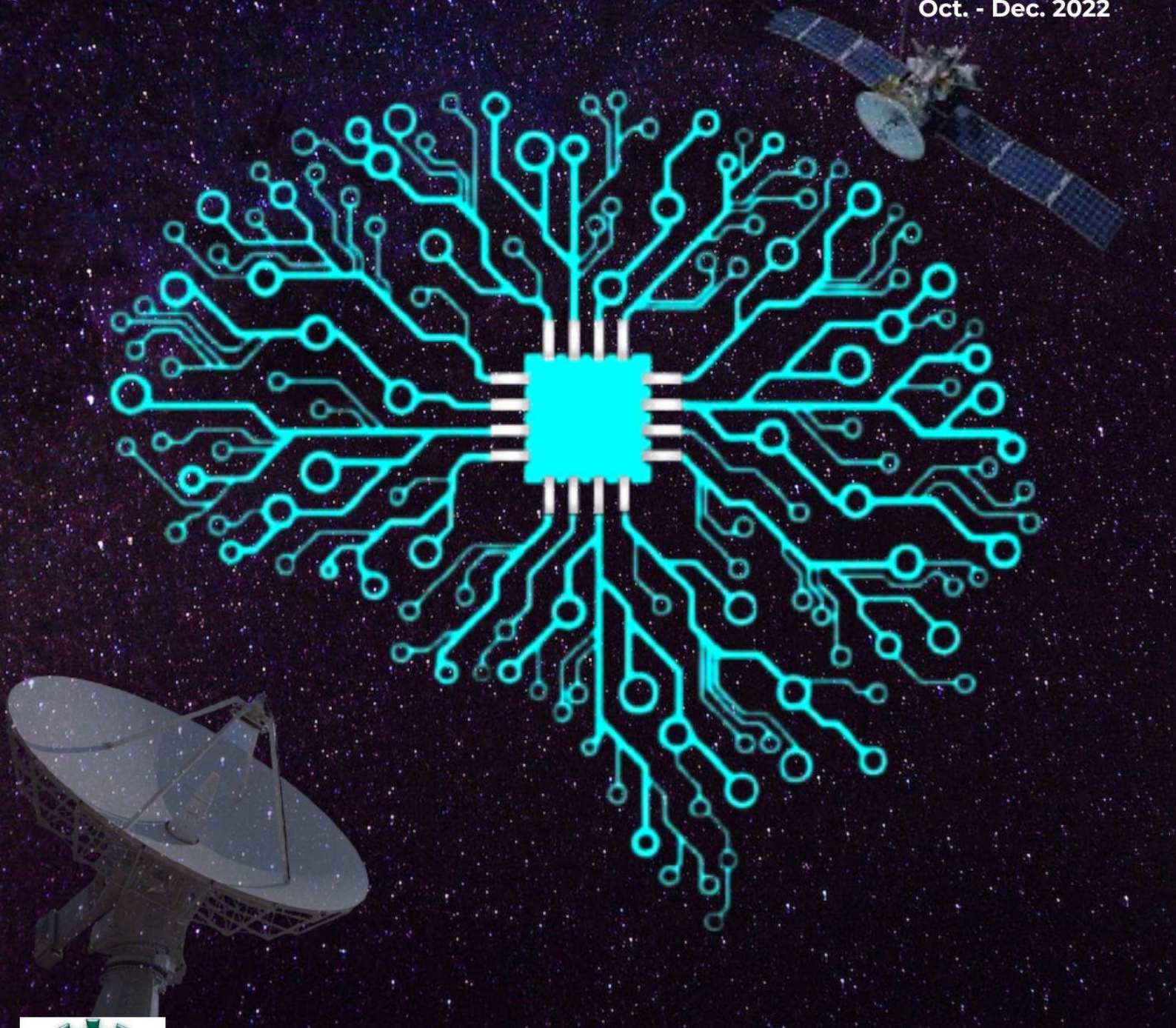
MINDRONICS

Dept. of ECE Magazine, Volume - 6, Issue 2

Oct. - Dec. 2022



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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MINDTRONICS

Dept. of ECE Magazine Oct. - Dec. 2022 Vol. 6, Issue 2

Focus & Scope:

A department magazine encourages the students to think, present and draft that help them in developing their talent, technical and writing skills. Also it helps them to improve their power of thinking and strengthen their imagination. Our department magazine MINDTRONICS consists of Articles on Emerging Developments in Electronics, Cartoons, Poetry, Drawings and Review Writings on Latest Happenings collected from department students.

Contact :
Dr. T. Satyanaryana - 9346429163
A. Kamal Phaneendra - 9030729999

Send your articles to mail ID
mindtronics.lbrce@gmail.com

Foreword

Electronics and Communication Engineering (ECE) involves researching, designing, developing, and testing electronic equipment used in several engineering systems. It gave me great satisfaction to know that the Department of Electronics and Communication Engineering has come up with its own magazine, "Mindtronics". The way they presented it was unique, very creative and hope it will serve as a motivational and technological source for the students to exhibit their inherent talents and improve their skills. I'd like to express my appreciation to the whole team members of Mindtronics including Faculty Coordinators who really made it possible.

Dr. K. Appa Rao,
Principal

Dr. Y. Amar Babu,
Proffesor & Head, ECE

The branch ELECTRONICS stands for "Ever Learning, Ever Creative Through Research Onsetting New Inventions Comforting Society". The Department of ECE's magazine, "TechConnect," recently revised as "Mindtronics," that has been a source where members of the department are invoked to share their ideas, talents which includes technical, general aspects, and I strongly believe it is a wonderful platform to showcase their creative skills. I appreciate the entire students' team of Mindtronics for their efforts and hard work that they put in to bring out this edition. I extend my sincere thanks to Faculty Coordinators for their fabulous guidance. I hope this magazine gets strengthened further in all aspects to improve the overall skillset of students.

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Category -I

EMERGING DEVELOPMENTS IN ELECTRONICS

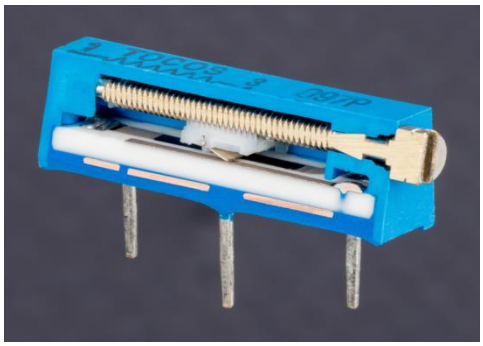
INNER BEAUTY OF ELECTRONICS

High-Stability Film Resistor:

This high-stability film resistor, about 4 millimeters in diameter, is made in much the same way as its inexpensive carbon-film cousin, but with exacting precision. A ceramic rod is coated with a fine layer of resistive film (thin metal, metal oxide, or carbon) and then a perfectly uniform helical groove is machined into the film.

Instead of coating the resistor with an epoxy, it's hermetically sealed in a lustrous little glass envelope. This makes the resistor more robust, ideal for specialized cases such as precision reference instrumentation, where long-term stability of the resistor is critical. The glass envelope provides better isolation against moisture and other environmental changes than standard coatings like epoxy.

15-Turn Trimmer Potentiometer:

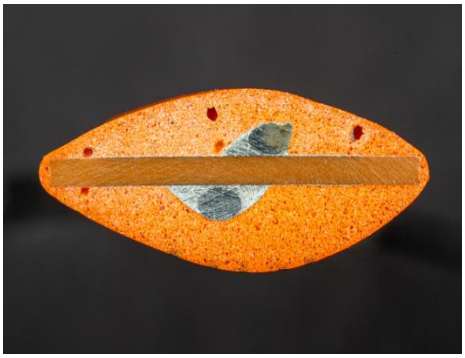


It takes 15 rotations of an adjustment screw to move a 15-turn trimmer potentiometer from one end of its resistive range to the other. Circuits that need to be adjusted with fine resolution control use this type of trimmer pot instead of the single-turn variety.

The resistive element in this trimmer is a strip of cermet—a composite of ceramic and metal—silk-screened on a white ceramic substrate. Screen-printed metal links each end of the strip to the connecting wires. It's a flattened, linear version of the horseshoe-shaped resistive element in single-turn trimmers.

Turning the adjustment screw moves a plastic slider along a track. The wiper is a spring finger, a spring-loaded metal contact, attached to the slider. It makes contact between a metal strip and the selected point on the strip of resistive film.

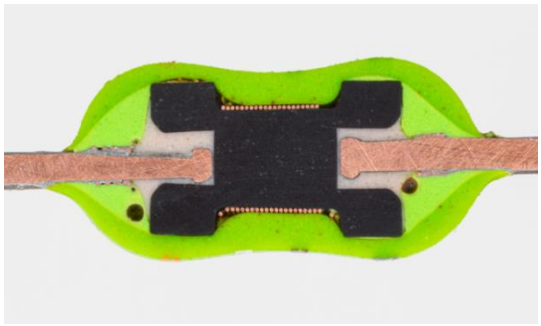
Ceramic Disc Capacitor:



Capacitors are fundamental electronic components that store energy in the form of static electricity. They're used in countless ways, including for bulk energy storage, to smooth out electronic signals, and as computer memory cells. The simplest capacitor consists of two parallel metal plates with a gap between them, but capacitors can take many forms so long as there are two conductive surfaces, called electrodes, separated by an insulator.

A ceramic disc capacitor is a low-cost capacitor that is frequently found in appliances and toys. Its insulator is a ceramic disc, and its two parallel plates are extremely thin metal coatings that are evaporated or sputtered onto the disc's outer surfaces. Connecting wires are attached using solder, and the whole assembly is dipped into a porous coating material that dries hard and protects the capacitor from damage.

Axial Inductor:



Inductors are fundamental electronic components that store energy in the form of a magnetic field. They're used, for example, in some types of power supplies to convert between voltages by alternately storing and releasing energy. This energy-efficient design helps maximize the battery life of cellphones and other portable electronics.

Inductors typically consist of a coil of insulated wire wrapped around a core of magnetic material like iron or ferrite, a ceramic filled with iron oxide. Current flowing around the core

produces a magnetic field that acts as a sort of flywheel for current, smoothing out changes in the current as it flows through the inductor.

This axial inductor has a number of turns of varnished copper wire wrapped around a ferrite form and soldered to copper leads on its two ends. It has several layers of protection: a clear varnish over the windings, a light-green coating around the solder joints, and a striking green outer coating to protect the whole component and provide a surface for the colorful stripes that indicate its inductance value.

By

Devi Sri Priya

21761A0472

CAN YOU TRY THESE….!?

- I thought a thought. But the thought I thought wasn't the thought I thought I thought. If the thought I thought I thought had been the thought I thought, I wouldn't have thought I thought
- Four furious friends fought for the phone

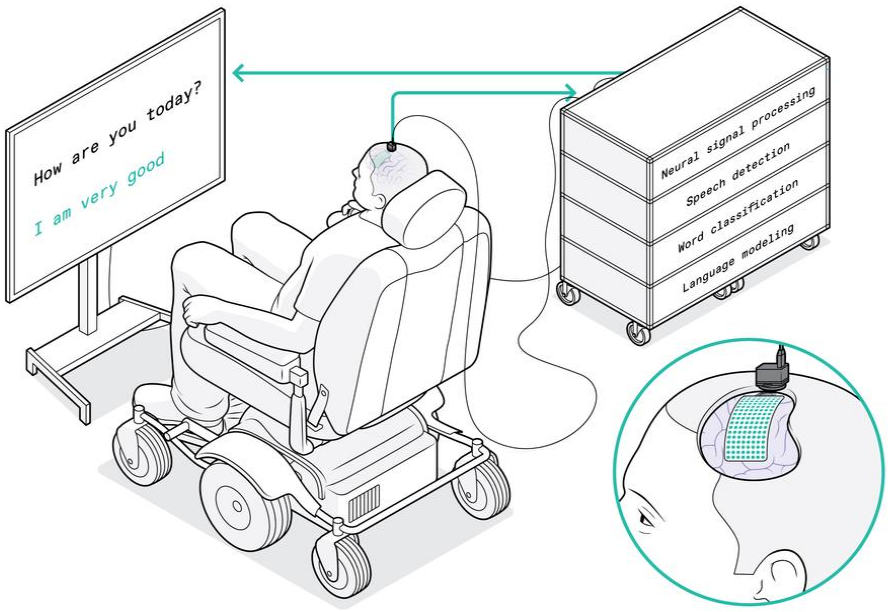
IMPLANT TURNS BRAIN WAVES INTO WORDS

A brain-computer interface deciphers commands intended for the vocal tract:

In our pilot study, we draped a thin, flexible electrode array over the surface of the volunteer's brain. The electrodes recorded neural signals and sent them to a speech decoder, which translated the signals into the words the man intended to say. It was the first time a paralyzed person who couldn't speak had used neuro technology to broadcast whole words—not just letters—from the brain.

How neuro prosthetics work?

Prosthetic implants for hearing have advanced the furthest, with designs that interface with the cochlear nerve of the inner ear or directly into the auditory brain stem. There's also considerable research on retinal and brain implants for vision, as well as efforts to give people with prosthetic hands a sense of touch. All of these sensory prosthetics take information from the outside world and convert it into electrical signals that feed into the brain's processing centers.



The opposite kind of neuro prosthetic records the electrical activity of the brain and converts it into signals that control something in the outside world, such as a robotic arm, a video-game controller, or a cursor on a computer screen. That last control modality has been used by groups such as the Brain-Gate consortium to enable paralyzed people to type words—sometimes one letter at a time, sometimes using an auto complete function to speed up the process.

The muscles involved in speech

Speaking is a product of modulated air flow through the vocal tract; with every utterance we shape the breath by creating audible vibrations in our laryngeal vocal folds and changing the shape of the lips, jaw, and tongue. the muscle that controls the lips is a sphincter, while the muscles that make up the tongue are governed more by hydraulics—the tongue is largely composed of a fixed volume of muscular tissue, so moving one part of the tongue changes its shape elsewhere. The physics governing the movements of such muscles is totally different from that of the biceps or hamstrings. The hardware involved is called **Electro corticography (ECoG).** The electrodes in an ECoG system don't penetrate the brain but lie on the surface of it. Our arrays can contain several hundred electrode sensors, each of which records from thousands of neurons.

By
B.Kejiya
20761A0407

DID YOU KNOW?

Category -II

REVIEW WRITINGS ON LATEST HAPPENINGS

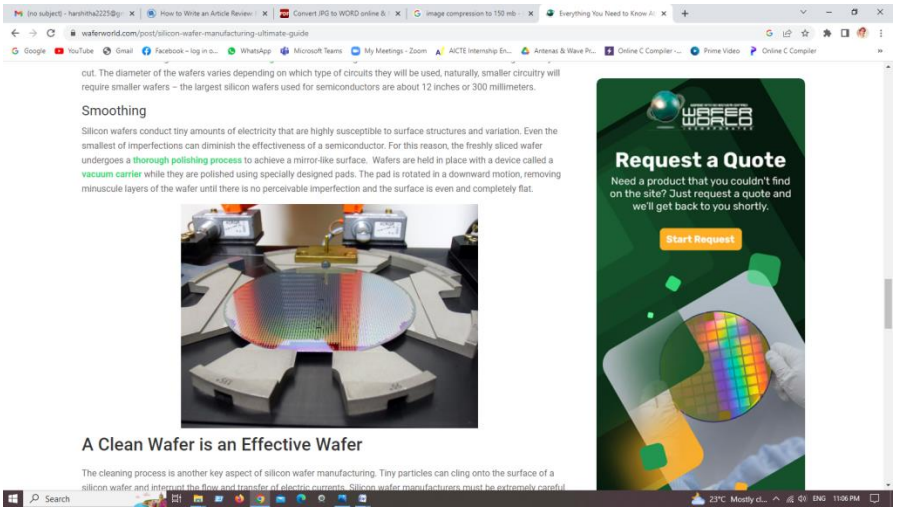
India can be a winner in semiconductors

This is a review on latest article representing the latest happening that is " establishment of semiconductor industry in India". Regarding this aspect Ajay srivastava published an article "India can be winner in the semiconductors". This review on that article tells about what actually India requires to establish semiconductor industry in our own mother country. The semiconductor chain has five broad segments like:1)chipdesign,2)Manufacturing of silicon wafers,3)chip fabrication tools,4) chip fabrication units,5)ATMP.

These are the main factors that India need to focus on. But the only ambiguity is "what are the five important aspects and how to implement them?". In order to understand this, elaborated explanation about the five aspects is as follows,

1. Chip design: before getting in to the chip design, designing of circuitry is important. The modern trends in chip design together with advance EDA tools have made the design of chips more scalable and more reliable than ever before.The physical size of transistors has decreased enormously over past decade. This led to both very large chip and also a low voltage chip design which means that chips consume very less power, even a few micro-watts of power. This allowed high scalability of chips in various markets and industries both in terms of chip size and market penetration.

2. Manufacturing of silicon wafers: the same semiconductor itself memorizes the element named silicon. Several components are integrated on the silicon chip, which requires a basic silicon wafer.As we mentioned, silicon wafers are used as semiconductors in electronics, specifically, in the manufacturing process of integrated circuits. Integrated circuits (ICs) are a combination of electronic components that work together to perform a specific function. ICs can hold hundreds or millions of transistors, resistors, and capacitors and are essential in the function of electronic equipment.



3. Chip fabrication tools: chip making requires specialized equipment, chemicals and gasses. Such tools convert the prototype designs into mass produce chips in the fabrication units.
4. Chip fabrication units: the chip fabrication units are also known as “fabs”. Fabs mass-produce chips from a prototype. Several machines are used for testing of the manufactured chip at fabrication unit. The will verify it under each and every conditions.

5. ATMP: ATMP-stands for “assembly, testing, marking and packing”. The fabricated chip need to perform the above ATMP to get rid of all defects.

This is all about what India need to focus on. The next big level of focus stays on the economy of establishing such a huge factory. With the announcement of 10 billion dollar production linked incentive (PLI) scheme for semiconductors, India has expressed its intent to be come a serious player in the annual 500 billion dollar high technology semiconductor business. Due to ongoing US-China trade and technology rivalry, many countries, led by the us are setting up an alternative semiconductor supply chains. India’s window of opportunity lies in this space.

By
Tunikipati Harshitha
20761A0458

AZADI QUEST

Mobile games based on freedom struggle

- To bring to the fore the story of the heroes of the Indian freedom struggle, the Union Minister for Information and Broadcasting, Shri Anurag Singh Thakur recently launched 'Azadi Quest', a series of online educational mobile games developed in association with Zynga India. This initiative is designed to engage players of all ages and harness the power of interactive entertainment as an educational experience about this important era.
- The first game in this series azadi Quest: Match 3 Puzzle' is a very simple and easy to play casual game, which presents the players the glorious journey of India's independence from 1857 to 1947.

Why has the government launched this game?

These games are an effort towards tapping the huge market of online gamers and educating them through games. So that children can learn from their stories. Because the number of people playing online games in India has increased by eight percent from 2020 to 2021, after which India has joined the top five countries in the field of gaming. The same, by 2023, the number of people playing such games is expected to reach 450 million.

Azadi Quest is a very useful resource not only for students but also for illiterate people also it conveys information so that it keeps impoverishing patriotism in every citizen of India. The above mobile game should not only be in English and Hindi which are international and national languages as it fulfills patriotism in people in every corner of the country.

This app should not consume children's study time and personal ethics and connections at home and relations. Children should inculcate enthusiasm in themselves, and must develop respect on our nation. The mobile game not only depicts patriotism but also struggles faced by our ancestors and freedom fighters, and nurture our future through good activities another thing was they also get the thought that if the idea was going wrong we should stop it and make proud our parents, teachers and nation.

By
N.Tejasri
21761A0436

Category -III

STORY WRITINGS

A FATHER AND HIS ANGRY SON

Once upon a time there lived a Young boy who had a bad temper. He would get angry on small things and lash out at others. His father knew this and was getting concerned with this behaviour. One day the father decided to teach his young son a lesson. He called his son and told him that from now on every time you lose. Your temper you must take a nail and Hammer it in the wooden fence of their house. The father handed the son with a Hammer & a bag full of nails. At the end of the first day, the son happened to have a really bad day and had to hammer 12 nails in the Fence. The son also realized that it was a big number in one single day.

Over the course of few weeks the son started to control his temper and is hammering of nails also reduced on daily basis. The son realized that it was easier to control his temper than hammer nails in the fence. And after a month or so the son had achieved the unthinkable. He had reached the level where he wouldn't get angry at all and he didn't have to hammer the nails again. The son was proud of this and came running to his father. He shared the news with his father. The father smiled and told him to do one final task. "Now go and remove all the nails you have hammered in the fence", the father asked. The son agreed and did it.

As the son was standing at the fence, his father came out, stood next to his son and said, "Son do you see all those brutal marks on the fence now? Even though you gently took all the nails out these bruises will remain forever". The father continued, "same thing happens when you get angry and start lashing however frustration through our words or actions on others. people get hurt. that heart causes pain and Breweries their feelings for life. Even though you might go back and say sorry for things you said or did".

Moral of the story :

Anger destroys relationships. That's why practicing the "Art of pause "before you say anything damaging is a relationship saver. As they say -Think before you speak!

By
Narasapurapu Harshitha
20761A04G8

A STORY ON CHANGING OUR VISION

A wealthy man was bothered by a severe eye pain. He consulted a Galaxy of medical experts, consumed heavy loads of drugs and underwent hundreds of injections. But there was no effect on him even after so much medication. At last, he called monk who was an expert in treating such patients. Understanding the problem, the monk said that for sometime the man should concentrate only on green color and not to left his eyes fall on any other colors. It was strange prescription for the wealthy man but he was desperate and decide to try it.

Following the monk's advice, the wealthy man appointed a group of painters and purchased barrels of green paint and directed the painters to paint every object green wherever his eye was likely to fall.

After a few days, when the monk came to visit the wealthy man his servants ran with buckets of green paint and poured it on the monk since he was in a red dress. Looking at the situation, the monk laughed and said to the man, "If all new had purchased a pair of green spectacles, you would have saved these walls and all other articles and also would have saved a large share of fortune.

MORAL:

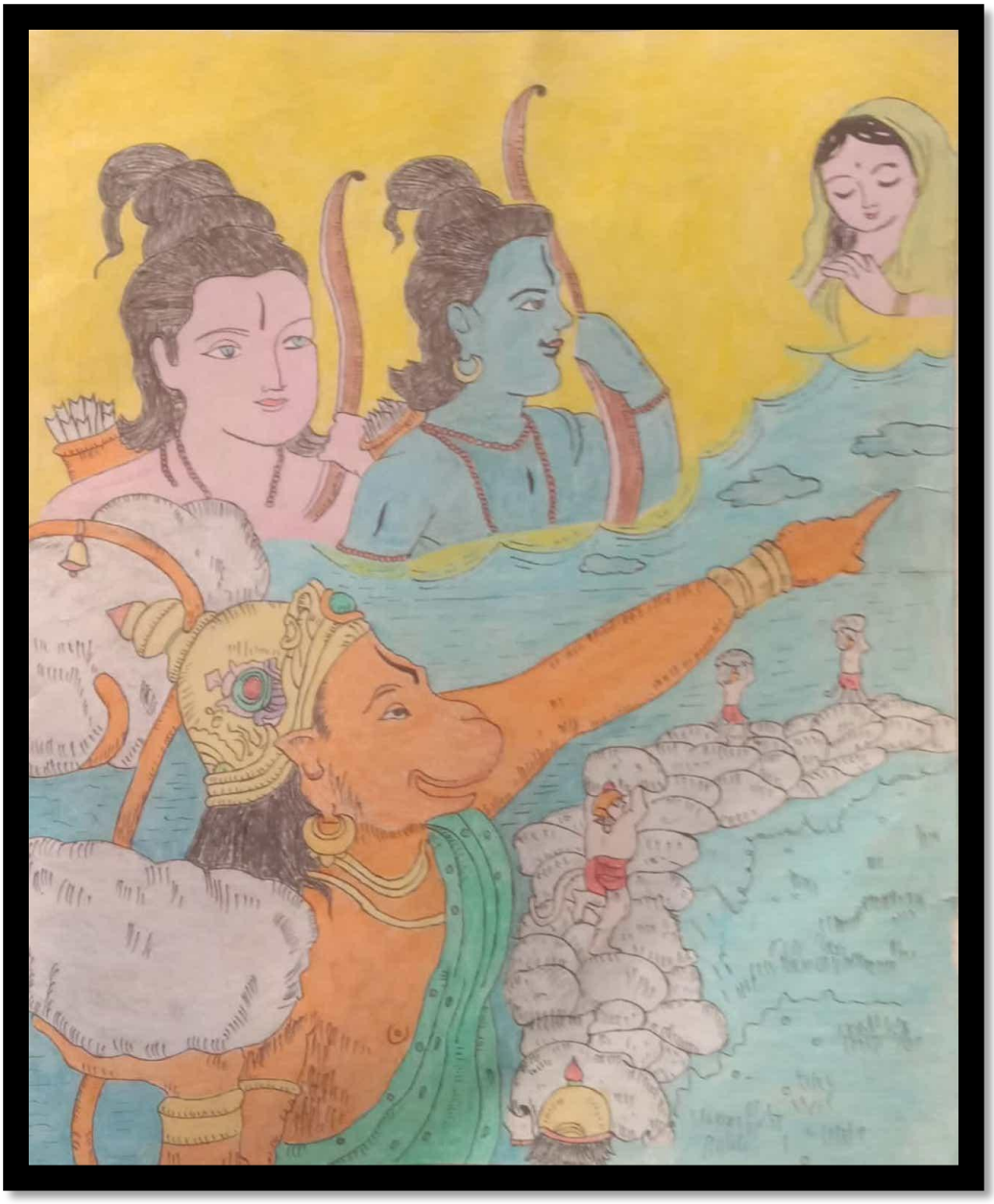
Let us change our vision and shape ourselves first and the world will appear itself accordingly.

By
Narasapurapu Harshitha
20761A04G8

Category -IV

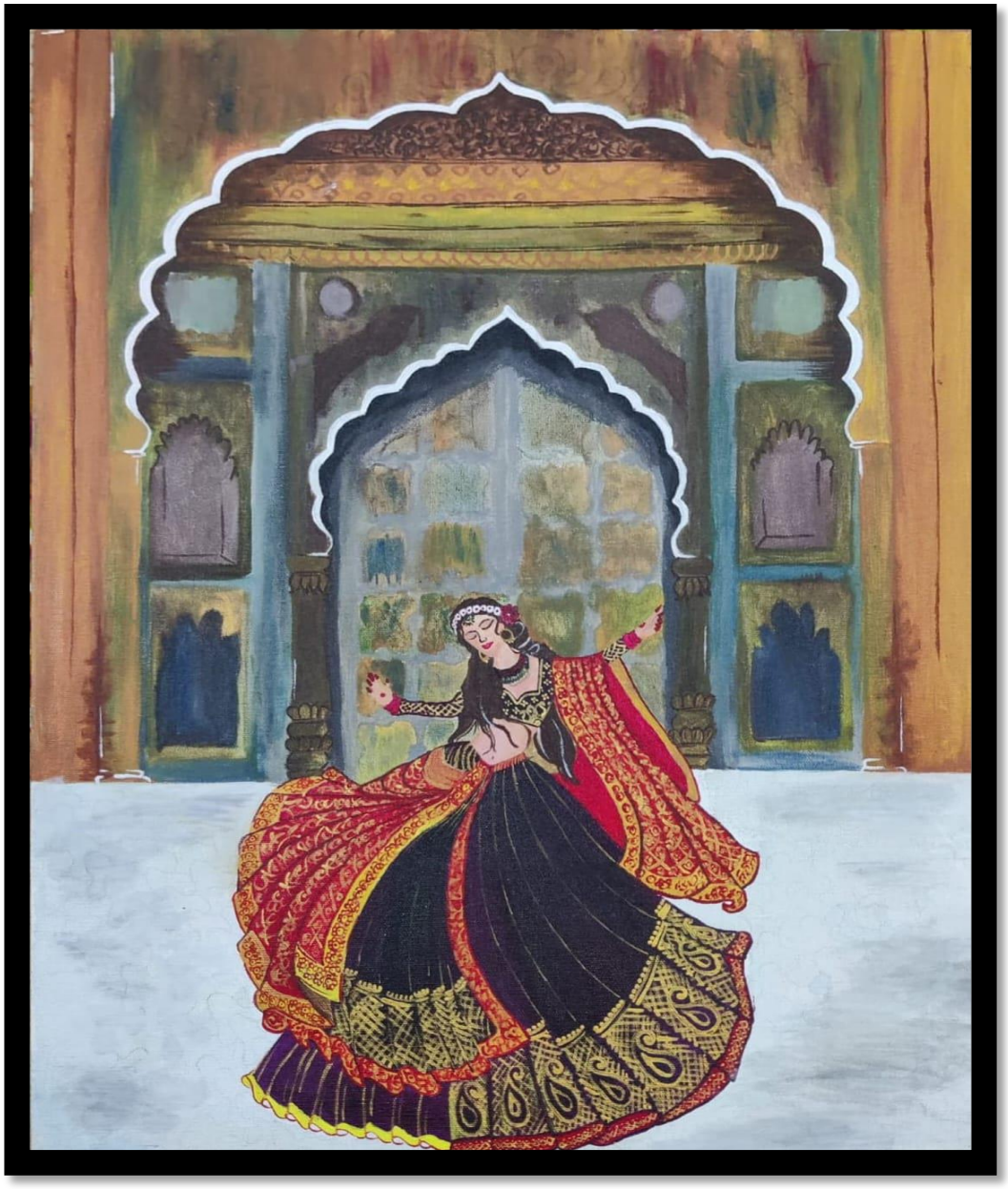
DRAWINGS

RAM SETHU



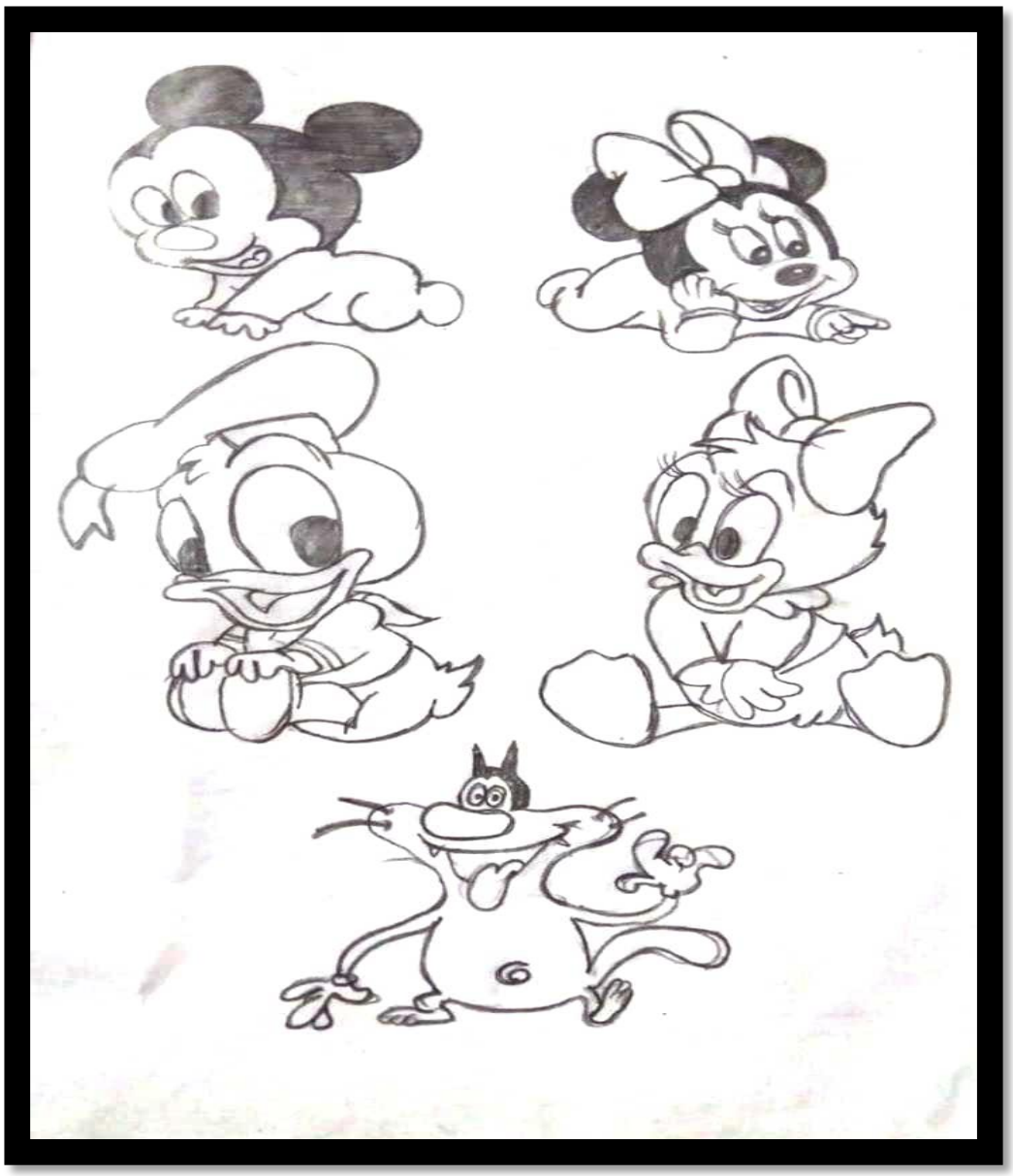
By
B.Purna Chandra Rao
20761A04D1

ADORN YOUR HOBBY WITH DANCE



By
Snigdha Battula
20761A04D2

MICKEY MOUSE



By
Shaik Taufeeq Ahmad
20761A04I2

LIBERATING THE STEREOTYPES OF BLACK

By
Avula Kamal Phaneendra
20761A0468

Category -V

PUZZLES

Word game

There are 10 words hidden in the word search below, the words may be found across, down, diagonally and backwards and can overlap with each other. The hidden words are listed beneath the word search; circle the words in the word search as you find them and cross them out from the list.

D	D	N	E	I	L	N	S	A	W	H	P	I	I
E	I	N	R	A	O	I	A	E	I	W	S	O	E
I	R	O	T	C	U	D	N	I	T	E	C	E	N
J	T	O	O	S	T	O	F	E	N	J	U	C	C
M	A	S	Y	J	S	T	E	T	T	N	R	N	T
Z	E	N	N	E	R	D	I	O	D	E	R	A	M
H	S	R	E	I	F	I	L	P	M	A	E	T	C
X	I	I	Q	E	P	M	M	N	Z	N	N	C	C
E	I	R	C	A	P	C	I	T	O	R	T	A	R
R	E	S	C	E	S	N	O	P	S	E	R	E	I
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R	E	A	A	R	O	T	A	L	L	I	C	S	O
C	F	H	T	R	A	N	S	I	S	T	O	R	O

AMPLIFIER
CAPCITOR
CURRENT
INDUCTOR
OSCILLATOR
REACTANCE
RESISTOR
RESPONSE
TRANSISTOR
ZENNERDIODE

SUDOKO

			9	3	5			
5				7	8	2	1	3
7	3	8				6		5
	7	4	2	1		5		
2					3			
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9	1					4		8
8	5						2	6
	6	2	5	8	1	9	3	7

Kyanam Sai Venakata Supraja studying in 3rd year from the department of ECE attended Pravasi Bharatiya Divas 2023(PBD) convention as the youth delegate of Andhra Pradesh.The convention was held at Indore,Madhya Pradesh from January 8 to January 10.Pravasi Bharatiya Divas is a celebratory day observed on 9 January by the Republic of India to mark the contribution of the overseas Indian community towards the development of India. The day commemorates the return of Mahatma Gandhi from South Africa to Mumbai on 9 January 1915.

Hon'ble Rashtrapati ji, Smt. Droupadi Murmu ji, Hon'ble Prime Minister Shri.Narendra Modi ji and Hon'ble Chief Minister of MP Shri.Shivraj Singh Chouhan ji addressed the event , Convention was hosted by Ministry of External Affairs, Republic of India.

Sivaraju Uha Jahnavi Sharma

19761A04I3

Participated in national youth festival organised by ministry of sports, government of India and government of Karnataka in the twin cities hubbali-Dharwad Karnataka

E – Resources

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TEAM MINDTRONICS

Dr. T. Satyanarayana,
Professor, ECE

Mr.P.James Vijay,
Asst. Professor,ECE

A. Kamal Phaneendra,
20761A0468

B. Snigdha,
20761A04D2.

Sk. Taufeeq Ahmad,
20761A04I2

A. Jaswanth,
21761A0466

Y.V. Shashi Rekha,
20761A04C8

Ch. Anand,
20761A0408

B. Devi Sri Priya,
21761A0472

B. Radhika,
20761A0406

A. Rahamtunnisa,
20761A0401

Y. Harshitha.
21761A04J3

Department of Electronics & Communication Engineering

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