



Dept of ECE, RNSIT, Bengaluru

INCESS

21st Edition

Emotions
are
enmeshed
in the
neural
networks
of reason

NEURAL NETWORKS

Winter Edition 2021

VISION

Conquering technical frontiers in the field of electronics and communication

MISSION

- To achieve and foster excellence in the core of Electronics and Communication Engineering with focus on hardware, simulation and design.
- To pursue research, development and consultancy to achieve self-sustenance.
- To create Benchmark Standards in Electronics and Communication by active involvement of all stakeholders.

WELCOME TO

noesis

Welcome to NOESIS winter edition 2021! We humbly thank our Principal **Dr. M K Venkatesha**, HoD **Dr. Vipula Singh** and Assistant Prof. **Chethana J** for their continuous support and encouragement.

What is Noesis....?

The word noesis is of greek origin referring to the perception of human mind. It is also a philosophic term, sometimes equated to the intellect and intelligence.



“

*It's ok to feel lost
That's life, with its ups and downs
It's ok to feel sad
Sometimes, smiles give way to frowns
It's ok to fail
Not every day is meant to be won
As long as you persevere
You'll be second to none*

Dr. Vipula Singh

”

PUBLICATIONS

Mrs. Ibrar Jahan M A

Design and development of optical fiber Bragg grating based device for measurement of handgrip force, Optical and Quantum Electronics vol. 54, no.68, 2022

Mrs. Kruthika P J & Dr Archana V Kukarni

"IoT Assisted Health Monitoring Frame Work with Secure Data Transmission System", e-ISSN: 2582-5208, Volume:03/Issue:09/September-2021, International Research Journal of Modernization in Engineering Technology and Science.

Dr. Suresh D, M Ravi Kumar, N Bala

Dastagiri " Design of dynamic comparator with reduced kick back noise", International Conference on Circuits, Controls and Communication, December 23-24, 2021

Dr. Suresh D

"Novel method for the segmentation of Brain images using the FCM clustering approach as well as rough set", Third International conference on Cyber network, Cognition and Machine Learning Applications, ICCCMLA 2021, August 21-22, 2021

Dr. Sangeetha B G, Hemalatha K N,

"Optimized 64-bit reversible BCD Adder for low power applications and its comparative study", ICoCIST-2021, October 28-30, 2021

Sangeetha B G, Girija S,

"Fault Tolerant Arithmetic and Logic Unit in Reversible Logic for Low Power Applications", Design Engineering, Vol. 2021, Issue 8, pp. 1311-1323, Oct 2021

Ghousia Begum, Vipula Singh "

Detection of Atrial Fibrillation using 1D-Convolution Neural Network in ECG Signal", Science, Technology and Development Journal, Vol.10, Issue 10, Oct 2021

N Aswini , S V Uma,

"Drone to Obstacle Distance Estimation Using YOLO V3 Network and Mathematical Principles", Journal of Physics: Conference Series, Vol. 2161, pp.1-13, January 2022

Sangeetha B G, Girija S,

"Optimized Modular Arithmetic and Logic unit in Reversible Logic", Journal of Information and Computational Science, Vol. 11, Issue 8, pp. 330-341, Aug 2021

Ibrar Jahan M A, Rajini V Honnungar,

"Design and Modeling of Ultra-compact and Highly-sensitive Silicon Bragg Grating Sensor for Biochemical Sensing Applications", Silicon Journal, January 2022 (Accepted)

PHD THESIS SUBMITTED

Mr. Prakash Tunga P

GUIDE : Dr. Vipula Singh, RNSIT, Bangalore
Near Lossless Compression of MRI images based on Region of Interest".

Mrs. Ibrar Jahan

GUIDE : Dr. Rajini V Honnungar , RNSIT, Bangalore
" Design, Modeling and Analysis of Integrated Optic Bragg Grating for Sensing Applications".

Mrs. Leena Chandrashekhar

GUIDE : Dr. M N Dinesh, RV College of Engineering, Bangalore.
"Detection of Brain Cancer using Image Fusion Techniques for Multimodal and Multiresolution Brain Images"

GUEST LECTURES

Mr. Ranganath Muralidhar Kulkarni	How to build your resume and importance of coding in core domain.	Advanced Micro Devices, Inc.,Silicon Design Engineer	25/9/2021
Roopa Kumari M D Relational Manager Byju's , Bangalore	Career guidance	Career Labs	28/10/2021
Mr. Vivek Adishesha, R&D Engineer. Mr. Chiranjit Patel, Memory Design Engineer. Mr. Vivek Urankar, Layout Design Engineer	A Knowledge sharing session on "Opportunities in VLSI industry"	Strukton Rail and BHEL R&D. ARM Embedded. Sign off Semiconductors.	13/8/2021

NEURAL NETWORKS

Neural networks reflect the behavior of the human brain, allowing computer programs to recognize patterns and solve common problems in the fields of AI, machine learning, and deep learning.

Neural Networks provides a forum for developing and nurturing an international community of scholars and practitioners who are interested in all aspects of neural networks, including deep learning and related approaches to artificial intelligence and machine learning. Neural Networks welcomes submissions that contribute to the full range of neural networks research, from cognitive modeling and computational neuroscience, through deep neural networks and mathematical analyses, to engineering and technological applications of systems that significantly use neural network concepts and learning techniques.

This uniquely broad range facilitates the cross-fertilization of ideas between biological and technological studies and helps to foster the development of the interdisciplinary community that is interested in biologically-inspired artificial intelligence. Accordingly, the Neural Networks editorial board represents experts in fields including psychology, neurobiology, computer science, engineering, mathematics, and physics. The journal publishes articles, letters, and reviews, as well as letters to the editor, editorials, current events, and software surveys. Articles are published in one of four sections: learning systems, cognitive and neural science, mathematical and computational analysis, engineering and applications.

The world is wide open for anybody jumping out there to start knowing what is a neural network and exploring the field. The more you understand the concepts, the better you can apply them in various fields. While the adoption of AI is growing with each passing day, companies across the world are facing the AI skills crisis. There is no better time than now to upskill yourself and become an Artificial Intelligence Engineer. You can consider taking Simplilearn's Artificial Intelligence Engineer Master's Program, which will help you understand neural networks from scratch. Get certified today and build your career in this challenging domain.

Placement Statistics - 2021 batch

No.	DRIVE	CTC	#Students
1	Texas Instruments	35k/month, 14.77LPA	5
2	Cognizant	4 LPA - 6.5 LPA	67
3	Accolite - SheCodes Hiring Women in Tech	20k/month, 5 LPA	1
4	Capgemini - Senior Analyst	7.5 LPA	2
5	Capgemini - Analyst	22k/month, 4 LPA	34
6	Wipro - Elite	3.5 LPA	63
7	LTI L-1	5 LPA	2
8	LTI L-2	6.5 LPA	6
9	LTI L-3	8 LPA	3
10	Accenture ASE	4.5 LPA	19
11	Accenture - Advanced ASE	6.5 LPA	5
12	Dell	25k/month, 7 LPA	1
13	InTimeTech	10k/month, 5.5 LPA	11
14	Mphasis	4 LPA	81
15	Hexaware	5 LPA	2
16	Evry	4.5 LPA	4
17	Tech Mahindra	3.25 LPA	4
18	Maersk	40k/month, 9 LPA	3
19	Tata Elxsi	3.5 LPA	8
20	Infosys	4 LPA	13
21	Knodtech	10k/month, 3 LPA	1
22	Nokia	6.3 LPA	7
23	Flurn	25k/month, 7 LPA	1
24	Turingminds.ai	5-7 LPA	9
25	TCS	5-3.5 LPA	20
26	Sasken Technologies Ltd	25k/month, 5 LPA	1
27	QuEST Global	3 LPA	2
28	SATTVA AERO ACCESSORIES & SYSTEMS PVT.LTD	6k/month, 15-20k/month	2
29	M/s Tejas Network	10-11 LPA	1
30	LeadSquared	20k/month, 6 LPA	2
31	Hashed in by Deloitte	25k/month, 7.84 LPA	5
32	Uipath	9 LPA	1

IEEE



Dr Rajini V Honnungar obtained her PhD degree from the prestigious Indian Institute of Science Bangalore during 2014. She is currently working as an Associate Professor, in the Dept. of ECE, R N S Institute of Technology, Bangalore. She has a teaching experience of 22 years. Her research interests include Optical communication, Optical Sensors, Integrated Optics and Microwave Photonics. She has published around 20 papers in journals and various National and International conferences. She won the best paper award at the "International Conference on Optics and Electro-optics" held at IRDE, Dehra Dun during 2014.

She won the best teacher award at RNSIT during 2006. She obtained a project funding of 2 lakhs as Co-ordinator under the VTU Competitive Research Funding during 2020.



The following activities were held by RNSIT IEEE Student Branch(STB 50401) during Jun to Dec, 2021.

- Course : **Signal Processing Techniques using Python**, from June 18th, 2021, by **Chetan Adhikari**, Python Expert, TCS
- A Technical Talk on " **Cyber Security**" , talk rendered by **Mr. Srinath Kappgal**, Security Architect, Dell Technologies, on August 9 , 2021.
- A Technical Talk on " **Remote Sensing and GIS in Water resources Engineering**" , talk rendered by **Ms Raksha**, Deputy Director, M/s SPACE GEO TECH, on August 11, 2021.
- A Technical Talk on " **AI for Manufacturing- Challenges and Opportunities**" , talk rendered by **Dr Praveen**, Director of Numetrix Consulting, on August 12,2021.
- A Technical Talk on " **Career Opportunities in CyberSecurity**", talk rendered by **Mr Ajith Kumar**, Security Engineer, M/s NetApp on August 14,2021.
- A Technical Talk on " **IOT in Future**" talk rendered by **Mr Sudhir Puthran**, VP at Schneider Electric, on August 16,2021.
- A talk on " **Career development and 21st Century Opportunities**", by **Ramneek Kalra**. A celebration of IEEE Day on Oct 5, 2021.



WORKSHOPS

NAME OF WORKSHOP	DATE	NAME OF WORKSHOP	DATE
IETE Sponsored Fourth conference on Emerging trends in Engineering, Science and Technology (Online)	05/07/21	Web Development	04/12/21
AICTE 5 - Days online FDP on Recent Trends in the World of Photonics	26/7/2021 to 30/7/2021	GNU Radio Software	04/12/21
4 WEEKS INTERNSHIP ON MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE	28/7/2021 to 27/8/2021	Joy of coding with ESP32 and IOT application	11/12/2021 & 12/12/2021
IEEE Day celebrations by IEEE RNSIT Student Branch.	05/10/21	3rd International Conference on Circuits, controls and communication-CCUBE 2021	23/12/2021 & 24/12/2021
2 Day workshop on "Circuit Design and simulation Using Multisim"	30/10/2021 and 31/10/2021	3 Day workshop on "Digital signal processing Using MATLAB"	9/12/2021 10/12/2021 & 11/12/2021



CCube-2021



RNSIT had an international conference on Circuits Controls and Communications, CCUBE 2021", jointly organized by Departments of Electronics and Communication Engineering, Electrical and Electronics Engineering and Electronics and instrumentation Engineering. The conference was held on December 23-24, 2021. A total of 106 papers were received out of which 31 papers were accepted the conference was inaugurated by Dr. Rajaram Kudli, Former Vice President, Analytic Engineering Valgen, USA, followed by keynote address by Dr. Piotr Slomka, Director and Professor of Medicine and Cardiology Cedars Sinai USA. The conference also had a Panel Discussion on the topic "AI & ML-Constructive/Disruptive". The conference concluded with the valedictory function presided by Dr. Shivakumar KM. Architect (AL/ML). CCUBE 2021 was technically sponsored by IEEE Bangalore section, COMSOC, PES, SPS Chapters.

OPEN HOUSE PROJECT EXPO-2021



WINNERS OF OPEN-HOUSE

PROJECT EXPO-2021

• BEST HARDWARE

• 1st PLACE

- Varun Rao
- Shardul Satheskumar
- Pratham B Parlecha
- P Shree Hari Thejus

• 2nd PLACE

- Kavana N
- Poornima B
- Nandini VA

SECURITY
SYSTEM

REED
MAGNETIC
SWITCH DOOR
SYSTEM

• BEST SOFTWARE

• 1st PLACE

- Aman Kumar
- Prahlad V Avadhani
- Siddharth Shetter

• 2nd PLACE

- Rohini K
- Sahana G
- Satyam Pandey

DETECTION
AND ANALYSIS
OF BRAIN
TUMOR

• BEST HYBRID-1

• 1st PLACE

- Neelesh Kumar N
- Hemanth KS
- Syed Mohanmmed AS

• 2nd PLACE

- Mayank Ranjan
- MD Salauddin Asad
- M Brendha
- Mohammed Humdaan
- Archana Jha

CAREBOT

SPYBOT

• BEST HYBRID-2

• 1st PLACE

- Yashas
- Tejas
- Varun Patil

• 2nd PLACE

- Ajay Raman
- Srinivas D
- Prashanth M

IOT BASIC
PROJECTS

PARKING
MANAGEMENT
USINNG
ARDUINO

• BEST HYBRID-3

• 1st PLACE

FACE
RECOGNITION
BASED
ATTENDANCE
SYSTEM USING
ESP32 CAM
MODEL

- Abhigna V Kumar
- Abhishek Simha P
- Swaroopa A
- Chinmayee Urs

• 2nd PLACE

LCD
INTERFACING
WITH ARDUINO

- Gopa Deepak
- Gowrish
- Gowtham N Gowd
- Hema Kalash

• BEST TEACHING AID

MOSFET

BI STABLE FLIP
FLOP

VOICE CONTROL

- Karunya P
- Ashwath Kumar N
- Yashwanth Kumar S

- Achyuth G Prasad
- Amruth KS
- Karthik
- Yashwanth M

- Ajeet GN
- Samayak

Different Levels of Autonomous Driving and Where we are Today

For the last many years, automobile manufacturers have turned their attention towards self-driven cars. It all became serious when Google launched its self-driving car project (Wamyo) in 2009. A few years later, Elon Musk announced Tesla would build a self-driving system into its cars and in November 2018, Tesla launched a feature called Navigate on Autopilot. By 2013, major automotive companies including General Motors, Ford, Mercedes Benz, BMW, and others started working on their own Autonomous Vehicle technologies. Just recently, Uber has also announced bringing self-driving cars to Washington, DC. GM and Honda have also announced the launch of a new self-driving car named Origin.



With the technological boom of Artificial Intelligence (AI) and IoT, it's no wonder that a large number of automotive giants are working to make fully self-driven or driverless cars a reality. The race to get self-driving cars on the road is speeding up and the autonomous vehicle market is growing to a great extent. Researchers forecast that by 2025 we'll see around 8 million autonomous or semi-autonomous vehicles on the road.

Autonomous Driving Levels

There are 6 levels of driving automation. Different levels of automated vehicles represent capabilities and options for drivers. These levels of automation describe various elements and capabilities of the vehicles as they pertain to driving automation. Many self-driving vehicles that exist in the market today are from level 0s to 2s. Automakers around the globe are talking about advanced driver assistance systems (ADAS) which means that the vehicle features a few automated systems like steering or accelerating for driver assistance. Cars with ADAS systems can detect certain objects, do basic calculations, can alert the driver of bad road conditions and in some cases, automatically stop the vehicle.

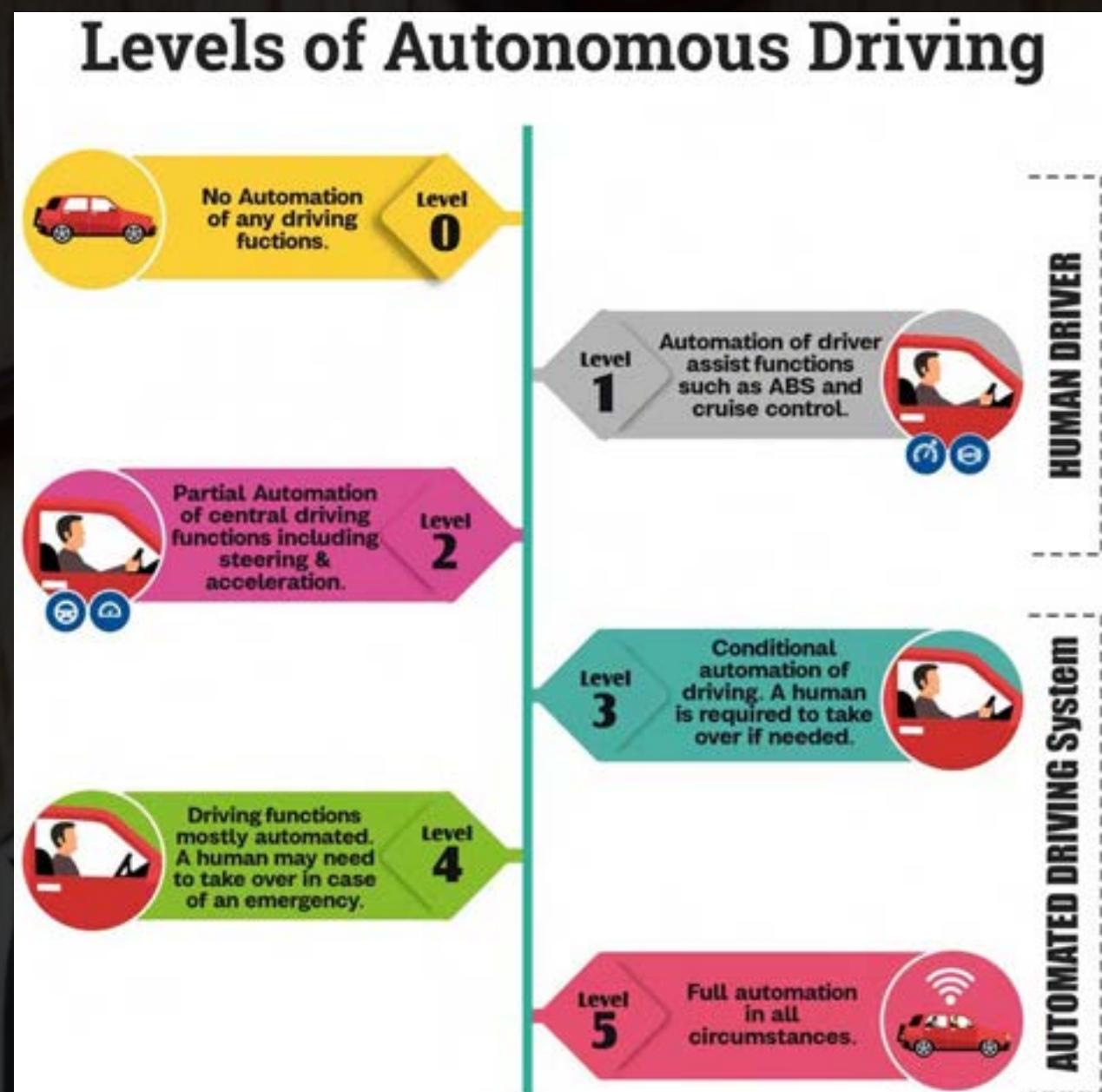
Level 0 (No Automation): At this level, the driver performs all operating tasks like steering, braking, accelerating or slowing down, etc. The automated system may issue warnings and momentarily intervene but has no sustained vehicle control.

Level 1 (Driver Assistance): At this level, the driver and the system share control of the vehicle. The driver handles all accelerating, braking, and monitoring of the vehicle whereas the system performs functions like maintaining a set speed (cruise control) or engine and brake power to maintain and vary the speed (Adaptive Cruise Control or ACC), lane-keeping assistance, etc.

Level 2 (Partial Automation): Also referred to as 'hands-off', this level vehicles can control both steering and accelerating/decelerating. The person at the driver's seat must take control of the car at any time when necessary. Many automakers like Hyundai, Kia, Genesis, etc. are developing vehicles at Level 2.

Level 3 (Conditional Automation): Also referred to as 'eyes-off' level, vehicles at this level itself control all monitoring of the environment (using sensors like LiDAR) although the driver needs to be attentive but can disengage from "safety-critical" functions like braking and leave it to the technology when conditions are safe. Many current Level 3 vehicles require no human attention to the road at speeds less than 37 miles per hour.

Level 4 (High Automation): Also referred to as 'mind-off', vehicles at this level are capable of steering, braking,



accelerating, monitoring the vehicle and roadway as well as responding to events, determining when to change lanes, turn, and use signals. The autonomous driving system at this level would first notify the driver when conditions are safe, and only then does the driver switch the vehicle into this mode. It cannot determine between more dynamic driving situations like traffic jams or a merge onto the highway.

Level 5 (Complete Automation): Vehicles at this level are the ones that require no human interaction at all. In simple words, vehicles at level 4 are fully autonomous. Robotic taxis, Audi's Aicon concept are the vehicles of this level. There is no need for pedals, brakes or a steering wheel, as the autonomous vehicle system controls all critical tasks, monitoring of the environment and identification of unique driving conditions like traffic jams. A few years back, NVIDIA announced its AI computer, Drive PX Pegasus to help achieve level 5 autonomy where the driver simply plugs in the destination and leave the rest up to the vehicle itself.



team SPLASH

'SPLASH- THE ALL IN ONE' SPLASH CREW ORGANIZES 'CULTURAL AND SPORTS' 'EVENTS IN ECE DEPARTMENT. IT IS AN AMUSEMENT MAINSTAY. THE FIRST SUCCESSFUL EVENT CONDUCTED BY THIS TEAM IS 'FLASHMOB' WHICH GOT VERY GOOD RESPONSE AND APPRECIATION, WHICH WAS THEN FOLLOWED BY AN EVENT CALLED 'OPEN MIC'- A PLATFORM TO SHOWCASE TALENTS COMPRISING DIFFERENT GENRE SUCH AS DANCE, MUSIC, INSTRUMENTS, STANDUP COM AND SO FORTH. THIS IS AN ALLIANCE OF ENTERTAINMENT AND TALENT. FURTHER THE TEAM IS ALL SET TO CONDUCT 'SPORTS' EVENTS IN THE COMING MONTHS





Techkruthi " is a Techno-Cultural Fest conducted by the Department of ECE, under the sponsorship of IETE . Event was held on 7th and 8th October,2021.Events were held online through the Zoom and Google meet Platform, with 50+ Participants from Various departments. The event was co-ordinated by Dr.Nandini K S, Asst Prof with a team of 30 including Coordinators and Volunteers from 3rd and 5th Semester students along with student coordinator Tejasree c and Harish.

The Preparing of the event started with a meeting with all the event coordinators for ideas to conduct the event online. Then volunteers were recruited by having a conversation with them.

The events got finalized and the advertising of the events started 3 days prior to the day of fest, through Posters, Brochures and Registration-links broadcasted through various social media platforms.

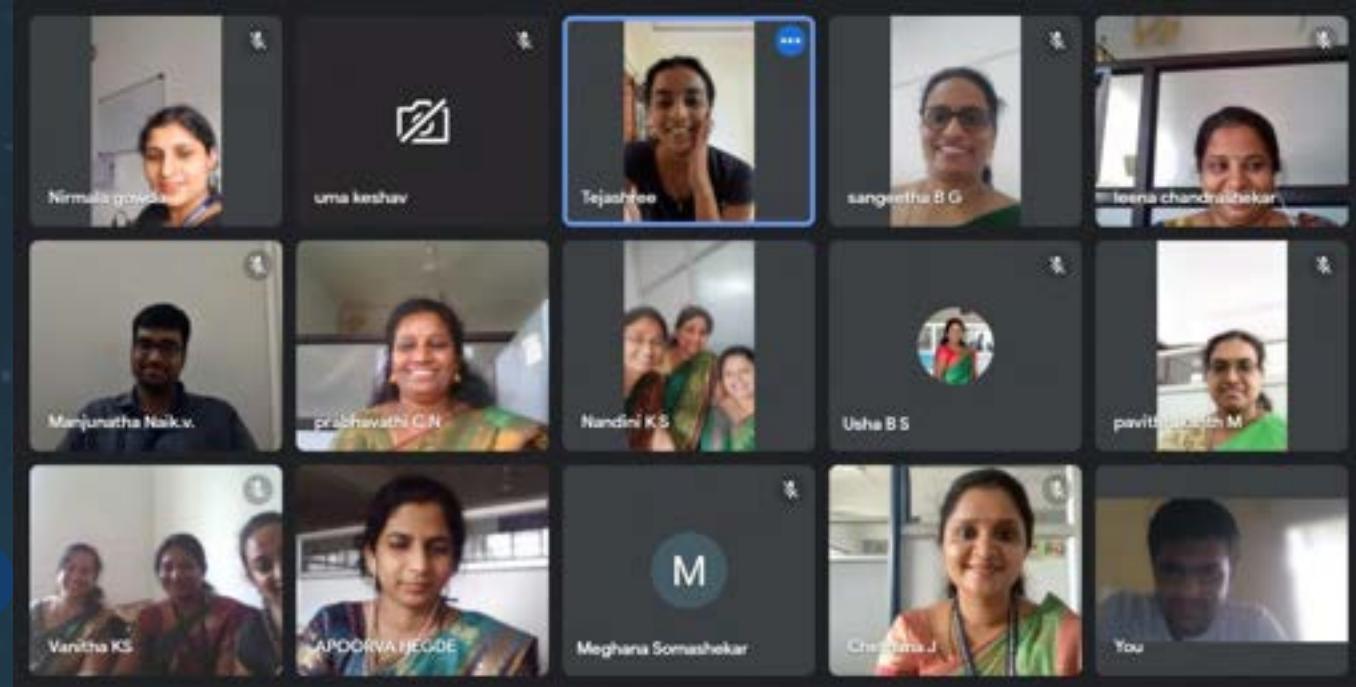
On Day 1 ,7th October 2021, the fest started with an Inauguration function held online at 1:00pm, we had Hod and other professors of our department with us encouraging all of us through their words.

Then we started our technical events viz, technical crossword, coding, technical quiz and Non-Technical event Indian web series which lasted till 6:30pm, making it up the end of Day 1.

On Day 2 , 8th October , the remaining rounds of Technical events circuit debugging and coding was held,2 Non-Technical event Mythological quiz and 1 Cultural event earworms were organized from 1:00am to 2:30pm . Simultaneously, the faculty members were entertained through an event called Earworm and anthyakshari both the days.The Results were finally announced at 5:00pm,while the Coordinators and Volunteers shared their first time experience of an Online fest.

Techkruthi-2021 will always be cherished in all of our young minds involved in the success of the event. All the Events were held as planned due to the dedication shown by the Volunteers, in view of the Coordinators and in guidance by the Faculty Coordinator,

Dr Nandini K S.



Teachers' Day

Festive Moments



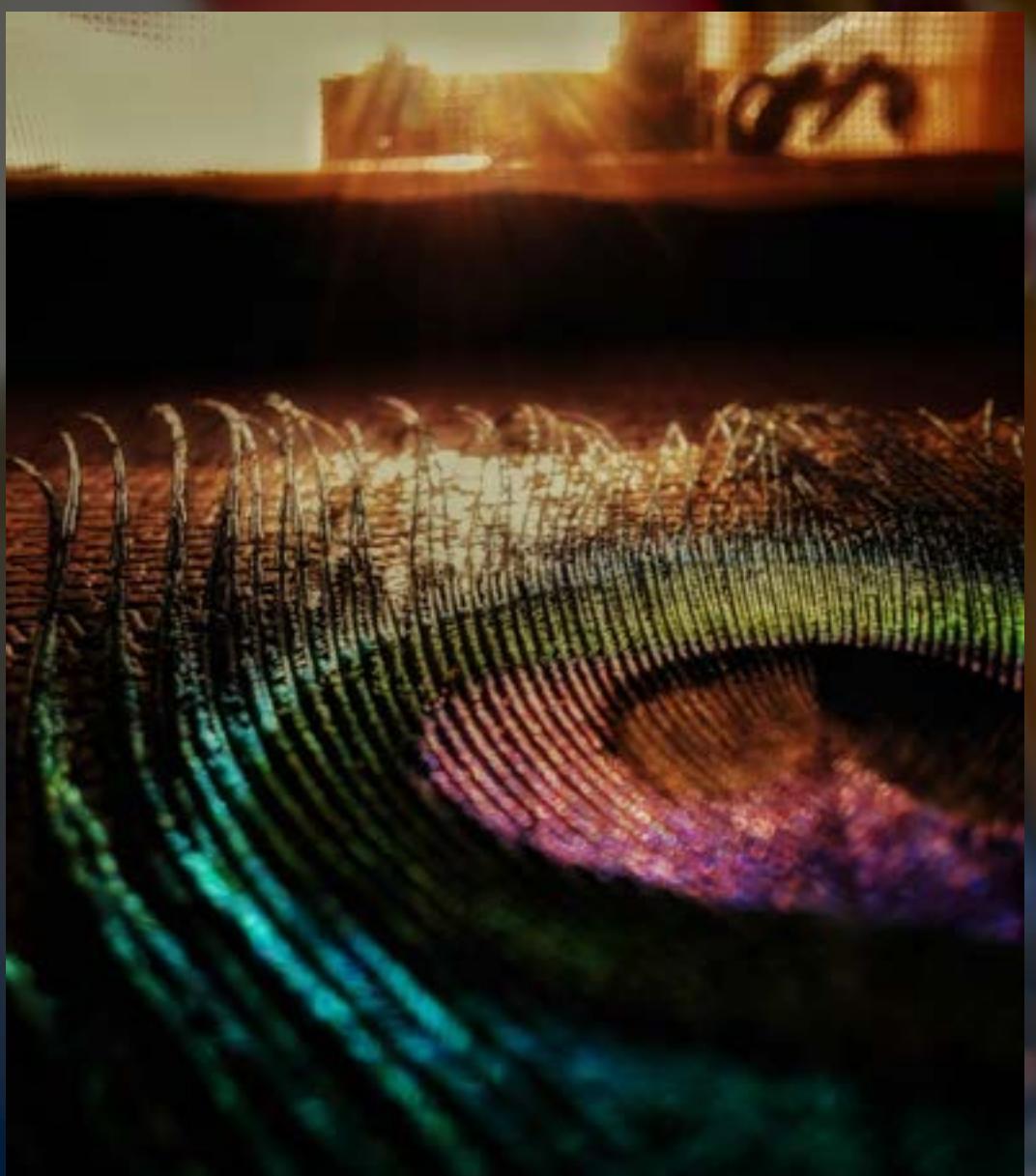
ILLUMINATION



Meghana Somashekar
5th Sem



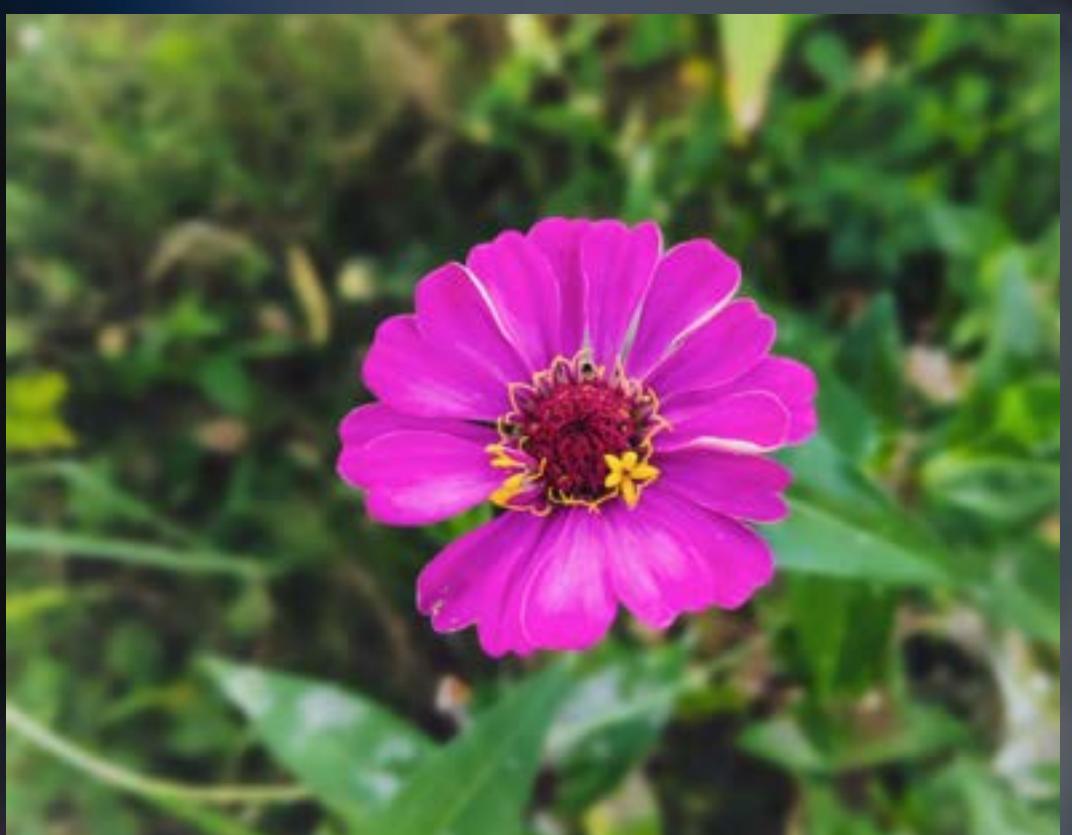
Karunya P
3rd Sem



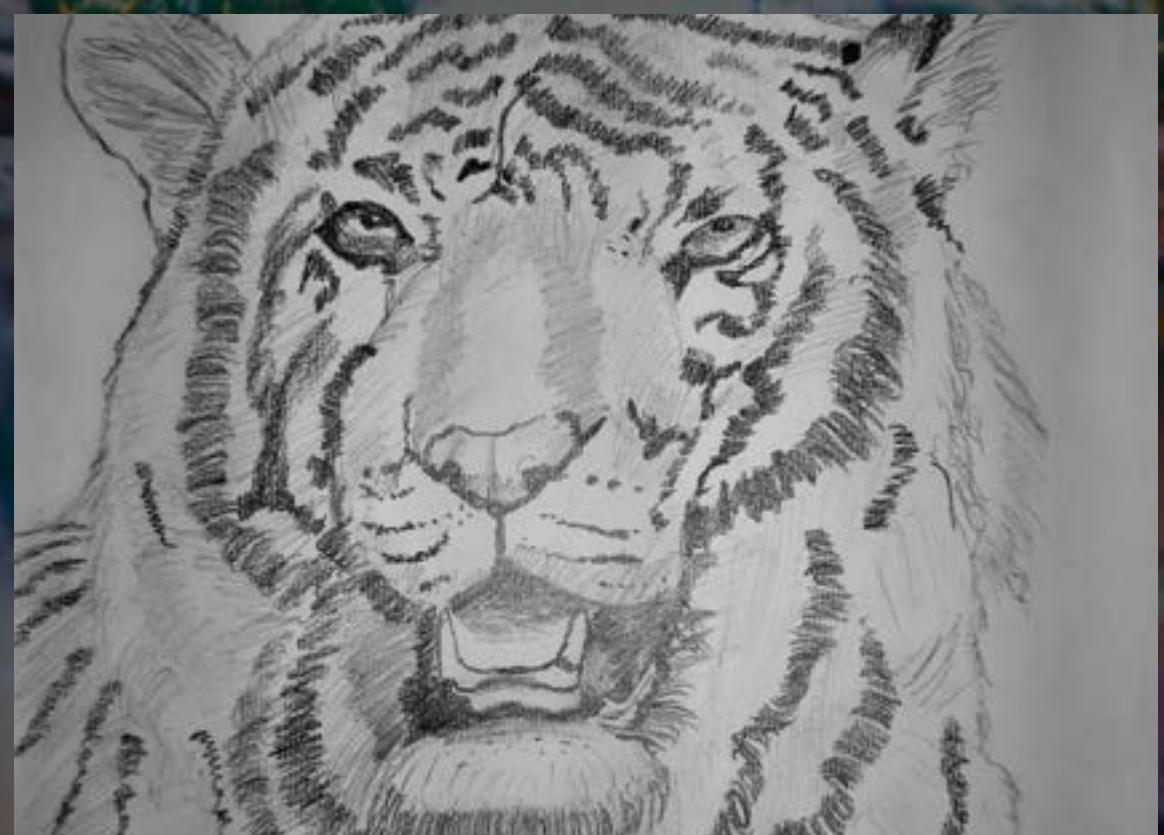
Aryan
1st Sem



Brunda Kotian
3rd sem



Pruthvik R
1St sem



Pranath S
1st sem

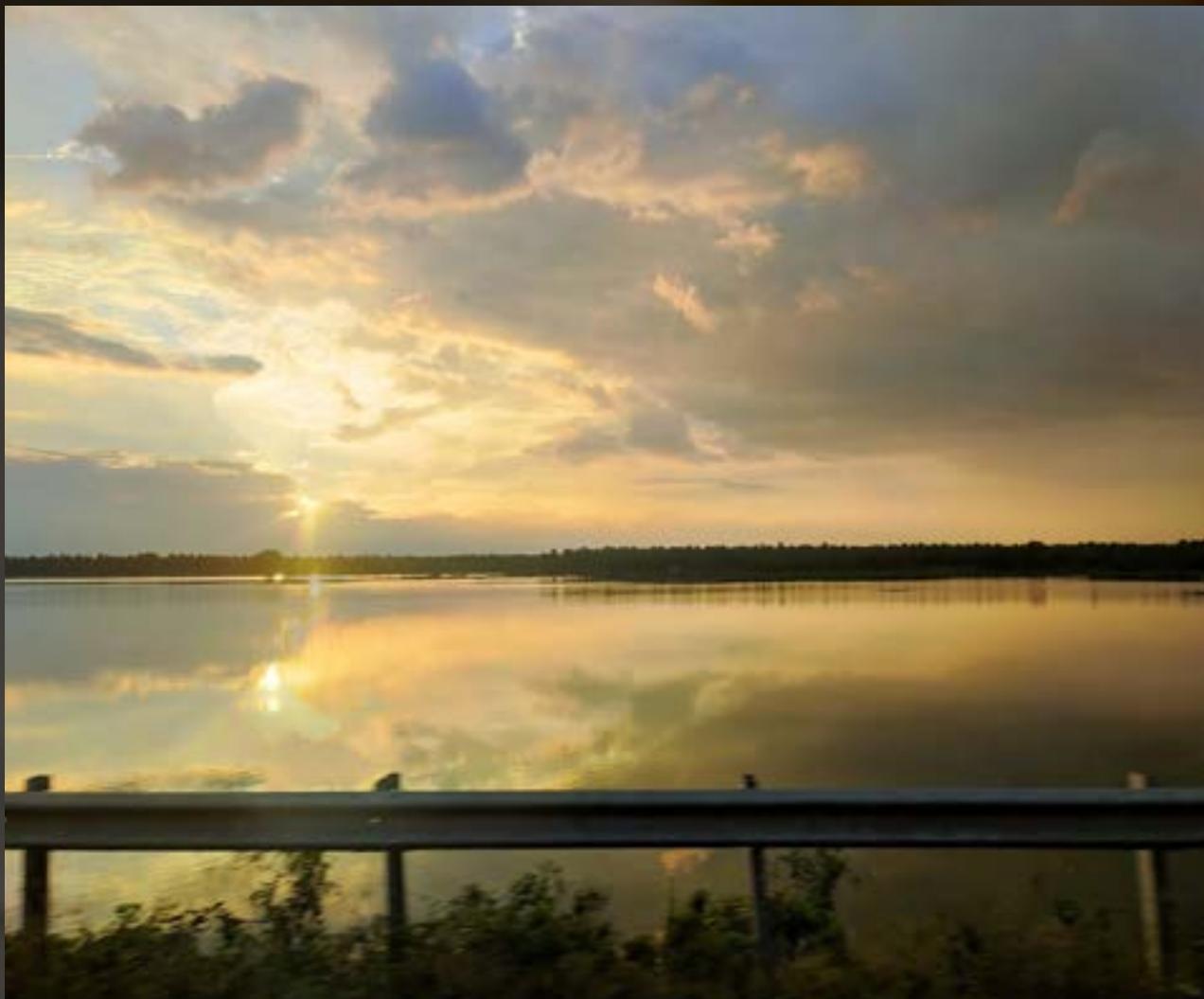
ILLUMINATION



Abhishek Chintalwar
5th sem



Ahishek Bishnoi
5th sem



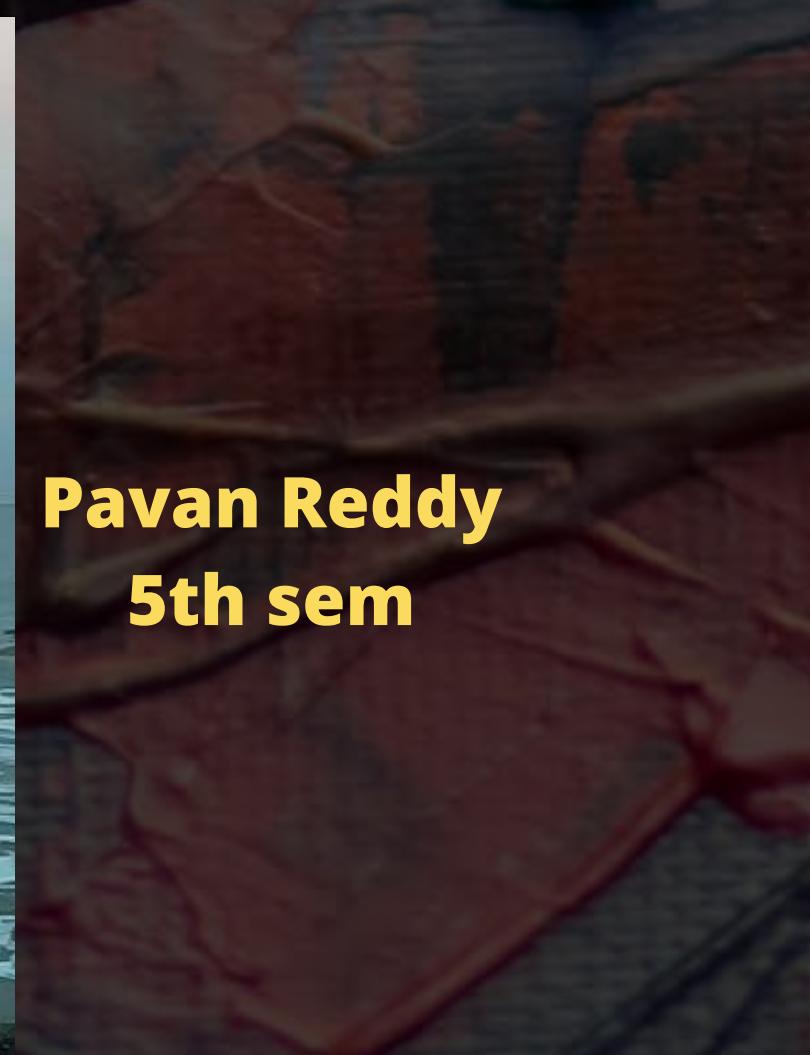
K A Amith
3rd sem



Abhishek
5th sem



Pavan Reddy
5th sem



Congratulations

We heartily Congratulate our students for bagging **400*** placement offers - 2021

and setting the record of highest placements across all the Dept. in the campus.

Editorial Team



Pranav S Raja

3rd SEM

Nandini Mallick

5th SEM

Karunya P

3rd SEM

RNS INSTITUTE OF TECHNOLOGY

(AICTE Approved, VTU Affiliated and NAAC 'A' Accredited)

(UG Programs - CSE, ECE, ISE, EIE, and EEE have been Accredited by NBA for the Academic years 2018-19, 2019-20, 2020-21, and 2021-2022)

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