



# ELECTROZEN'19



**Every moment is a New Beginning**

**Volume-5 | A Product by ECEian's**



# HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

## “AN INVESTMENT IN KNOWLEDGE PLAYS THE BEST INTEREST”

HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY is founded with a vision to impart high quality engineering education at an affordable cost under the guidance of our CHAIRMAN THIRU T.S.R. KHANNAIYANN and beloved SECRETARY THIRUMATHI SARASWATHI KHANNAIYANN in the year 2000.

Our institution is an AUTONOMOUS body and all the courses are approved by ALL INDIA COUNCIL FOR TECHNICAL EDUCATION (AICTE) and NAAC.

True to it's legacy, HICET has embarked on a mission to empower students and prepare their young minds for lifelong learning by creating and disseminating appropriate knowledge. Our management has taken utmost care in providing state of the art infrastructure such as well equipped labs, spacious class rooms, hi-tech teaching aids, auditorium, well stocked library, hygenic canteen and a safe and secure hostel for out-station students.

# ELECTRONICS AND COMMUNICATIONS ENGINEERING

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## VISION OF THE DEPARTMENT

To evolve as a centre of excellence in Electronics and Communication Engineering,  
to cater the global industrial needs.

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## MISSION OF THE DEPARTMENT

- » To expand frontiers of knowledge through the provision of inspiring learning environment.
  - » To develop the intellectual skills towards employability by fostering innovation, and creativity in learning.
  - » To provide a quality system for wholesome learning to achieve progress and prosperity in life along moral values.
- 

## PROGRAM EDUCATIONAL OBJECTIVES (PEO)

Preparing graduates to,

PEO 1 : Exhibit their technical skills and knowledge in their working environment, higher studies and research.

PEO 2 : Succeed in multidisciplinary dimensions by excelling through life-long learning.

PEO 3 : Become leaders and innovators by devising engineering solutions for social issues and problems.

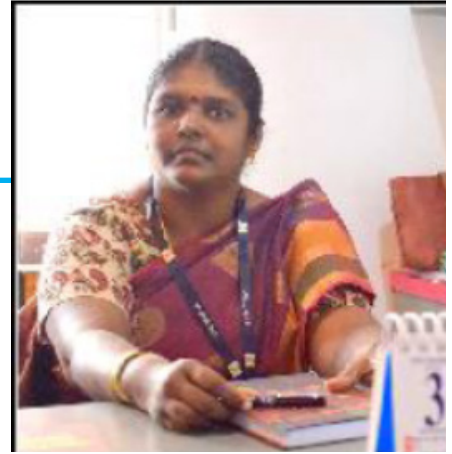
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## PROGRAM SPECIFIC OUTCOMES (PSO)

1. Graduates will be able to disseminate the knowledge in Electronics and Communication Engineering towards technical incubation.
2. Graduates will have the perseverance to learn the modern design tools for electronic system designs and analysis.

## Head of the Department's Desk

**"Education is the passport for tomorrow, for the future belongs to those who prepare for it today"**



Providing ample opportunities in engineering education is one of the most fundamental obligations we owe to our students because in our department, we are driven by the belief that every student deserves a high quality education.

ELECTROZEN provides an intersection of great challenge and opportunity for the students to review their efforts and to analyze their achievements in research and development. Technology is evolving at a dizzying rate and our classrooms may not be designed to keep pace with it. There may may be a lot wrong in the style of education but the pages of ELECTROZEN tell the tale of all that has been a part of what is right about the education they get in our department and in the institute.

I congratulate the team of students and the faculty for their tireless efforts that have come to fruition in the form of this magazine. I wish it all success and hope that this tradition that has been set by the current will be carried through by the following generation of students to come.

*P. Rajeswari*

**Dr. P. RAJESWARI**  
**HEAD OF THE DEPARTMENT, ECE**

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...stripes or show off her arms... she dug out a pile of old... in a pencil skirt and... in a sleeveless dress... I sent YOU to join me in... those horizontal stripes... because society tells you... those horizontal stripes... I had been shared... Holiday's arms was... to date, the hashtag... on Instagram over... million times, accompanied... of men and women... bodies defy the conventions... and cuddly bellies and... strong thighs that strain out of... as well as the occasional... of those defined not by weight... sexualty-standards made... world wake up in 2015, the first size 22... to sign with... agency. She... on the cover of *People*... in the US, starred in an... alongside Iggy Pop... *Vogue*... asked: "Will... like it looked like it might... in 2018, because in 2018, the... falling apart. She shared the... social-media army... After the birth... child, Bowtie, Holiday... with post-partum... She describes it as like... and spent the months... 2017 until spring 2018... the worst mental-health state of... she had... in Mississippi. She... a groundswell coming

"It felt like the water was boiling... over and things were coming to the... top again," she explains. "I remember... very vividly driving in the car with... Bowtie and I thought to myself, 'I wish... I could just disappear. I wish I could... vanish. It felt at that point like I was... causing everyone around me so much... pain. It felt like a never-ending black... hole. I was so tired of hurting... I just didn't want to be here any more... The trauma that she mentions... here is multifaceted, some of it well... documented, some of it less so. Some... of her earliest memories are of abuse... mother suffered at the hands of... her father (she then left him when... Holiday was a small child), as well... as the succession of inappropriate... boyfriends who came... through the house... There was one who used to try... and tickle me and move... his hands beyond my hips... But I never let him. When... he drove me anywhere... I learned to keep one hand... on the door handle at all... those partners derailed the... family's life completely... however when, in 1995, he shot Tess's... mother in the head. Twice. Against... all odds, she survived. With spiralling... health care costs, the family moved... into an old trailer parked in the back... of her grandparents' garden. Nothing... ever grew there, she tells me, except... thistles. Her next tattoo, she says, smiling, is going to be a thistle.

**"I was tired of hurting. I didn't want to be here"**

But you know, although we never... did without. She tells stories of... our poverty. She tells stories of... her mother promising ice cream but... only if they could play the game of... collecting cans for weeks, before first... Or the "run days" she would organize... where she would take Holiday and... her brother on a tour of the city. "She... would take us to this bakery where... person. I didn't realize it was rape... at the time. Which a lot of people... to people that it clicked... "The first time I went back to his... room, I thought he was cute. I was... into him, but I didn't want to have... sex. He forced himself onto me. The... first time I let him do it, but I was also... told I had no choice. And that's why... I didn't realise it was rape. The second... time I was in his living room and he... started making moves on me, I didn't... want it to happen and said no again... but it happened again," she tells me... Consequently, she has unwittingly... become a vocal lead on the #MeToo... movement.

# ARTICLES



## WHAT ABOUT MY RIGHT TO FEEL SAFE?

The vulnerability of children from infancy through their childhood years of dependency on adults for safety and ongoing nurturing puts them at risk of maltreatment in many forms. A World Health Organisation report estimates that over 40 million children around the world suffer from abuse and maltreatment.

Child Abuse is an aspect of humanity that is most universal in its incidence. It is neither restricted to any racial, cultural, or socio-economic groups. 53% of children in India face some form of child sexual abuse. According to the National Crime Records Bureau, the cases of rape and murder of children increase every year. The growing complexities of life and the changed social economic conditions have exposed the children to new and different forms of abuse. In fact child abuse is a violation of the basic human rights of a child.

Everyone has the right to live, to be free, and to feel safe. No one should be held in slavery for any reason.

So What is Child Abuse? As per the definition given by UNICEF, violence can be physical and mental abuse and injury, neglect or negligent treatment, exploitation and sexual abuse. Violence may take place in homes, schools, orphanages, residential care facilities, on the streets, in prisons and in place of detention. Such violence can affect the normal development of a child impairing their mental, physical and social being. In extreme cases abuse of a child can result in death.

Physical abuse is any non accidental injury resulting done with intention to harm a child which includes punching, hitting, throwing, kicking, choking, biting, beating and burning with an object and trussing.

Sexual abuse is inappropriate sexual behaviour with a child. It includes fondling a child's genitals, making the child fondle the adult's genitals, intercourse, incest, rape, sodomy, exhibitionism and sexual exploitation. The involvement of the child in sexual

activity intended to gratify the needs of another person. This does not mean only the actual sexual act but also inappropriate kissing, unnecessary touching either directly or through clothing the private body parts of a child for reasons other than hygiene or health care purposes.

Emotional or psychological abuse is the behaviour and attitudes towards a child that endangers or impairs the behavioural, cognitive, affective or physical development and functioning of the child.

Child Abuse in all its forms is far more prevalent than Indian society has been willing to acknowledge. This is largely because the focus has been more on basic survival: health, nutrition, and shelter. Consequently little attention has been paid to the abuse of children and its impact. Abuse remains underreported because of the silence and denial around it, and the discomfort that it generates if acknowledged. Yet, conversely, over the last decade with the increasing public awareness about child abuse and programs being created for maltreated children, there should be steady increase in the number of reported cases. Society's awareness and understanding of the pervasiveness of child abuse and its adverse effects is slowly and finally growing. Early detection of child abuse is crucial in breaking the cycle of violence and preventing further and emotional damage to the child.

Even if you did not say "no", the abuse is never your fault. Keep telling till someone listens. Even if the first person you tell does not help you, someone will.

To deal with child abuse, we must recognize and report it. This can be difficult but it is the first step towards stopping it.



DHANYA VARSHINI V  
IV YEAR ECE- A



# THE FUTURE OF THE INTERNET OF THINGS

By many measures, 2020 was the year Internet of Things (IoT) adoption came of age, both in the consumer and enterprise markets. The number of connected devices increased 15-20 percent, more enterprise IoT projects were launched or progressed towards completion, new technologies like cellular IoT changed the landscape, and the use of turnkey IoT “platforms” expanded significantly.

These developments are exciting and offer an encouraging outlook for the future. At Ayla Networks, we’ve always believed the internet is a transformational force that will eventually drive all things to be powered, digitized, and connected for better outcomes. When we started our journey eight years ago, there were virtually no connected devices. Gradually that changed with the advent and growth of smart home devices for convenience and control. Fast forward to today when IoT has become an integral part of digital transformation initiatives in commercial and industrial segments. Our vision is to deliver on the promise of the “Connected Home” and the “Connected Enterprise,” spanning a wide range of use cases and services including security, energy management, asset performance, health care efficiency, and risk and compliance management. This vision is already becoming a reality in interesting ways. Case in point: A leading global manufacturer of HVAC systems approached us three years ago with the intent of developing a new connected product line purely for competitive differentiation reasons because they believed IoT would be the “in thing.”

Service providers, such as wireless operators and utilities are also adopting our IoT vision to launch new innovative services to stay competitive. One of the largest SPs in the Asia-Pacific region is using IoT technology to remotely manage tens of thousands of gas meters leveraging the Narrowband-IoT standard, with implications on smart city initiatives. Other leading U.S.-based SP companies are looking to transform elder care management, improve security solutions, and help food services companies better manage risk with enhanced inventory track and trace capabilities. As we enter 2021, I predict that while the connected home market will continue to see steady incremental growth, the enterprise IoT sector will pick up exponentially based on the types of inquiries we’ve fielded from industries as diverse as food manufacturing, agricultural equipment, coffee brewers, and real estate management, among others. These are complex use cases with many moving parts and long sales cycles, but the size of the problems and opportunities for digital transformation are breathtaking.

2020 will be the year of enterprise IoT, featuring expansion into a wide variety of use cases and driving meaningful business improvement. The future of IoT is bright, and it’s rapidly evolving from a technology experiment to a strategic imperative.



Ranjith SB  
III year ECE C

# ARTIFICIAL INTELLIGENCE

In computer science, artificial intelligence sometimes called machine intelligence, in contrast to the natural intelligence displayed by humans. As machines become increasingly capable, tasks considered to require "intelligence" are often removed from the definition of artificial intelligence, a phenomenon known as the artificial intelligence effect. Modern machine capabilities generally classified as artificial intelligence include successfully understanding human speech, autonomously operating cars, intelligent routing in content delivery networks, and military simulations. Artificial intelligence has been divided into subfields that often fail to communicate with each other. These subfields are based on technical considerations (e.g. robotics or machine learning). Subfields have also been based on social factors i, e. particular institutions or the work of particular researchers. The traditional problems of artificial intelligence research include reasoning, knowledge representation, planning, learning, natural language processing, perception and the ability to manipulate objects. Many tools are used in artificial intelligence, including versions of search and mathematical optimization, artificial neural networks and methods based on statistics, probability and economics. The artificial intelligence fields draws upon computer science, information engineering, mathematics, psychology, linguistics, philosophy, and many other fields. Advancements in this technique have contributed to the growth of the automotive industry through the creation and evolution of self-driving vehicles. As of 2017, there are over 30 companies utilizing artificial intelligence into the creation of self-driving cars. A few companies involved with artificial intelligence include Tesla, Google, Apple. Artificial intelligence is assisting doctors. Microsoft is working on a project called "HANOVER" on at the moment fighting 'myeloid leukemia' a fatal cancer where the treatment has not improved in decades. Another study was reported that artificial intelligence was as good as trained doctors in identifying skin cancers. In the 21st century, this technique have experienced a resurgence following concurrent advances in computer power, large amounts of data and these technique have become an essential part of the technology industry, software engineering and operations research



ROOBICA.S  
III-ECE 'C'

# QUANTUM COMPUTING

QUANTUM COMPUTING: One of the emerging technologies in 21st century is QUANTUM COMPUTING. Quantum computing is the study of a non-classical model of computation. Whereas a classical computer encodes data into fundamental units called bits, where each bit represents a one or a zero, a quantum computer encodes data into bits that can represent a one, a zero, or some combination. The combination is known as a quantum superposition, and bits with these quantum properties are known as qubits. This is in contrast to classical computers which perform computation that never deviate from clearly defined values.

Some amazing applications on quantum computers to real world issues are:

- Cybersecurity
- Drug Development
- Weather Forecasting and Climatic Change
- Artificial Intelligence
- Electronic Materials Discovery

IBMQ is an industry first initiative to build universal quantum computers for business, engineering, and science. This effort includes advancing the entire quantum computing technology stack and exploring applications to make quantum broadly usable and accessible. AMAZON, GOOGLE, IBM and MICROSOFT plus host of smaller companies such as RIGETTI and D-WAVE are all betting big on quantum.

According to a leaked scientific paper, Google created a quantum computer that performed a series of operations in 200 seconds that would take a typical supercomputer 10,000 years. Quantum can also decrypt complex passwords within minutes



SELVALAKSHMI.B  
III YEAR-ECE 'C'

## WHAT IS INTERNET OF THINGS(IOT)?

The Internet of Things, or IoT, refers to the billions of physical devices around the world that are now connected to the internet, all collecting and sharing data. Thanks to the arrival of super-cheap computer chips and the ubiquity of wireless networks, it's possible to turn anything, from something as small as a pill to something as big as an aeroplane, into a part of the IoT. Connecting up all these different objects and adding sensors to them adds a level of digital intelligence to devices that would be otherwise dumb, enabling them to communicate real-time data without involving a human being. The Internet of Things is making the fabric of the world around us more smarter and more responsive, merging the digital and physical universes.



**Rishi Kanth P**  
**ECE-C III Year**

# GAGANYAAN

Gaganyaan is a fully autonomous 3.7-tonne (8,200 lb) spacecraft designed to carry a 3 member crew to orbit and safely return to the Earth after a mission duration of up to seven days. Its service module is powered by two liquid propellant engines . The crew module is mated to the service module, and together they are called the orbital module. Based on the payload capability of the GSLV-III booster, the service module would have a mass of about 3 tonnes (6,600 lb). The space capsule will have life support and environmental control systems. It will be equipped with emergency mission abort and emergency escape that can be done at the first stage or second stage of the rocket burn. The nose of the original version of the orbital vehicle was free for a docking mechanism, but primary entry was evidently through a side hatch secured by explosive bolts. Following two non-crewed orbital flight demonstrations of the spacecraft, a crewed Gaganyaan is slated to be launched on the GSLV Mk III launcher in late 2021. Though the spacecraft is designed to carry 3 people, it is likely that the first flight will carry one person only. About 16 minutes after liftoff from the Satish Dhawan Space Centre (SDSC), Sriharikota, the rocket will inject the spacecraft into an orbit 300–400 km (190–250 mi) above Earth. When ready to land, its service module and solar panels will be disposed off before reentry. The capsule would return for a parachute splashdown in the Bay of Bengal. Crew module is equipped with two parachutes for redundancy, while one parachute is good enough for safe splashdown. The parachutes would reduce the speed of the crew module from over 216 m/s (710 ft/s) to under 11 m/s (36 ft/s) at splashdown.

**Abubakker Siddiq A,  
III ECE A**



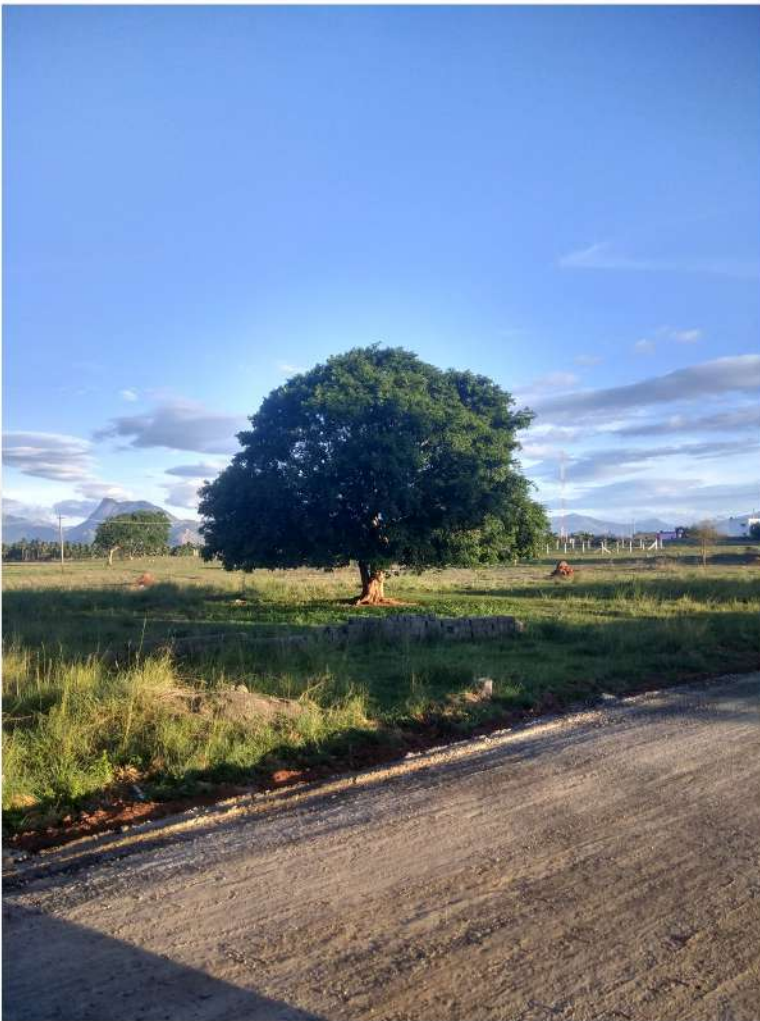
# PHOTOGRAPHY

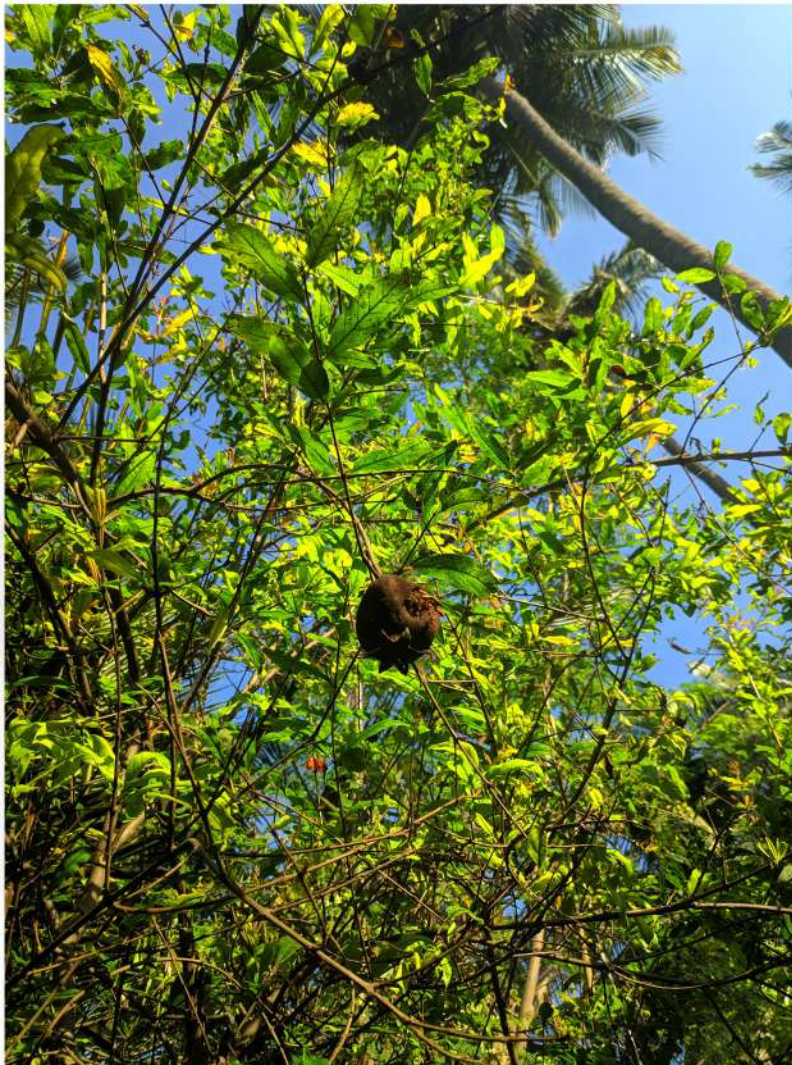
## CAMERA COMPARISON

We compare the newest releases from major brands.

## SHUTTER SPEEDS

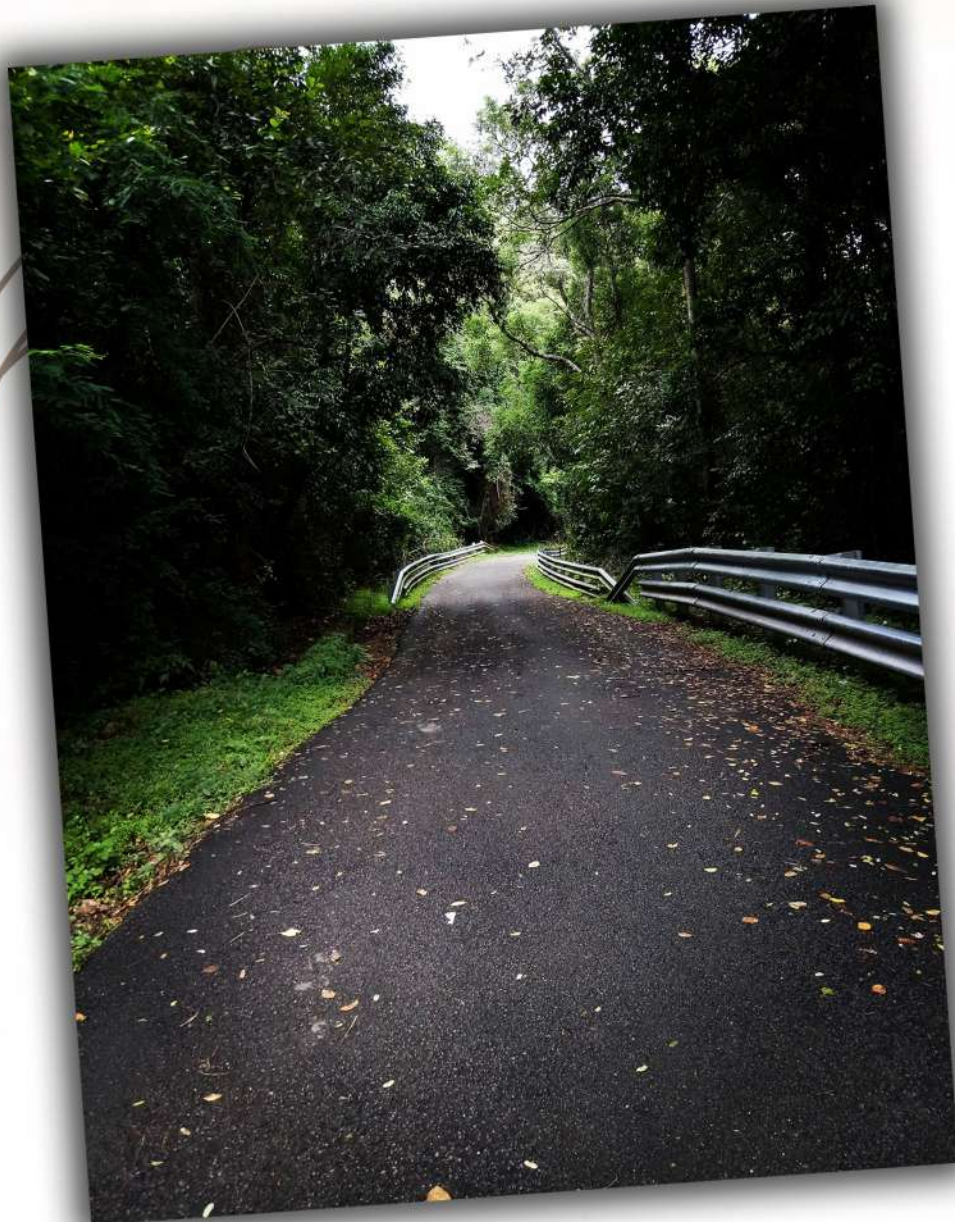
We take a look at fast and slow shutter speeds.



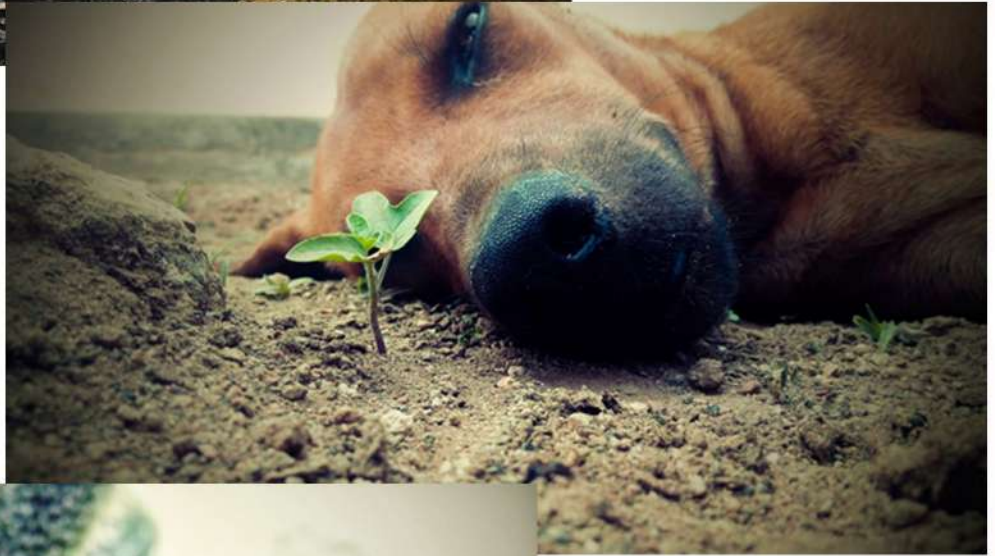


**BASKAR R  
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by  
Blessy  
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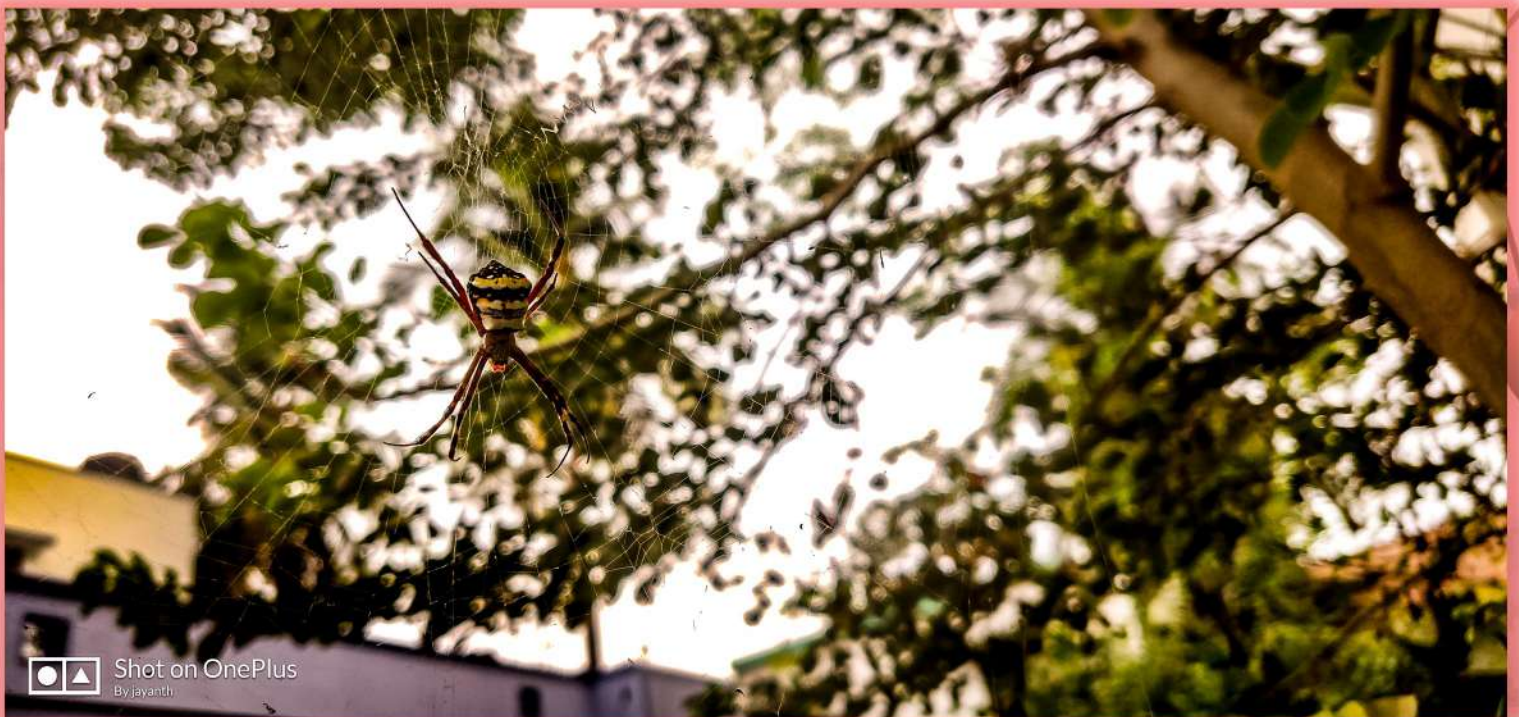
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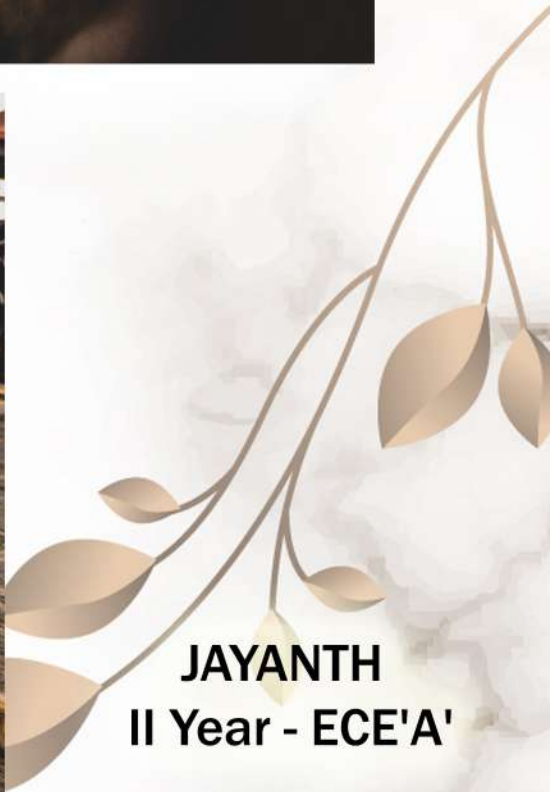
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Shot on OnePlus  
By Jayanth



**JAYANTH**  
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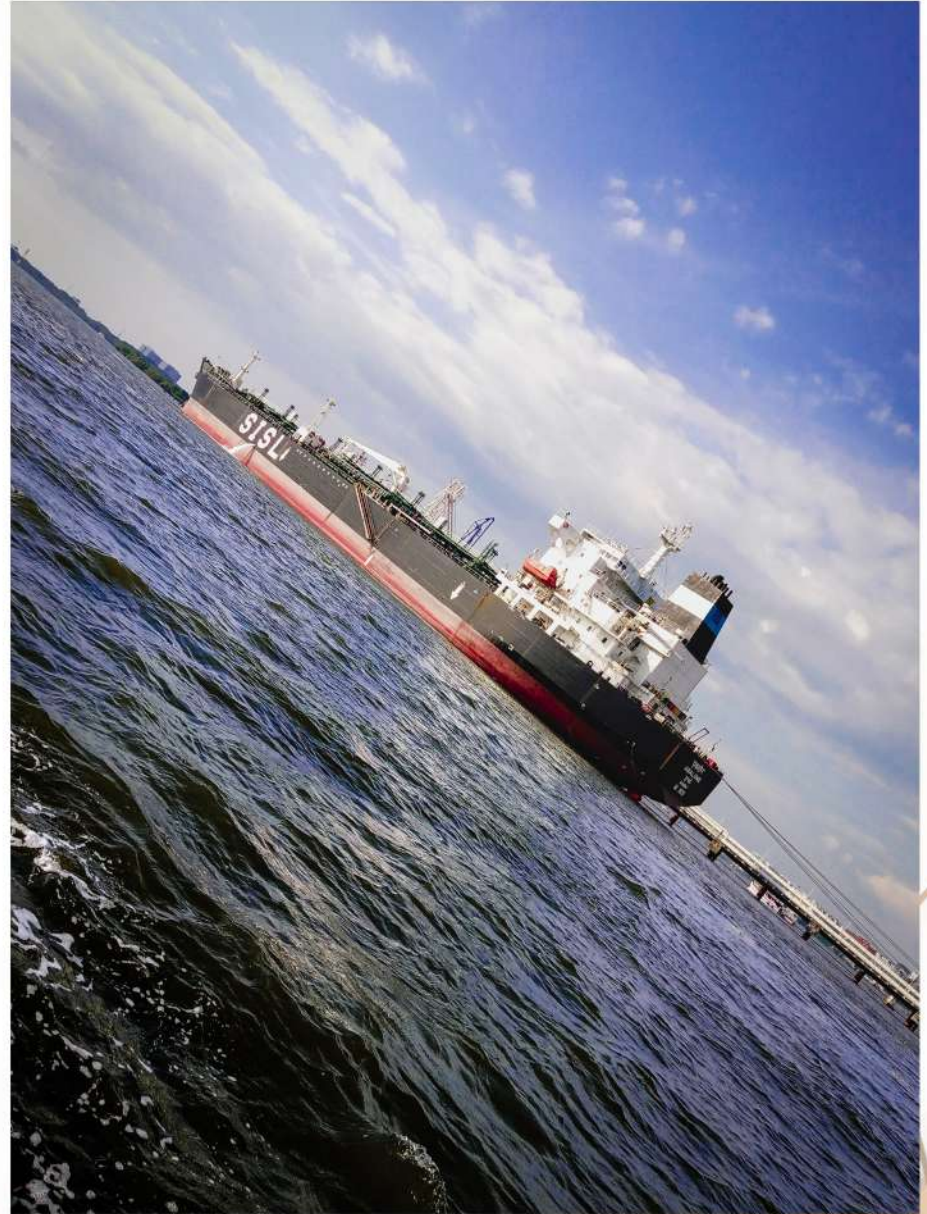




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**JEFFREY PAUL**  
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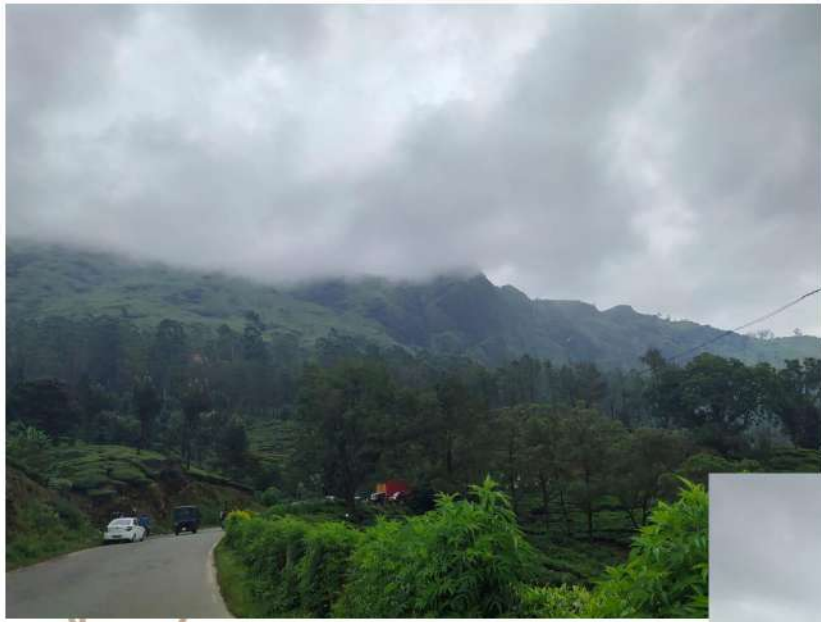
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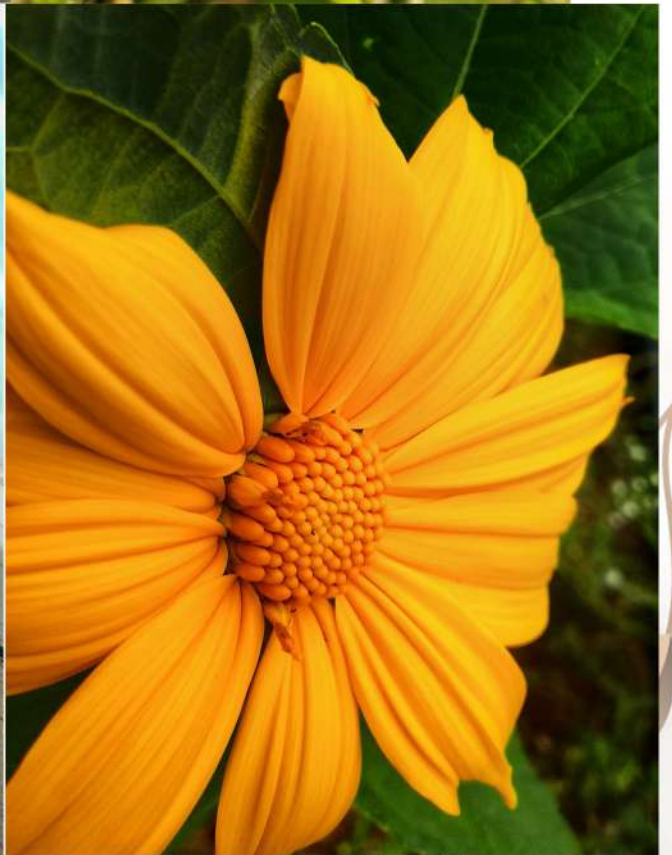




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## TEARS WITH BLUSH

Serene silence and crazy talks..  
Laughter nights and lazy walks..  
Promises to keep..  
Secrets to share..  
Parks to scroll..  
Time to spare..  
Fights wait to be fought...  
Pillows waiting to be cried..  
Sorrlys waiting to be expressed..  
Arms waiting to be hugged..  
Stares waiting to be understood..  
Conversations waiting to be happen..  
Beautiful moments waiting to be spent...  
Colourful pages waiting to be filled...  
Stories to be told..  
Memories to hold..  
Two people standing by each other through their ups and down...  
Best friends for life..  
Best friends forever..



G.Subhashini  
III-ECE 'C'

# DIRECTOR

**“Pick up a Camera. Shoot Something. No Matter How Small, No Matter How Chessy, No Matter Whether Your Friends and Your Sister Star in it. Put Your Name on it as Director. Now You’re a Director. Evertthing After that You’re Just Negotiating Your Budget and Your Fee.**



**M.D.Ashwin  
III Year - ECE - A**

## தாய்மை

கருவாக இருக்கையில் பல்வேறு

கனவுகள் மூலம் மட்டுமே

உன்னைக் கண்ட நான், என்

கைகளில் நீ தவழ்ந்தும்,

உன் பஞ்சக் கால்களால் என் நெஞ்சில் உதைத்தும்,

பிஞ்சுக் கைகளால் என் கன்னத்தில் அரைந்தும்,

கண் சிமிட்டாமல் கள்ளாக நிற்கின்றேன்...

கனவைக் காட்டிலும் என் கைகளில்

நிறைவாக நீ கிடைத்துவிட்ட கிரக்கத்தினால்...

## வரலாற்று விதை

புதையுண்ட தமிழனின் வரலாற்றுக்கு

விதையுண்டு என்பதனை, வெவ்வேறு

அகழ்வாராய்ச்சிகளின் மூலம் மட்டுமே

நம்மால் அறிய முடிகிறது...



## தன்னம்பிக்கை

தரணியில் வாழும் தலைசிறந்த தலைவர்களே  
உன்னை தகுதியற்றவன் எனக் கூறினாலும்  
தளர்ந்து விடாதே! தன்னம்பிக்கை மட்டுமே  
தகுதியற்றவனையும் தலைவனாக்கும் வல்லமையுடையது...

## அம்மா

என் முகம் பாராமல் என்னை நேசித்த

முதல் உயிர் நீதான்....

என் முதல் அழகையில் மட்டுமே

ஆனந்தம் அடைந்ததும் நீதான்...

என் மழலைகள் குரலில் முதலில்

அழைத்ததும் உன்னைத் தான்...

என்னை பாசத்துடன் வளர்த்த உன்

கரங்களுக்கு அல்ல, உன்

பாதங்களுக்கு என் கோடி முத்தங்கள்...



**LINGATHARAN A**  
**ECE - B III YEAR**



**ECE DEPARTMENT ART 2020**







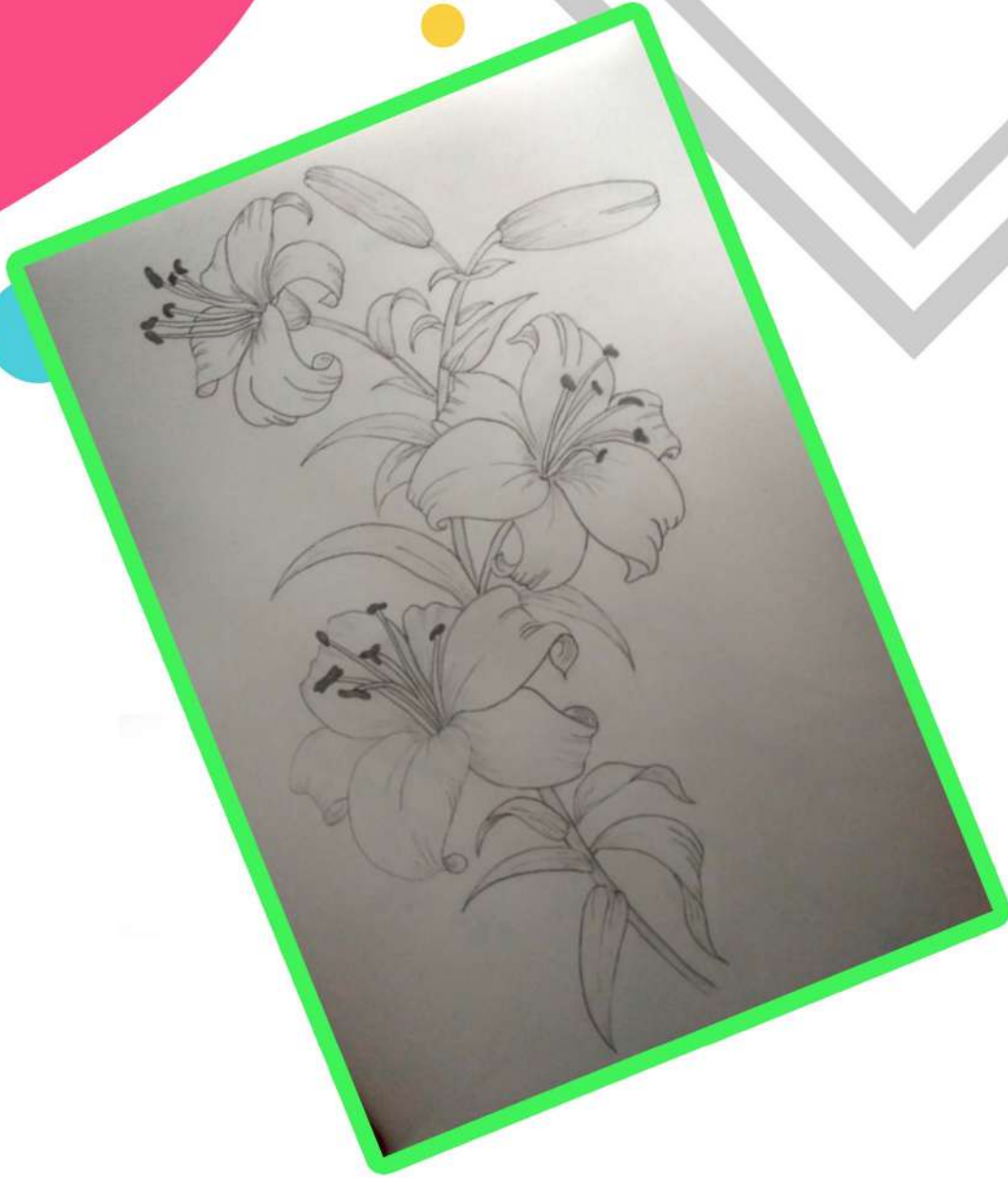




**Subhiksha**  
ECE - C II Year







**MOHAN G  
IV ECE B**



by  
DHANALAKSHMI A  
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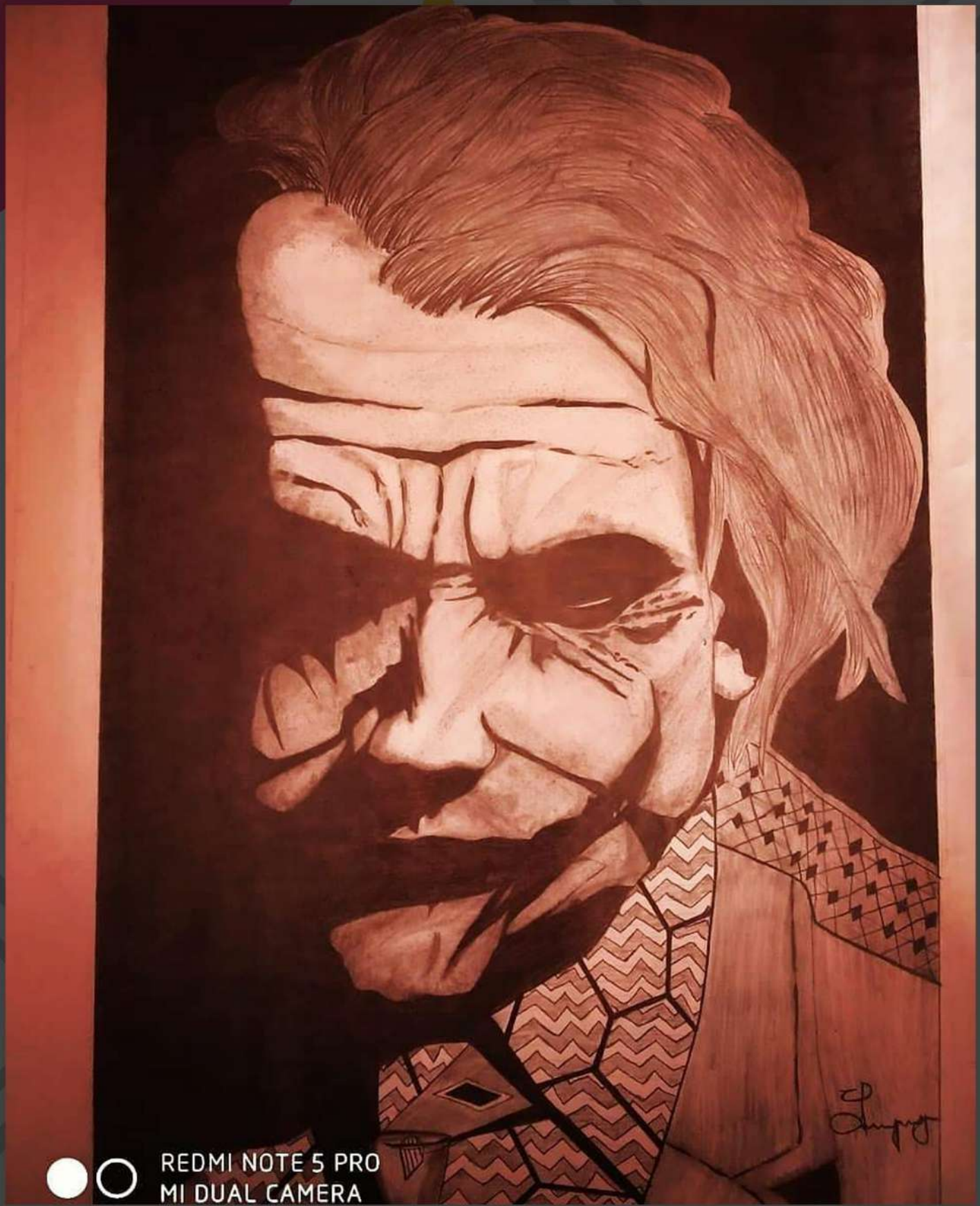


BY  
HARSHINI M S  
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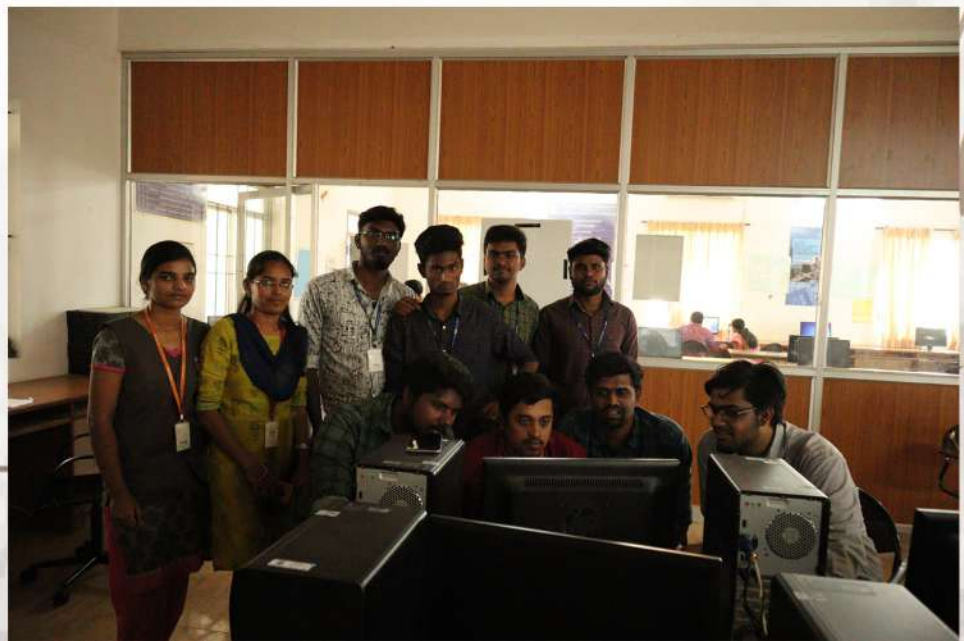
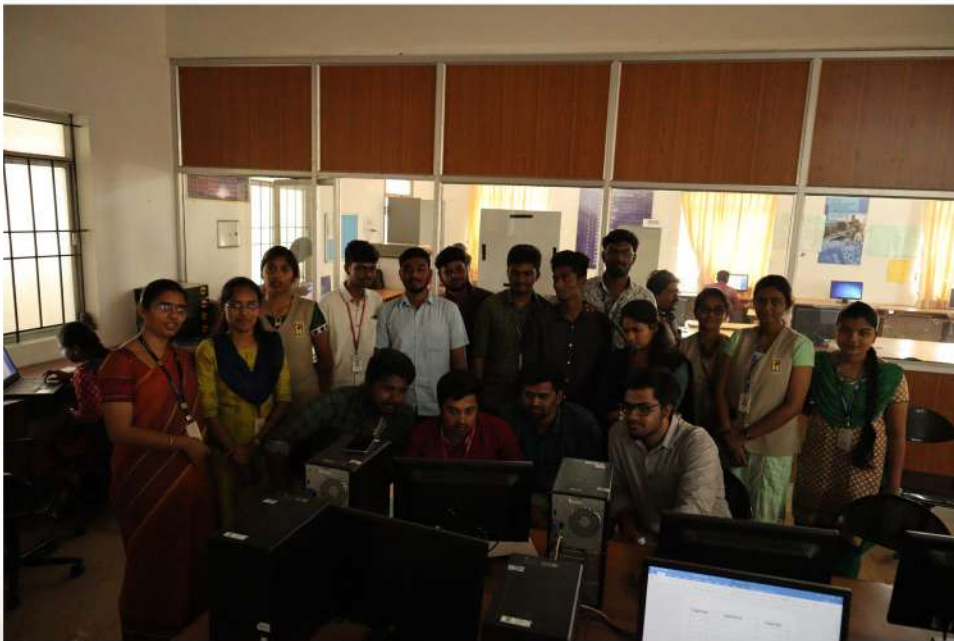
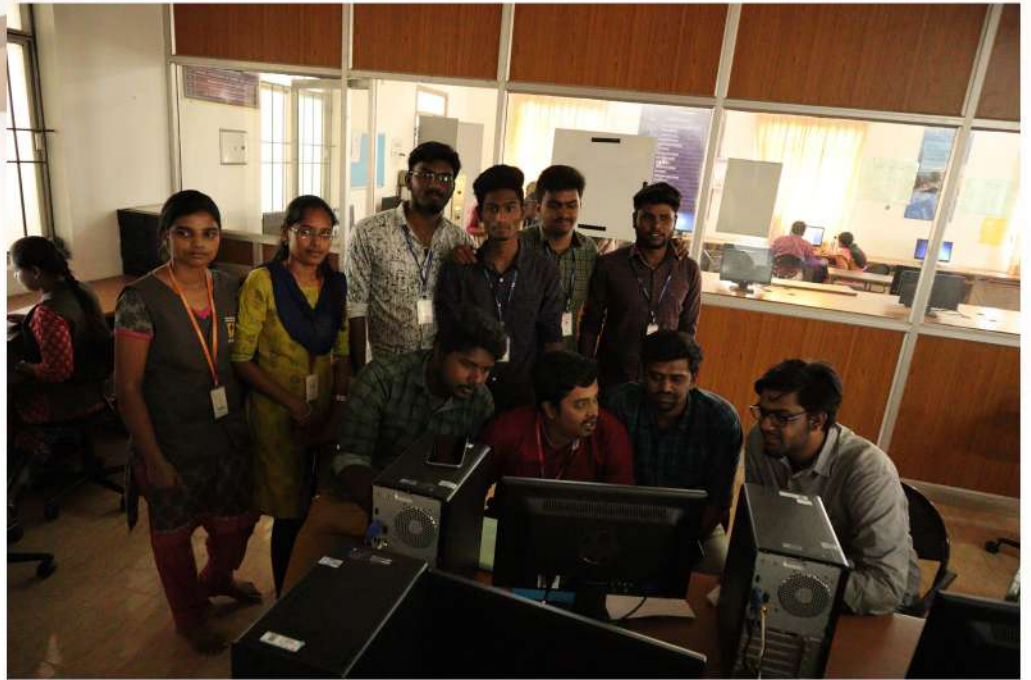


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**Yaminipriya.P**  
**III Year - ECE - C**

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