

The annual techno-cultural magazine

iArtefacts

The Department of Electronics and Communication Engineering

4th
edition
2019





**PROF. (DR) M.N.
BANDYOPADHYAY**

**DIRECTOR, HALDIA INSTITUTE OF
TECHNOLOGY, HALDIA, PURBA
MEDINIPUR**

**"ECE ENGINEERS
SHOULD BE
JACK OF ALL
TRADES."**

FROM THE DIRECTOR

I am extremely glad to note that Department of Electronics and Communication Engineering, Haldia Institute of Technology is going to publish the fifth edition of the techno-cultural magazine 'i-Artefacts'. It is an immense pleasure to know that this magazine covers four sections including Tech Trends, Picture Perfect, Youth Central & Campus Insider with Technical and Non-technical Articles, Drawings and Photographs, Inspirational Stories from Alumnus, Latest Happenings in the Department as well as Institute and Tech-updates. Today, the Society seeks a generation of young people who are not only enlightened but also trained to think innovatively. They are expected to meet tough challenges and create opportunities in unconventional areas in a very short span with unprecedented success. It is my firm belief that obstacles do not deter success, rather they enhance one's possibilities to succeed. This type of magazine with vast diversification in both technical and non-technical fields will give the students a better understanding of all the trades. It is my strong belief that obstacles do not deter success, rather, they enhance one's possibilities to succeed. So, I am providential enough to express my heartfelt contentment over the publication 'i-Artefacts'. I take this opportunity to convey my best wishes and congratulate all the committee members for their sincere hard work. I hope this magazine comes as a breeze of fresh air and encourages the youth to do constructive work and take the nation forward.



DR. ANJAN MISHRA

**REGISTRAR, HALDIA INSTITUTE OF
TECHNOLOGY, HALDIA, PURBA
MEDINIPUR**

**"THIS INSTITUTE IS
EMERGING AS A
TREND-SETTER IN
THE HEART OF
WEST BENGAL"**

FROM THE REGISTRAR

In the era of rapid technological advancement and information revolution, we aspired and served two decades to build our youth for the development of the country. During the journey we always encouraged the growth of the students by our patronage, criticism, sympathy and guidance. Haldia Institute of Technology with these initiatives has now become a Centre for meaningful learning. It is my privilege to express my sincere satisfaction over the publication of the techno-cultural print magazine "i-Artefacts" initiated by the Department of Electronics and Communication Engineering. This institute is emerging as a trend-setter in the heart of West Bengal, offering a good mix of academic and co-curricular activities. I urge all the stake holders to make the most of the multiple opportunities, for self-development as well as the development of the Institute and the society as a whole. Please make the best use of all the facilities that are available. Please try to maintain a balance between academic and co-curricular activities. Enjoy yourselves by all means, but always re- member the need for self-discipline, moral values and a sense of responsibility. I am sure that the initiative taken by the Department of Electronics and Communication Engineering, will definitely make our effort towards the achievement of the vision of our Institute stronger. I extend my best wishes to the faculty members and students involved of the magazine "i-Artefacts".



PROF. (DR) ASIT KUMAR SAHA

PRINCIPAL, HALDIA INSTITUTE OF
TECHNOLOGY, HALDIA, PURBA
MEDINIPUR

“THIS MAGAZINE IS A MILESTONE THAT MARKS OUR GROWTH, UNFOLDS OUR IMAGINATIONS, AND GIVES LIFE TO OUR THOUGHTS AND ASPIRATIONS.”

FROM THE PRINCIPAL

I am glad to know that Department of Electronics and Communication Engineering is going to publish the fifth edition of its annual techno-cultural magazine “i-Artefacts” in April, 2020. Innovation in Science and Technology is a highly philosophical subject. Congested mind cannot think freely unless it is relaxed with cultural taste. Swami Vivekananda believed “Education is the manifestation of perfection already in man”. So, even if we put efforts to impart education to match the advancement of technology; it would not be effective if it is not complimented with something where the thoughts of our young generation are reflected. Here, techno-cultural magazine can play a major role to manifest their thoughts and views towards its perfection. “i-Artefacts” has many features which will install many good qualities not only in our young generation but also in all the people involved in this activity. Also, it will try to inculcate creativity, innovation and confidence in all of them. This magazine is a milestone that marks our growth, unfolds our imaginations, and gives life to our thoughts and aspirations. It unleashes a wide spectrum of creative skills ranging from writing to editing and even in designing the magazine. So, it is almost like a dream to get the magazine publish. I congratulate the entire team of “i-Artefacts” and the contributing authors for their hard work and dedication in making this dream into reality.



PROF. (DR) CHANCHAL KUMAR DE

HEAD OF THE DEPARTMENT OF
ELECTRONICS AND COMMUNICATION
ENGINEERING, HALDIA INSTITUTE OF
TECHNOLOGY, HALDIA, PURBA
MEDINIPUR

“I SOLEMNLY BELIEVE THAT THE ELECTRONICS AND COMMUNICATION ENGINEERING FRATERNITY WILL CERTAINLY IMPART A SHAPE TO THIS TINY MAGAZINE TO EMBARK THE MEANING OF THE SAME IN THE DAYS TO COME.”

FROM THE HEAD OF DEPARTMENT

I am happy to learn that our department, Department of Electronics and Communication Engineering, Haldia Institute of Technology is coming out with the fifth edition of the departmental magazine “i-Artefacts”. In fact, the name and fame of a department depends on the calibre and achievements of the students, teachers and staffs. A magazine carries the contributions reflecting ethos and aspirations of the students, faculty and staff members of a department. “i-Artefacts”, the magazine provides a platform for students, teachers and staffs to share information and innovative ideas, spread the latest technical knowledge, exhibit the varied creativities and cultivate right ways that will equip all of us to stay competent in our respective fields of study and research. Moreover, ‘i-Artefacts’ means something observed in a scientific investigation or experiment that is not naturally present but occurs as a result of the preparative or investigative procedure and in connection to the name of the magazine; I solemnly believe that the Electronics and Communication Engineering fraternity will certainly impart a shape to this tiny magazine to embark the meaning of the same in the days to come. It is my pleasure to congratulate all the students, teachers and staffs who have made untiring efforts to make this magazine possible. I extend my warm wishes towards the success of this edition of the magazine.



DIBYENDU CHOWDHURY

ASSISTANT PROFESSOR (ECE) , HALDIA
INSTITUTE OF TECHNOLOGY, HALDIA,
PURBA MEDINIPUR

“THIS MAGAZINE IS A MILESTONE THAT MARKS OUR GROWTH, UNFOLDS OUR IMAGINATIONS, AND GIVES LIFE TO OUR THOUGHTS AND ASPIRATIONS.”

FROM THE EDITOR

Mid-way through editing and designing a pile of articles which I was nose deep in and with the thoughts of the zillion things that ‘JUST HAD TO BE DONE’. I pulled at my hair for the very first time. This was the first of many such moments (hours)! Putting a magazine together was no cake walk. I along with my editorial team members have spent sleepless nights to make this magazine stand out. So here you have “i - ARTEFACTS”, the long awaited magazine of the ECE department for the year 2020. The name of the magazine, “i - ARTEFACTS” may seem difficult, but it just means “AN OBJECT MADE BY HUMAN HAND”. This magazine gives an insight into the different hobbies of students, their creativity and activities. This magazine is a platform that exhibits the literary skills and innovative ideas of teachers and students. “i - ARTEFACTS” presents the hard work and dedication of students and contributions of teachers. I would like to thank all my editorial team members for helping me to this through. I express my considerable appreciation to all the authors of the articles in this magazine. These contributions have required a generous amount of time and effort. It is this willingness to share knowledge, concerns and special insights with fellow beings that has made this magazine possible.

Thank you all!!

**ANKIT ANAND,
SUSHANT MISHRA**

STUDENT EDITORS, IARTEFACTS

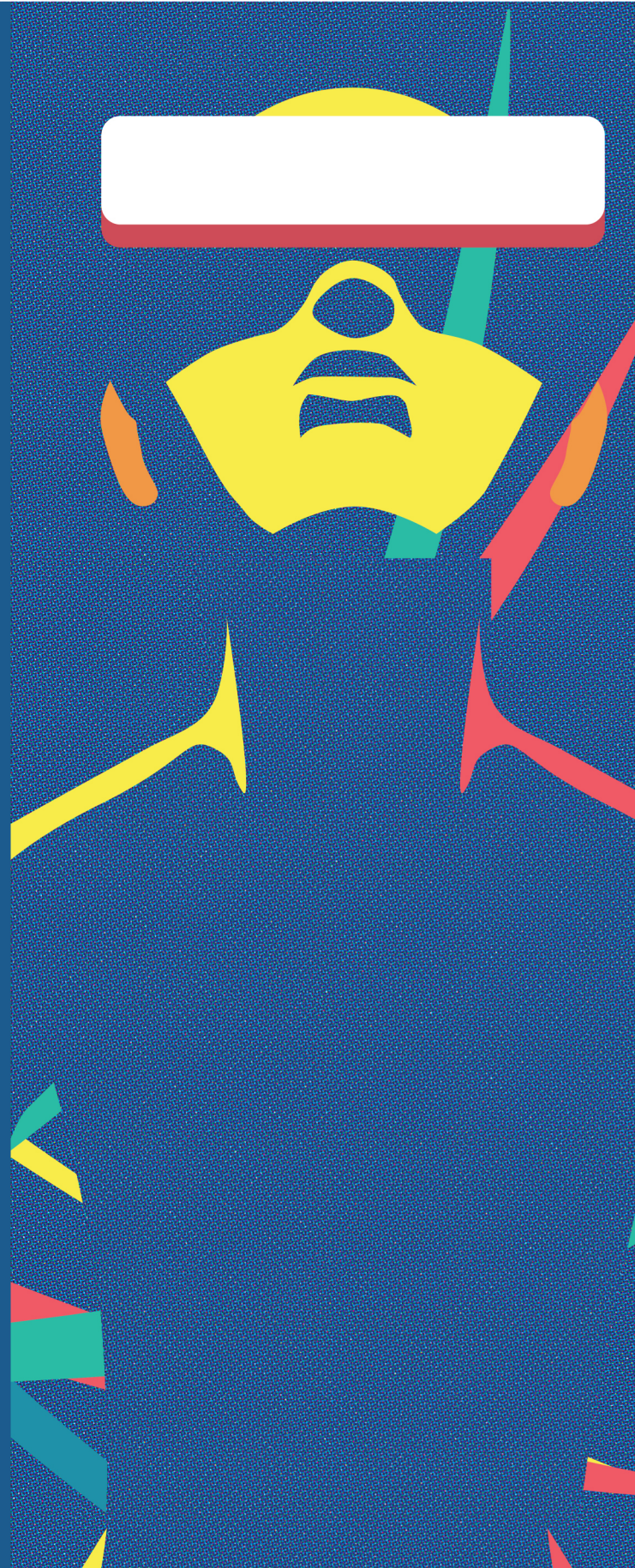
“THE ENTIRE PROCESS OF PUBLICATION HAS BEEN A GREAT LEARNING EXPERIENCE FOR US.”

FROM THE STUDENT EDITORS

I-artefacts, a students' magazine is a journey of sharing ideas in the field of technology, art and creativity. The pages reflect upon the innovative ideas of our students as well as our teachers. As a reader you will feel a dopamine rush while going through the recent advances in communications, electronics, automation, robotics and future end technologies. And while diving into the literature section you will embrace the remarkable efforts of our peers at HIT expressing their heart through beautiful words and pictures. We have thoroughly put visual illustrations and the emotions we share with our readers. And this endeavour would not have been complete without a rewind through the achievements of ECE department and the glimpses of some memorable moments we have lived together. Put in a nutshell, the entire process of publication has been a great learning experience for us. This amalgamation of ideas is a contribution of our team whose common goal was to build something great. We invite our readers to share their views and remarks on our social media instances and make this journey an ongoing process. Our heartfelt gratitude to our HOD sir and all faculty members of the department of Electronics and Communication Engineering for constantly mentoring us through this publication journey. We also thank the readers and contributors of this magazine who helped us deliver this best content. The magazine to read, I-artefacts coming through.

The People that Brought You **iArtefacts**

Sushant Mishra
Shreya Tiwary
Ankit Anand
Aditi Sengupta
Mithilesh Kumar
Tanusi Lahiri
Pabitra Malick
Prakash Kumar
Souvike Saha
Jai Kumar
Lija Saha
Ankit Pairwar
Rishika Roy
Aman Srivastava
Nilanjan Dua
Mashhood Ahmad Danish
Sudhanshu Ranjan
Ritaban Biswas
Abhineet Saurabh
Abhishek Kumar



TECHNICAL ARTICLES (ENGLISH)

CAPACITORS, BUT THE SUPER ONES

All of us are familiar with what capacitors are, something cylindrical or flat shaped, used in electronic circuits, store charges in an electric field, right. But what if they go super? Yes, you read it right. Supercapacitors are also known as ultracapacitors as the name suggests are high-capacity capacitors. The first supercapacitors were made around 1950, made of activated charcoal as electrodes. They store much more charges than normal capacitors do i.e. having a capacitance 10 to 100 times and store much more energy per unit volume than the normal electrolytic ones, also can deliver charges much faster and can tolerate much more recharge cycles than rechargeable batteries. Amazing right?

Made up of electrostatic double-layer capacitors and electrochemical pseudocapacitance, both of which contribute to the total capacitance of the capacitor.

Electrostatic double-layer capacitors use carbon electrodes that have much higher capacitance, achieving a charge separation between the surface of the conductive electrode and an electrolyte. This separation is of much smaller order than a normal capacitor.

Electrochemical pseudocapacitors are made up of metal oxides electrodes to achieve a high electrochemical pseudocapacitance

Like an ordinary capacitor, a supercapacitor has two plates that are separated. The plates are made from metal coated with a porous substance such as powdery, activated charcoal, which effectively gives them a bigger area for storing much more charge. Instead of dielectric, both plates are soaked in an electrolyte and separated by a very thin insulator (made of carbon, paper, or



plastic). When the plates are charged up, an opposite charge forms on either side of the separator, creating what's called an electric double-layer, maybe just one molecule thick (compared to a dielectric that might range in thickness from a few microns to a millimeter or more in a conventional capacitor). This is why supercapacitors are often referred to as electric double-layer capacitors or EDLCs. In the above diagram, you can see how a supercapacitor resembles two ordinary capacitors side by side. The capacitance of a capacitor increases as the area of the plates increases and as the distance between the plates decreases. In a nutshell, supercapacitors get their much bigger capacitance from a combination of plates with a bigger, effective surface area (because of their activated charcoal construction) and less distance between them (because of the very effective double layer).

That's all it is the property and construction of supercapacitors, but where do we actually use them. Depending on how it works, they are mostly used where it requires faster charge delivery and quick charge cycles. In electronic devices like computers and laptops they are used as voltage stabilizing devices, to reduce the fluctuation of voltage, also as a power source in low power devices like RAM and SRAM, in case of emergency shutdown. In the camera, it is used for the burst current required to get a bright flash.

One of the most important applications of it

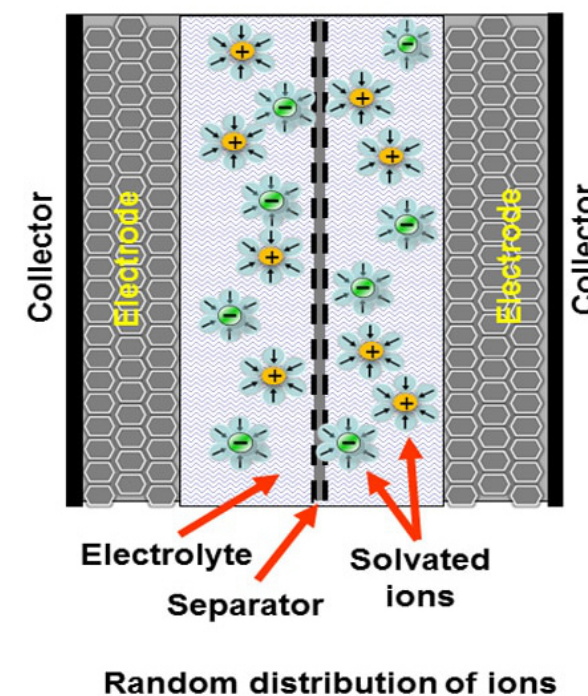


is in the field of transport. Life-saving airbags require a quick and high amount of current supply, and supercapacitors provide them with that. Also in electric buses, they are used for quick acceleration. Normal batteries can't do such things.

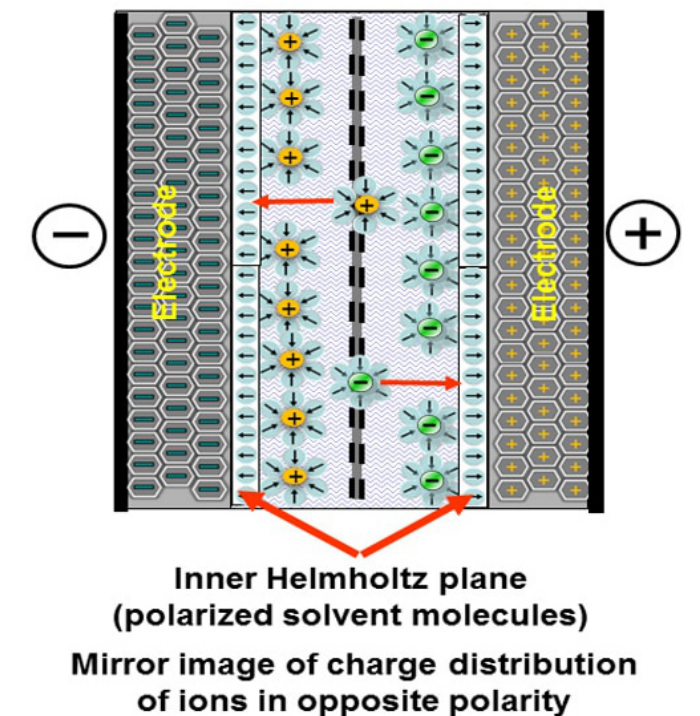
The only few disadvantages they come with are high self-discharging, supercapacitors that aren't well-suited for long-term energy storage. The discharge rate of supercapacitors is significantly higher than lithium-ion batteries. And the other one is gradual voltage drop, supercapacitors aren't well-suited for long-term energy storage. The discharge rate of supercapacitors is significantly higher than lithium-ion batteries. Supercapacitors are somewhat like a bridge between conventional capacitors and batteries because they are fast, they are tolerant, and also because they are super!

Jai Kumar, 17/ECE/82

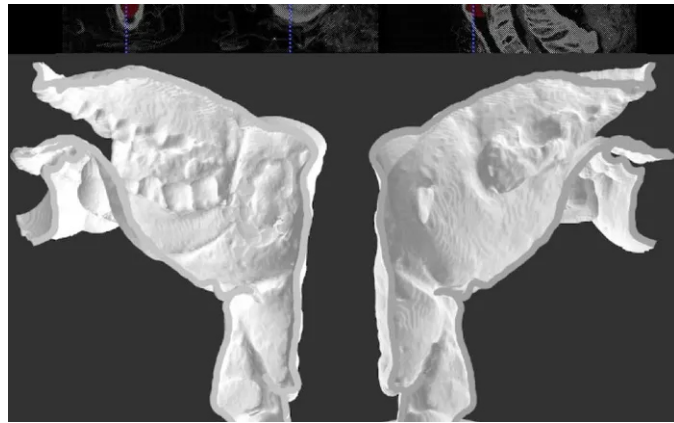
Capacitor discharged



Capacitor charged



TALK LIKE AN EGYPTIAN GOD



The “voice” of an ancient Egyptian mummy has been heard for the first time in 3,000 years. Using Computed Tomography (CT) scans of the mummy Nesyamun's Larynx & throat, the team of British researchers was able to 3D-print replica of his vocal tract and use it to hear what should have sounded like when he was alive.

Their research was published on 23 January 2020 in the scientific journal reports, researchers transported the mummy from Leeds City Museum to Leeds General Infirmary which was subject of much scrutiny: it was unwrapped in 1824; with subsequent work revealing that he was in his 50s when he died.

The team then paired their 3D-printed recreation of Nesyamun's vocal tract with an artificial larynx regularly used for speech synthesis.

The sound produced by the replicated vocal Tract more closely resembled a goat than a human. But the researchers believe it's just the first step, with time using new technology they can replicate the real voice of the mummy.

Rishika Roy, 17/ECE/42

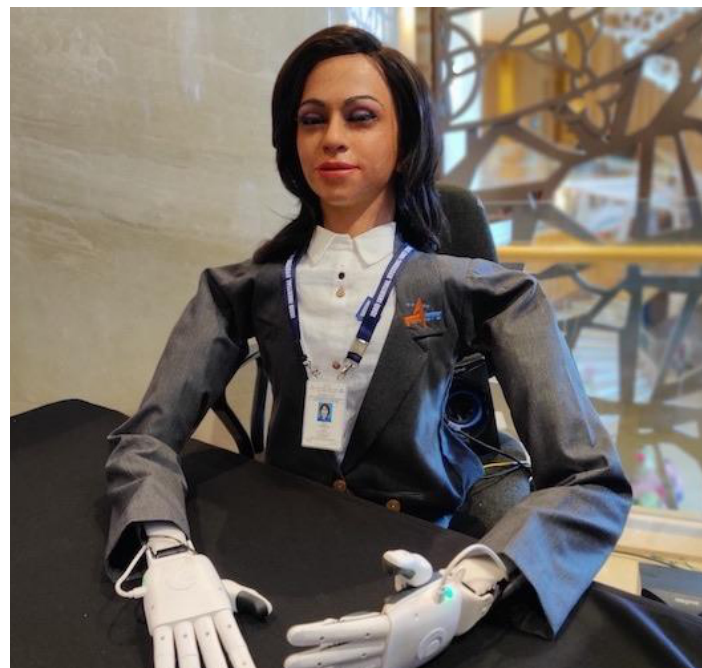
VYOM: INDIA'S HUMANOID SPACE ROBOT

“Vyommitra”, India's first legless humanoid robot is ready to leap of faith to space. Indian Space Research Organization (ISRO) unveiled its legless robot which will go to space. It can speak two languages.

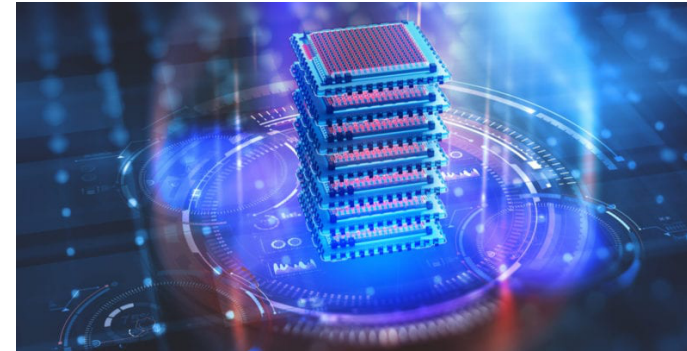
“Vyommitra will simulate human functions, will interact with environmental control and life support system”, ISRO chairman K Sivan told, “Our robot is like a human, and will be able to do what man can do, although not extensively”. The humanoid robot will be first launched into space this year December in an uncrewed test flight of India's most ambitious space program the “Gaganyaan”. “I can be a companion of the astronauts, recognize them, and respond to their queries”, said Vyommitra.

Though it is not the first time a country is sending a robot into space, Russia sent its robot named FEDOR to International Space Station last year in August.

Aakanksha Priyadarshini, 18/ECE/127



COMPUTING WITH QUANTUM



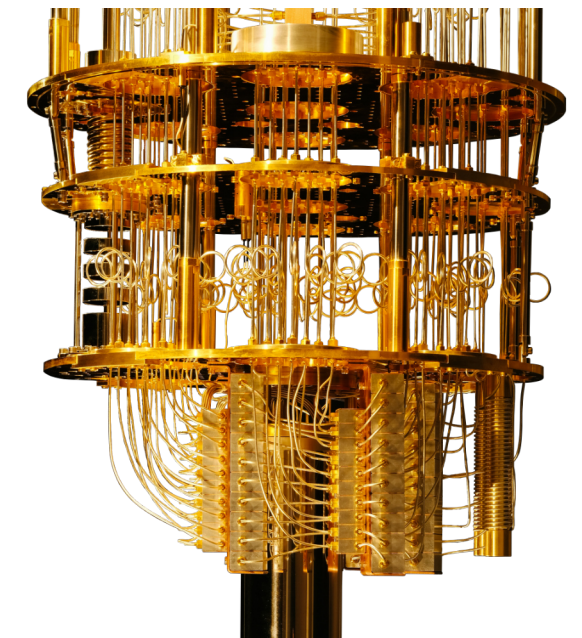
Computing data and information has a history as old as humankind and we have been using computers for over 5 decades and everyone is quite familiar with it. Computing we do in our everyday life makes use of algebra and classical mechanics, but that's not the case with quantum computing. Let's know how it works.

Quantum computing makes use of principles of quantum mechanics. A Quantum computer is any device that directly uses distinctively quantum mechanical phenomena, such as superposition and entanglement, to perform operations on data and information. The basic principle of quantum computation is that quantum properties can represent and structure data and that quantum mechanisms can be devised and built to perform operations with this data. In a classical (or conventional) computer, information is stored as bits; in a quantum computer, we store it as qubits (quantum bits). So basically, in quantum computing

Information is quantum and processes used to solve it are principles of quantum mechanics. Although quantum computing is still under research, experiments have been carried out in which quantum computational operations were executed on a tiny number of qubits.

So now, one may ask why do we need

quantum computing, is it any better than normal computers? The answer is yes; it is way better and faster than normal ones. If large-scale quantum computers can be built, they will solve certain problems exponentially faster than any of our current classical computers (for example, Shor's algorithm). Research in both theoretical and practical areas continues at a frantic pace, and many national governments and military funding agencies support quantum computing research to develop quantum computers for both civilian and national security purposes, such as cryptanalysis. The power of quantum computers Integer factorization is believed to be computationally infeasible with an ordinary computer for large integers that are the product of only a few prime numbers.



By comparison, a quantum computer could solve this problem more efficiently than a classical computer using Shor's algorithm to find its factors. The researchers are working their way to make quantum computers not only for scientific use but also for common people. It seems plausible that it will always be possible to build classical computers that have more bits than the number of qubits in the largest quantum computer.

Shubham Shandilya, 18/ECE/22

RELATIVITY AND TIME WARP

Before some decades, human beings thought that time is universal for everyone. But after the great German scientist's explanation, we came to know that time is also relative to space. Where one of his postulates describes no one can travel faster than light. This means that there is no way to travel light-years in few years. In the early 1900s, Minkowski built upon the earlier works of Dutch physicist Hendrik Lorentz and French mathematician and theoretical physicist Henri Poincare to create a unified model of spacetime. Einstein, a student of Minkowski, adapted Minkowski's model when he published his special theory of relativity in 1905. We know that traveling in space is nothing but a science fiction story's script. But we are going to a future where it will not be a daydream. In special relativity, the geometry of space-time is fixed, but observers measure different distances or time intervals according to their relative velocity.

In general relativity, the geometry of space-time itself changes depending on how matter moves and is distributed. Wrap theory is a technology where we make our ship in Time dilation states that increase of speed in space with something decreases time gap with that. Wrap theory explains that if we can make something that acts like a spring, then it decreases the time length to go beyond our imagination. So in conclusion it should be reminded that "rapid space travel, or travel back in time, can't be ruled out, according to our present understanding. They would cause great logical problems, so let's hope there's a Chronology Protection Law, to prevent people traveling back in time, and killing our parents. But science fiction fans need not lose heart." -STEPHEN HAWKING

Mashhood Ahmad Danish, 18/ECE/67



ROBOTIC PROCESS AUTOMATION

Like AI and Machine Learning, Robotic Process Automation, or RPA, is another technology that is automating jobs. RPA is the use of software to automate business processes such as interpreting applications, processing transactions, dealing with data, and even replying to emails. RPA automates repetitive tasks that people used to do.

Robotic process automation software is a subset of business process automation (BPA), an umbrella term for the use of technology to execute the activities and workflows that makeup with minimal human intervention. The most important differentiator between RPA and traditional workflow automation tools is the skill set needed to accomplish the automation task. In traditional workflow automation, an experienced software engineer writes code to create a set of actions that automates the task and connects the software to the underlying compute infrastructure by the use of application programming interfaces (APIS) written in Python, JAVA or other software languages. In contrast, RPA systems typically develop the action list simply by recording the users' actions as they perform a task in an application's graphical user interface (GUI). Once recorded, the system repeats those tasks directly in the GUI without the human effort required.

Assisted (aka attended) automation: In assisted automation, the RPA is automating applications running on a user's desktop typically for the purpose of helping the user complete an involved process in less time. This usually generates cost savings and helps deliver a better user and customer experience. Unassisted (aka unattended) automation: Unassisted automation requires no human agent. The RPA software performs on its own, notifying the user only when something

goes wrong. Unassisted automation can work 24/7.

Hybrid RPA: In hybrid RPA, the employee and bot essentially work as a team, passing tasks back and forth. Hybrid RPA automates the work the bot can complete solely (unassisted) as well as work that involves unstructured data or requires decisions by an employee (assisted). In hybrid RPA, the software bots and employees can work on different tasks at the same time for optimal efficiency.

RPA is not appropriate for every business process. Automating a mission-critical, long-running and complex business process is typically a job for IT using API-based Automation. The following benefits are widely cited by companies that have deployed RPA:

Accuracy: Set up correctly, bots complete the process the same way every time and don't get fatigued, reducing error rates and inconsistency.

Compliance: RPA tracks bot performance and stores the data for auditing

compliance with regulatory and governance requirements. It also reduces human

interaction with sensitive data, reducing the potential for fraud.

Cost savings: Job loss due to automation is a sensitive topic, and companies are circumspect about using RPA to eliminate jobs, preferring instead to tout the revenue and business benefits generated by a 24/7 bot operation with no downtime.

While RPA is a boon to the IT services industry considering the positive impact in terms of cost, profitability and operational efficiency, the concern about the downsizing of labor could be tackled by way of reallocation and redistribution of human capital.

Nirbhay, 17/ECE/64

MAGIC ROBOT HAND



Do you remember Echo-Echo from the famous cartoon show Ben-10, Yes the one who could manipulate the system. The Swiss Federal Institute of Technology in Zurich researcher Marcel Schuck's robot hand looks like a bisected sphere on the end of a standard robot arm.

Each half of the sphere contains numerous tiny loudspeakers. By precisely controlling the ultrasound waves emitted from the speakers using custom software, robots can suspend a small object between the two halves of the sphere, the phenomenon is known as "acoustic levitation".

The robot can even move the object around in midair by manipulating the direction of waves. The system has the potential to bring the benefits of robotics to a wider range of industries in the future.

The researcher plans now to survey experts from various industries to explore applications of his ultrasonic robot hand. But the researcher can already think of its potential in watchmaking, micromechanics and semiconductor industry.

Sudhanshu Ranjan, 18/ECE/15

BRAIN FOOD

"Sir, what if we used 100% of our cerebral capacity", we have heard this word a numerous times, most commonly in memes. Let memes be memes, now it's the time that our dream comes true. Yeah, you heard it right, our scientists have worked out a way to make what we called a science fiction a reality. True brain created a Brain Food, an advanced nootropics supplement required for the biological condition to make our brain work at full capacity and of course boost our cognitive performance. Nootropics are basically minerals, amino acids, nutrients and some other compounds used by our brain as a fuel for neurotransmission, they are also referred to as smart drugs. They don't make you smart but they definitely help you to boost your brain to the optimum level.



Trubrain was founded by former Unilever executive and UCLA scientists to help the people as much as they can. The product helps by increasing blood flow to the brain, bringing more oxygen and glucose to the brain, this increases metabolism, thereby increasing brain capacity, by enhancing new neural connections and making them more receptive. Though it is better not to take supplements unless necessary, it is best to take good food, enough exercise and a healthy happy lifestyle to enhance brain, but, it is not possible in our current rush hour lifestyle.

You want to enhance your brain capacity, Brain Food is available in both bars and drinks, go grab it .

Sarthak Tayal, 18/ECE/33

E-SPORTS IN INDIA

E-sports (electronic sports) is a form of sport competition using video games. E-sports often takes the form of organized, multiplayer video game competitions, particularly between professional players, individually or as team.



With its massive population and hundreds of millions of potential gamers, India as an esports market is brimming with potential. And everybody sees it. Unfortunately, not everyone was willing to invest in it. Even today, the concept of professional gaming is alien to most parents and even gamers. It's important that the government recognise e-sports as a legitimate sport because then it would be taken more seriously.

Would you be willing to sacrifice a cushy job as a no-name engineer in some massive multinational or would you rather follow your passion, find sponsorship and establish yourself as an esports player? Would friends and family support you in this endeavour? Easily the most important point brought up at the event was that esports and gaming aren't the same thing.

Gaming is entertainment, a leisure activity for a normal person. An esports player, on the other hand, isn't going to be doing that. They're going to be spending a dozen or more hours a day practicing tactics, figuring out optimal attack vectors and more. As Rathee – gamer, esports fanatic and founder of NODWIN – notes, "Esports is about skill. You stop playing, you lose your edge." In fact, Rathee claims that pro-gaming is more intensive than cricket.

Abhineet Saurabh, 18/ECE/121

AUGMENTED REALITY AND VIRTUAL REALITY

Technology today is at the brink of a new era. The era of Artificial intelligence, Augmented reality and Virtual reality. Augmented reality is an interactive experience of a real world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information sometimes across multiple sensory modalities including visual, auditory, haptic, somatosensory and olfactory. This experience is seamlessly interwoven with the physical world such that it is perceived as an immersive aspect of the real environment. In this way, augmented reality alters one's ongoing perception of a real-world environment, whereas virtual reality completely replaces the user's real world environment with a simulated one. The earliest functional AR systems that provided immersive mixed reality experiences for users were invented in the early 1990s. Commercial augmented reality experiences were first introduced in entertainment and gaming businesses i.e in games such as Pokemon GO. On the other hand Virtual reality is a simulated experience that can be similar to or completely different from the real world. Major difference between AR and VR is that, In Virtual reality the user's perception of reality is completely based on virtual information. But in Augmented reality the user is provided with additional computer generated information that enhances their perception of reality. Both AR and VR have applications in different areas, for example in architecture VR can be used to create a walk-through simulation of the inside of a new building, and AR can be used to show a building's structures and systems superimposed on a real life view. AR and VR both have their applications in different areas, as we can see both are in some ways same but are different. All these technologies are helping us humans to carve a better future for ourselves and the coming generations.

Lija Saha , 17/ECE/73

BLOCK CHAIN TECHNOLOGY

A blockchain is a decentralized, distributed, and oftentimes public, digital ledger that is used to record transactions across many computers so that any involved record cannot be altered retroactively, without the alteration of all subsequent blocks.

A blockchain is, in the simplest of terms, a time-stamped series of immutable records of data that is managed by a cluster of computers not owned by any single entity. Each of these blocks of data (i.e. block) is secured and bound to each other using cryptographic principles (i.e. chain).

So, what is so special about it and why are we saying that it has industry-disrupting capabilities?

The blockchain network has no central authority — it is the very definition of a democratized system. Since it is a shared and immutable ledger, the information in it is open for anyone and everyone to see. Hence, anything that is built on the blockchain is by its very nature transparent and everyone involved is accountable for their actions.



How Does Blockchain Work?

Information held on a blockchain exists as a shared — and continually reconciled — database. This is a way of using the network that has obvious benefits. The blockchain database isn't stored in any single location, meaning the records it keeps are truly public and easily verifiable. No centralized version of this information exists for a hacker to corrupt. Hosted by millions of computers simultaneously, its data is accessible to anyone on the internet.

The reason why the blockchain has gained so much admiration is that:

- It is not owned by a single entity, hence it is decentralized
- The data is cryptographically stored inside
- The blockchain is immutable, so no one can tamper with the data that is inside the blockchain
- The blockchain is transparent so one can track the data if they want to

The Three Pillars of Blockchain Technology

The three main properties of Blockchain Technology which have helped it gain widespread acclaim are as follows:

- Decentralization
- Transparency
- Immutability

Conclusion

The Bitcoin is the first successful implementation of blockchain. Today, the world has found applications of blockchain technology in several industries, where the trust without the involvement of a centralized authority is desired. So welcome to the world of Blockchain.

Anwi Binit, 18/ECE/98

HINDI ARTICLES

कब तक चलेगा ऐसे ?

हम फिर एक महिला की हिफाजत न कर पाए,
फिर देश की बेटी समाज के कुछ दरिंदों से नहीं बच पाई,
वे लोग शायद नवरात्रि में पूजा करने से वंचित रह गए थे,
या महिलाओं की इज्जत एवं सम्मान उनके संस्कार में नहीं,
हर बार कोई न कोई महिला इसकी शिकार हो जाती है।

एक इंटरव्यू में कुछ दरिंदों ने कहा,
छोटे कपड़े देखकर मन मचल जाता है,
अब तो लगता है घर-पड़ोस की महिलाएं बड़ी सहमी सी रहती होंगी,
पता नहीं कब पल्लू या दुपट्टा सरके,
और घर बैठे इन दरिंदों का मन मचल जाए।

इस तरह की कुछ ही वारदातें सामने आ पाती हैं,
और कितने ऐसे वारदातों को डरा धमका कर दफना दिया जाता है,
हर एक दिन इस प्रकार की वारदातों को सुनने का मौका मिलता,
महिलाओं को देवी मानने वाला यह देश इन घटनाओं को रोकने में लाचार सा दिखता,
हम बस मोमबत्ती ही जलाते रह जाते हैं,
घर बैठे आलोचना करते दिन बिता देते हैं,
सोशल मीडिया पर टिप्पणी कर अपने आक्रोश को दिखाते हैं।

पर क्या इससे कोई बदलाव हुआ है ?
क्या इससे इन घटनाओं पर रोक लगी है ?
हमें अब अपने देश में अपने कानून को सख्त करना पड़ेगा,
ऐसी कोई भी वारदात की पुष्टी होने पर बीच चौराहे पर जलाकर मौत की सज़ा दी जाए,
ताकि कोई ऐसी घृणित कार्य करने की कल्पना भी न करें।

अपनी परंपरा बस भूलते जा रहे हैं,
एक महिला के समुद्र पार कर अजय रावन का सर्वनाश कर दिया,
तो एक द्रोपदी के सम्मान के लिए अपने पापी बंधुओं से लड़कर सबका सर्वनाश किया,
एक दफा फिर से अपनी संस्कृति को दोहराने की आवश्यकता है।

हमारे देश की सभी महिलाओं शांति एवं सम्मान से जी सकें,
यहां बेफ्रिक होकर सभी महिलाओं चैन से जी सके,
जो देश महिलाओं को देवी मानता है वह इस देवी की सम्मान का दायित्व भी उठा सके।

अभिनीत सौरभ, 18/ECE/121

हमें मिलकर नया भारत बनाना है

हमें एक उचित रोजगार चाहिए, हमें मिलकर नया भारत बनाना है
एक स्वच्छ खुला विचार चाहिए, हमें मिलकर नया भारत बनाना है।

काम सिर्फ कागज़ पर ही रह मिटे नहीं, जमीनी स्तर तक भी पहुंचे
ऐसी लोकतांत्रिक सरकार चाहिए, हमें मिलकर नया भारत बनाना है।

लोग हर वक्त सिर्फ अपने अपने काम, मजहब में ही ना उलझे रहे
भारतीयों के बीच प्यार चाहिए, हमें मिलकर नया भारत बनाना है।

जो सही मुद्दों को बेझिझक होकर सबके सामने रखने में समर्थ हो
हमें वैसा खबर, समाचार चाहिए, हमें मिलकर नया भारत बनाना है।

हमें सिर्फ सरहद पर देश की रक्षा को खड़ी सेना ही ताकतवर नहीं
हमें पुलिस भी ईमानदार चाहिए, हमें मिलकर नया भारत बनाना है।

न्याय व्यवस्था तर्कसंगत हो, और समय पर सबको न्याय मिल सके
हमें अदालत इतनी तैयार चाहिए, हमें मिलकर नया भारत बनाना है।

अपने अपने छोटे मसलों में उलझ, जनता जनप्रतिनिधि को ना चुने
हमें युवा पीढ़ी समझदार चाहिए, हमें मिलकर नया भारत बनाना है।

आदित्य प्रकाश, 18/ECE/116

मुझमें तू अब भी ज़िंदा है

मुझमें तू अब भी ज़िंदा है,
ये खबर तुझ तक पहुंचानी है।
तेरा होना एक ख्वाब था,
उसे सच मान लेना तो बेईमानी है।
अकेली गुजरी शाम बहुत,
कुछ तेरे संग बितानी है।
कभी फुर्सत मिले तो खबर लेना,
कुछ बातें हैं जो तुझे बतानी हैं।
रंग तो तेरे आने से था,
अब बेरुख ज़िंदगानी है।
शायद तू लौट आए, फिर से
मुझमें अब भी इतनी नादानी है।
इतनी बनती नहीं अब मेरी मुझसे,
तेरे बाद की इतनी सी कहानी है।
कभी फुर्सत मिले तो खबर लेना,
कुछ बातें हैं जो तुझे बतानी हैं।

Jai Kumar, 17/ECE/82

मैं

जला दी गई है बस्ती मेरी
राख के उन ढेरों में बेचैनी समेटे हुए
अरमान ढूँढ रहा हूँ
कुछ ख्वाब लेकर आया था शहर
अब अपनी ही हस्ती लुटाकर
पहचान ढूँढ रहा हूँ
साथ छोड़ने वाले हर मोड़ पर मिले
जो ठहरने की ख्वाहिश लेकर आए
वो इंसान ढूँढ रहा हूँ
बस इतना जान लो मेरे बारे में
नीयत जहाँ मिल नहीं रही
वहाँ ईमान ढूँढ रहा हूँ

Jai Kumar

17/ECE/82

STUDENT ARTWORKS



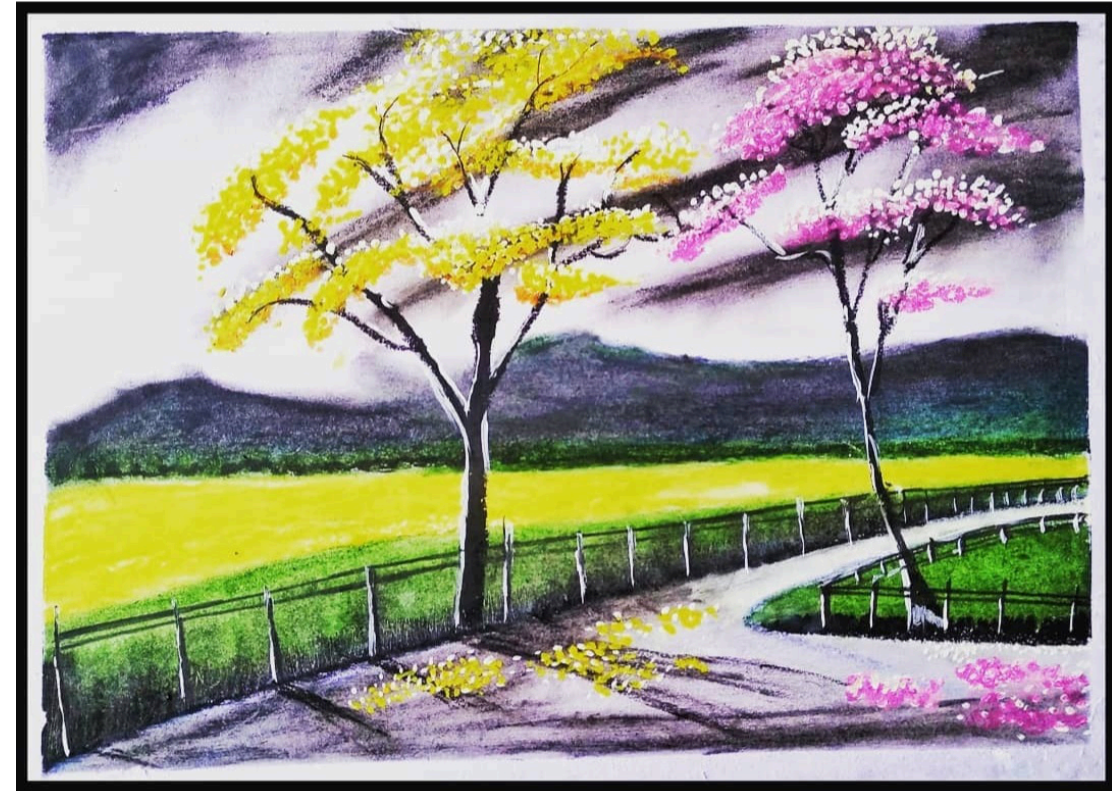
Alisha Azad, 18/ECE/111



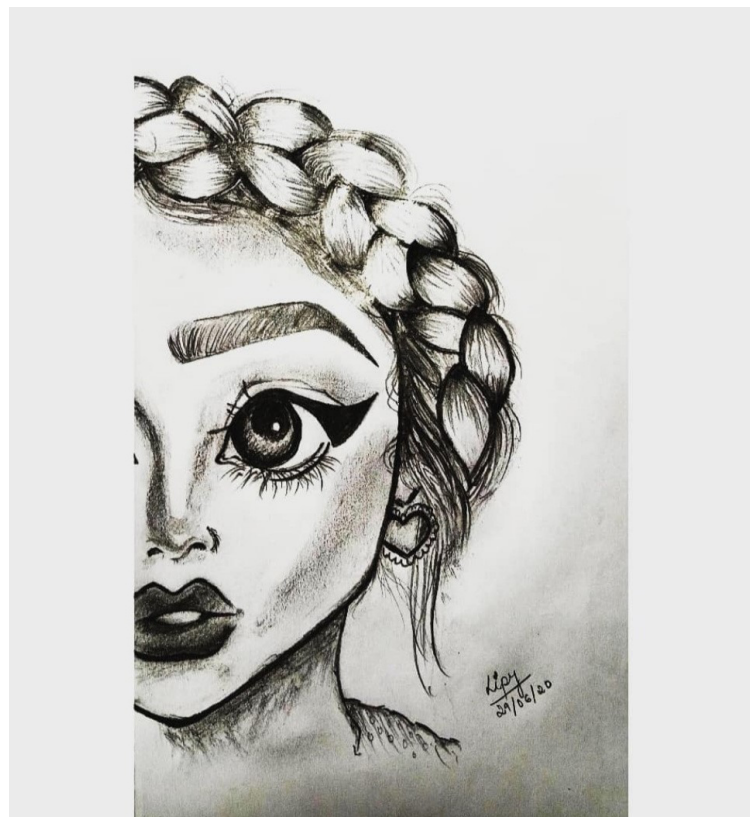
Anwi Binit, 18/ECE/098



Diksha Bharadwaj, 18/ECE/081



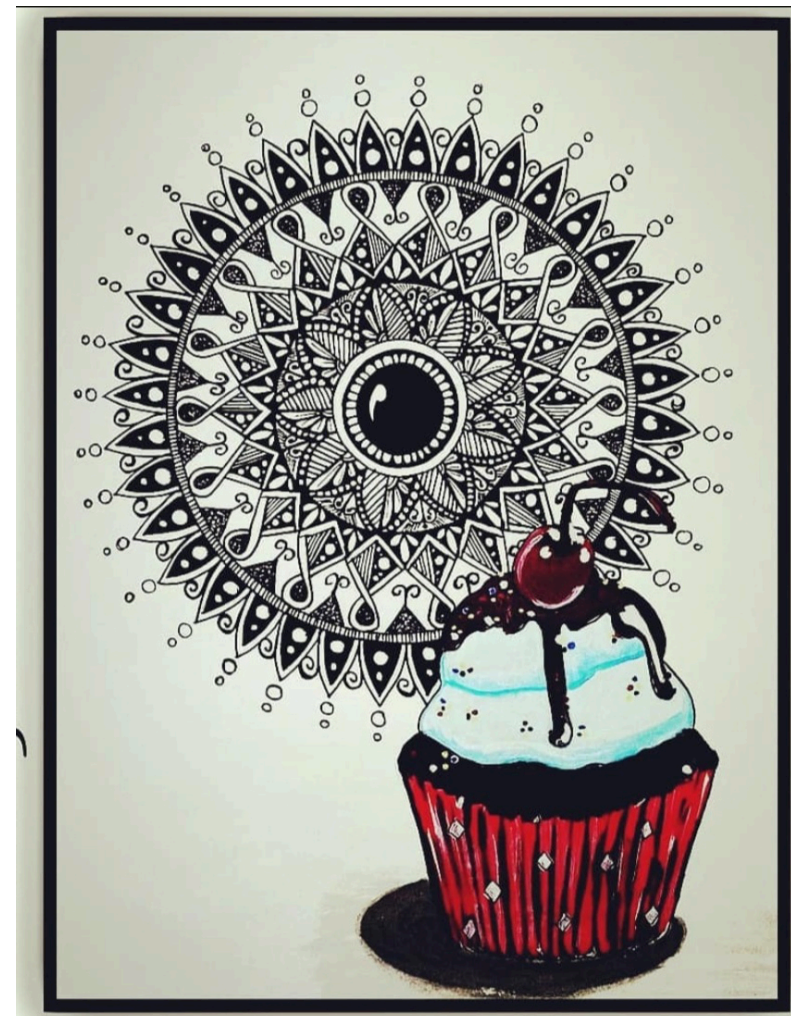
Smriti Sinha, 18/ECE/105



Lipy Singh, 18/ECE/071



Komal, 18/ECE/075



Shreya Tiwari, 16/ECE/034