have much to do with vulnerabilities in the system rather it leverages human error. The various methods employed by the perpetrators are;

- **Baiting**

This is the practice where that are intentionally left for people who are prime targets. They can come in many forms like physical devices like flash drives and compact discs, ads that prompt users to download malicious software, infected emails, and a host of other ways that aim to be effective by luring unsuspecting targets.

- **Scare ware**

This is a form of baiting where users are spammed with a lot of false alerts to make them install or download applications and files that are useful for the attacker or the malicious software in the system.

- **Pre-texting**

Impersonation and other tactics to gain trust of employees or officials to get them to do what the perpetrators want is another form. Here it's a planned out process that leverages human error. Although harder to execute, this is almost undetectable as it happens over the course of time as what seems to be normal course of action.

- **Phishing**

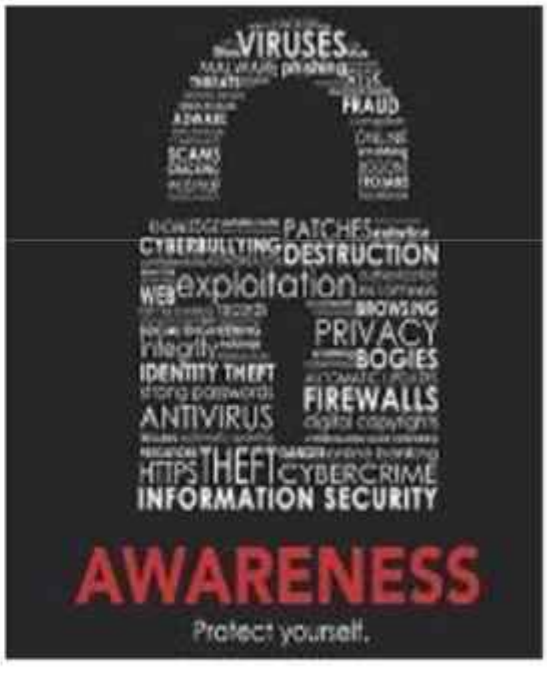
As one of the most popular social engineering attack types, phishing scams are email and text message campaigns aimed at creating a sense of urgency, curiosity or fear in victims. It then prods them into revealing sensitive information, clicking on links to malicious websites, or opening attachments that contain malware. Creating false front end pages by using similar domain names that people do not notice are also employed. Here users type in login credentials to a site where they trust and in turn their information is sent to the one who created that false page. This can occur in a variety of scenarios and can be prevented if the users are careful about checking the domain names of

- **Overloading**

Here users are bombarded with a lot of information and questions which make their sense of decision making poor. Most of this is through spam mails, calls and messages.

- **Reciprocation**

People tend to return a favors. So if an attacker gains trust and is able to do some trivial favors, he is in a position to ask for a return to that favors. This is successful most of the time due to the next flaw.



- **Integrity and Consistency**

People often approach others from the perspective of their own honesty and consistency. There is a natural tendency to measure others with what we know and expect from ourselves. These psychological loopholes are common and are the basic premise in which cyber attackers thrive. Manipulation and deception can be carried out by using one or more of these human feelings, such as curiosity or fear, to carry out schemes and draw victims into their traps. Whenever you attracted to an offer displayed on a website, or when you come across stray digital media lying about. Being alert can help you protect yourself against most social attacks taking place in the digital realm. Steps to remember while in a potentially suspicious situation are: Slow down spammers want you to act first and think later. Never let their urgency influence your careful review.

- **Email awareness**

Hackers, spammers, and social engineers taking over control of people's email accounts are widespread. After having access to emails there are a lot of ways to misuse it. Contacts, personal information, linked accounts all are in danger. Reset passwords or use a password manager.

- **Fake offers**

Do not take click baits telling you about the million dollar lottery you just won. The first line of defense should always be a clear and rational mind. Know your rights and responsibilities so others cannot influence your actions. Keep yourself from harm by taking preventive measures.

Sachu P
S3

# PHOTOGRAPHYS & ART WORKS

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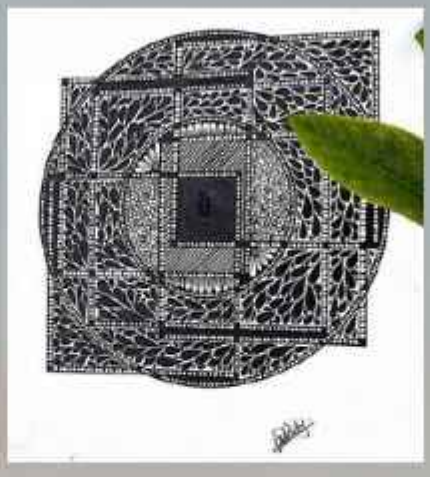

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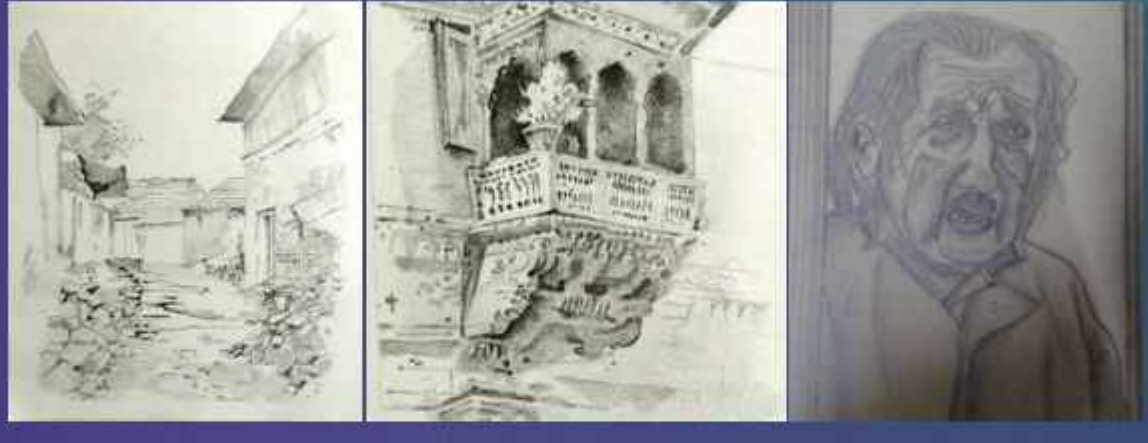

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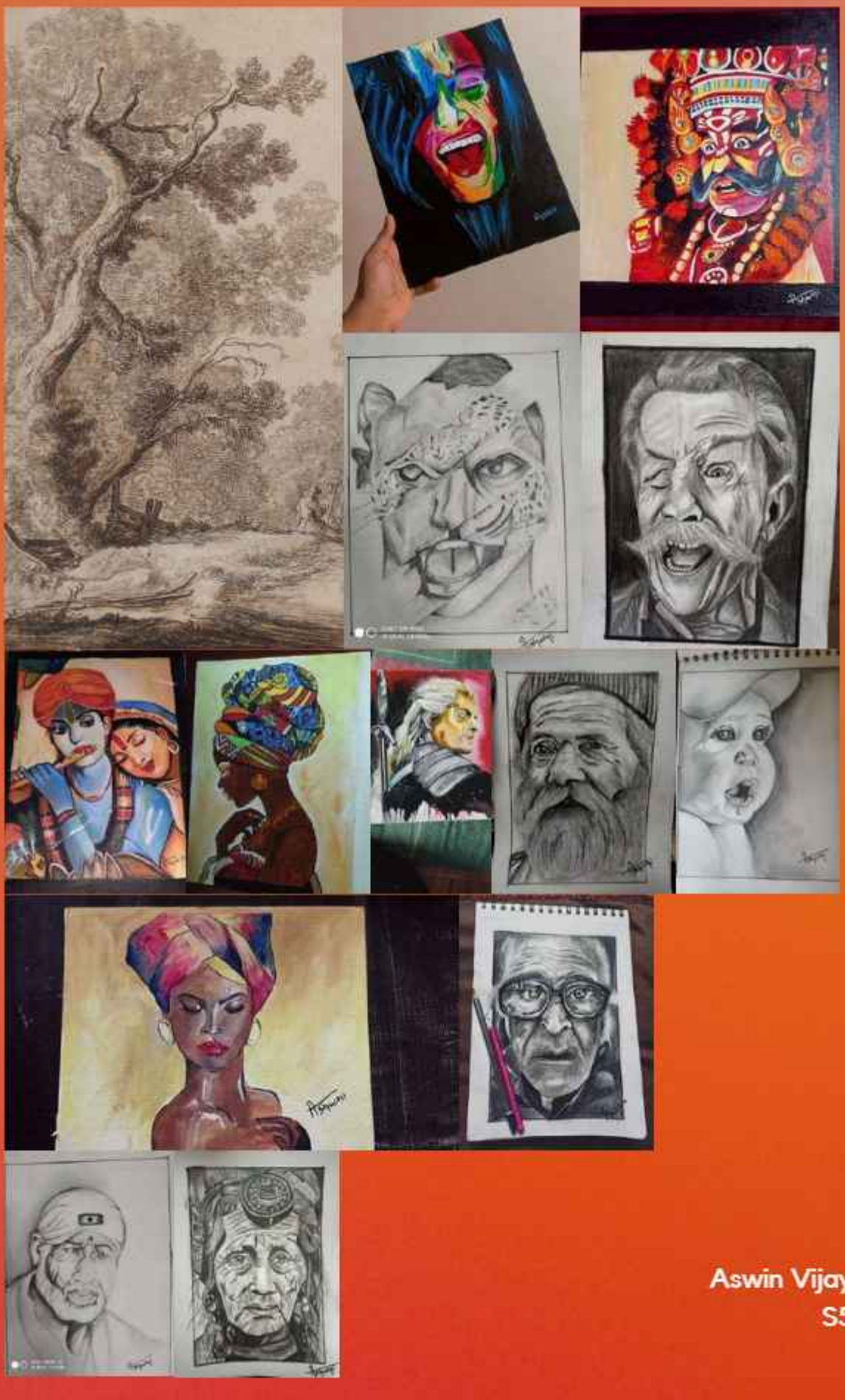

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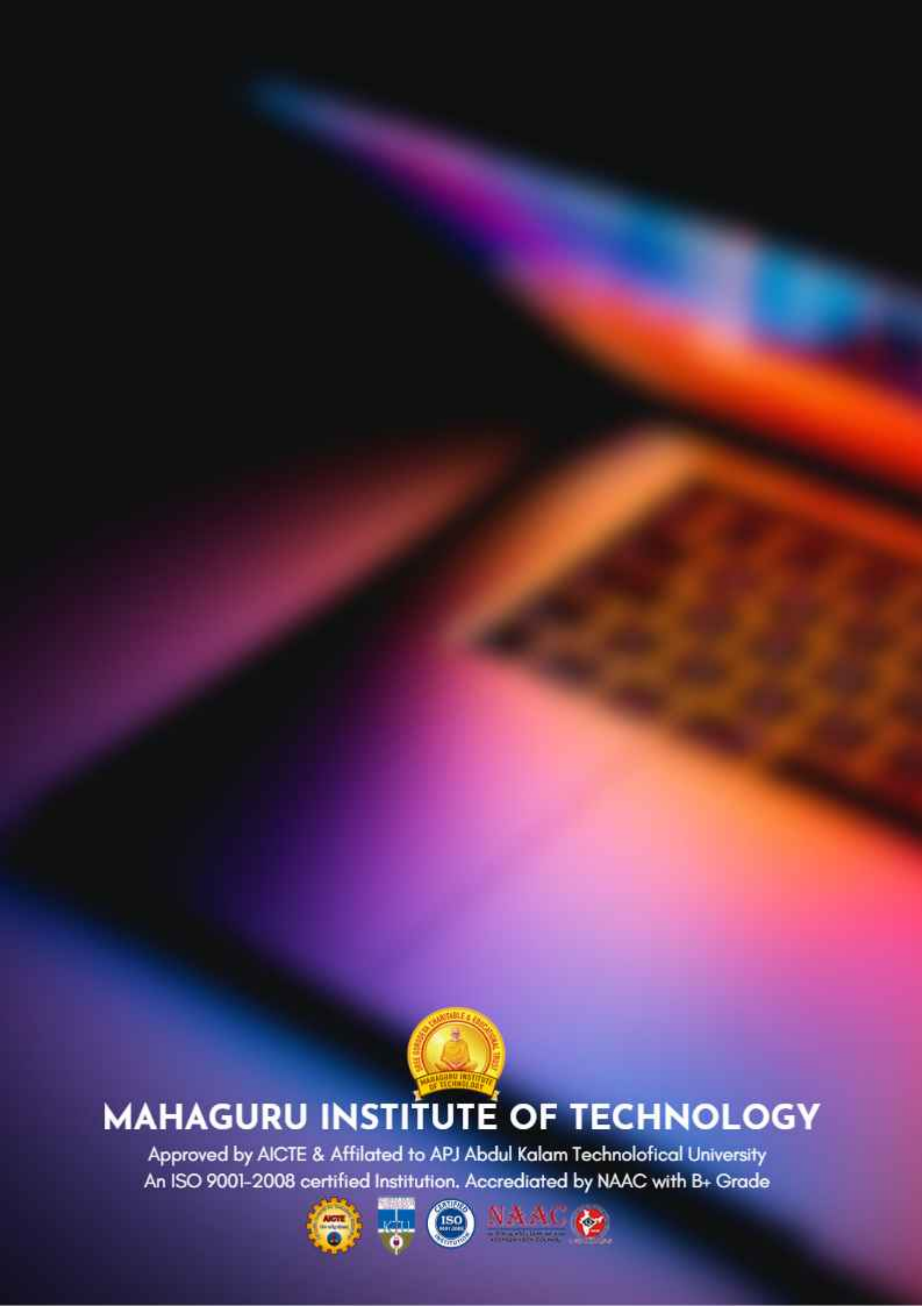

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