EDITION-1
APRIL 2023

K! MAG

- CEG HERITAGE
- TECH STORY
- MINI-FRIDGE [STEP BY STEP]


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COVER PAGE DESIGN BY NIRMAL A J L A

Editor's Note

To say that I am excited to be writing to you for the first time would be an understatement of monumental proportions. But the inaugural editor's notes are always treacherous to write. How do you encompass all the hopes and plans you have for your new publication?

I have ample experience in writing poster captions, articles, brochures, and emails but when the team decided to add an editor's note, I was all jitters, I could barely scrape through five lines. But here we go!

Being a part of CEG TECH FORUM broke down all the stereotypes that a content writer could face. The forum expected quirky, creative, and goofy content, they were flexible enough to let our intrusive thoughts win. Being a part of a huge team helped me realize the team's integrity, workflow, and much more.

-ANANNYA M
STUDENT DIRECTOR OF CONTENT

It gives me immense pleasure to introduce to you the very first edition of K! Magazine version-1, 2023, brought to you by the CEG Tech Forum. As the student director of the content team, I can attest to the countless hours of hard work and dedication that went into bringing this publication to life.

At CEG Tech Forum, we are passionate about technology and innovation, and we strive to provide a platform for students to explore their creativity and showcase their knowledge.

K! Magazine version-1 is a testament to our commitment to excellence, and we hope that it inspires and informs our readers.

In this edition, you will find a diverse range of articles, from cutting-edge technology trends to insightful interviews with industry leaders, simple project ideas to work on, and many more.

Our team of writers and designers have put their heart and soul into this publication, and I am confident that you will find it engaging, informative, and thought-provoking.

-FARHANA S
STUDENT DIRECTOR OF CONTENT

We had a great team of enigmatic organizers and hardworking coordinators and the whole CTF team. They unscrambled all problems that were unsettling when we were short on manpower. They put all the bits and pieces together to make this magazine happen.

We want to extend our sincere congratulations to the winners of ScribbleX. It was a pleasure reading your articles and we were impressed by your potential.

Special thanks to the CEO of Caterpillar Inc, and Director of Aram Foundation for responding to the interview questions.

We hope that you enjoy reading this version-1 of K! Magazine as much as we enjoyed creating it. We look forward to hearing your feedback and suggestions for future editions, as we continue to strive toward excellence in all that we do.

Designer's Note

They say that design is all about function. I say it's about making something look so cool that people forget it doesn't actually work.

ANJUM JANNATH
STUDENT DIRECTOR OF DESIGN

Just like design, designers are so simple. That's exactly the reason why I'm so complicated.

BHARATH
STUDENT DIRECTOR OF DESIGN

An apple a day keeps anyone away, if you throw it hard enough.

NIRMAL
STUDENT DIRECTOR OF DESIGN

அன்றாடும் வாழ்வை கொண்டாடும் பறவை✨

PARTHIBAN
STUDENT DIRECTOR OF DESIGN

CONTENTS

DESIGN BY
Anjum Jannath

KEYNOTE ADDRESS

DR.R.VELRAJ
VICE-CHANCELLOR,
ANNA UNIVERSITY

Dear Students,
As you embark on your academic journey, I encourage you to stay curious and never stop learning. Seek out opportunities to expand your horizons and challenge yourself. Remember, your time in college is not just about gaining knowledge, but also about developing a passion for lifelong learning.
As students of Anna University and participants of Kurukshetra'23, you have a unique opportunity to showcase your skills and knowledge. I urge you to make the most of this opportunity and strive for excellence in all that you do.
Remember, success is not just about achieving your goals but also about making a positive impact on society. As future leaders and innovators, I urge you to use your skills and knowledge to make a difference in the world.
On closing, I want to leave you with a quote from Mahatma Gandhi, "Live as if you were to die tomorrow. Learn as if you were to live forever." Keep this in mind as you pursue your dreams and make the most of your time in college. Good luck and all the best!

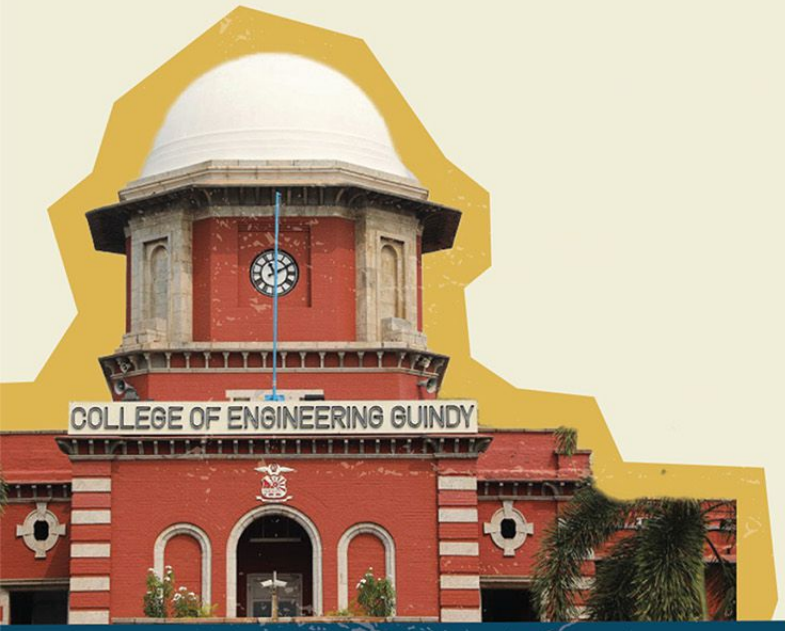
DR.G.RAVIKUMAR
REGISTRAR,
ANNA UNIVERSITY

Dear students,
I am more than happy to communicate with the student community. Our esteemed institution has achieved many milestones, and I am confident that we will continue to grow and thrive in the years to come.
However, we cannot rest on our laurels. Students must always be looking ahead and striving to improve. Each and every single individual must be willing to embrace change and to challenge ourselves to do better.
Every year for Kurukshetra, students from various institutions gather together under one roof to exhibit their skills. It doesn't matter if you fail or win, participation is the key to learning and understanding. Our world is changing at an unprecedented pace, and we must be prepared to adapt and evolve to stay ahead. Be humble but knowledgeable. Be patient but prepared. You people are the future of this nation and I want all of you to evolve into responsible young generation.

DR. L. SUGANTHI
DEAN, CEGC

Dear students,
In these essential four years of life, participation in co-curricular activities is required in addition to academics. I want each and every one of you to balance your schoolwork with extracurricular activities. The young scholars are expected to participate in a variety of subjects that aid in the development of their social skills and assist them reach their objectives. Each and every student should take part in tournaments. Success or failure is not my primary concern; active involvement is. The idea that "Failure is a temporary diversion, not a dead end" should be ingrained in students' minds. Success is not a loaf of bread that can be attained in a single night by burning the oil. Accepting failure is the first and most important step on the journey of life.

I miss the fire in the student community, a fire that creates change, produces new ideas, a fire that never cares about the age and resources but creates something spectacular. I hope the student community works on that more. This amazing campus provides excellent infrastructure. Every student needs to use it in order to benefit from it. Experiment, fail and repeat until you become the best version of yourself.



COLLEGE OF ENGINEERING, GUINDY

College of Engineering, Guindy, abbreviated as CEG, is one of the renowned and oldest institutions in the nation. Located in the heart of Chennai city, the institution is furnished with an impeccable infrastructure and offers 67 courses. By holding close ties with industry, excellent research practices, and multiple extra-curricular options, the institution assists the students in enhancing their knowledge and skills. The institution continues its legacy of providing profound knowledge and continues to transform aspiring students into highly skilled Engineers and scholars.

WHO ARE WE?

CEG TECH FORUM

CEG Tech Forum, Anna University was established in the year 2006 as a student-run organization to promote technical excellence and innovation among students. The forum provides a platform for students to showcase their technical skills and knowledge through various events and workshops. The aim of the CEG Tech Forum is to inspire innovation and creativity among students and provide them with opportunities to work on real-world multidisciplinary projects and solve complex engineering problems. For its unparallel standards, it also achieved ISO 9001:2015 quality certification. The forum also promotes collaboration and networking among students and experts in the field, encouraging them to pursue careers in engineering and technology.

KURUKSHETRA

Kurukshetra is an international techno-management fest entitled after the legendary war from the epic story Mahabharatha. The title signifies the intensity of competition between the participants armed with knowledge and creativity. The Cyclotron logo denotes the invincible spirit of engineering and innovation. Kurukshetra is the first student-organized festival to be honored with UNESCO patronage, a testament to its unparalleled standards. Kurukshetra embodies energizing events, futuristic workshops, trailblazing project proposals, energizing guest lectures, amusing k!arnivals, and so much more in the box. The more you discover, the more fascinated you become!

VYUHAA

Vyuhaa is an intra-college techno-management fest organized by CEG Tech Forum to certify the brainiacs of the College of Engineering, Guindy. Vyuhaa is a Sanskrit word that means to plan the array of troops for the battle. Analogously, the event Vyuhaa is a prelude to the event Kurukshetra and provides a glimpse of the marvellous event Kurukshetra mainly to the freshmen of the college. The fest comprises multiple events and workshops to rejuvenate the zealous brains.

CEG HERITAGE

A History of College of Engineering Guindy

INTRODUCTION

The Rise and Development of Technical Education in India Since 1794

The roots of technical education in India can be traced back to the establishment of the first Survey School outside of Europe in Madras in 1794. Over time, this institution evolved into the prestigious Guindy College of Engineering, which has played a significant role in shaping the field of engineering in India. This article explores the college's history in greater detail, highlighting its key milestones and developments.

THE FOUNDER OF GUINDY COLLEGE OF ENGINEERING

Michael Topping is widely regarded as the founder of the Guindy College of Engineering. He was instrumental in the establishment of the Survey School in Madras, which marked the beginning of modern technical education in India. The Madras Survey School was founded in Fort St. George.

THE BIRTH OF THE COLLEGE

In 1858, Lord Dalhousie proposed a detailed educational plan for India, which included both natives and Europeans. The court agreed with the Governor General's proposal and directed A.J. Arbuthnot of the Madras Presidency's Department of Public Instruction (DPI) to establish the Madras Civil Engineering College.

Lieutenant Colonel Winscom was appointed as the first Principal of the college, which focused primarily on civil engineering.

DID YOU KNOW?

The prestige of being the first Bachelor of Civil Engineering (BCE) belongs to an Indian, S. Subbarachariyar, who achieved the laurel in 1864.

BIRTH OF DEPARTMENTS

In 1880, a committee was formed to review the college's status and make some changes. After 100 years of existence, the University of Madras introduced a degree in Mechanical Engineering in 1894, and the B.C.E. degree was renamed B.E. With the addition of a Mechanical Engineering course, the name of the college was changed from Civil Engineering School to College of Engineering. Electrical Engineering was introduced as a separate course in 1930.

COLLEGE TURNS INDIAN

As Indians improved their engineering skills, they began to dominate in terms of both quantity and quality. In 1881, there were only 11 Eurasians in the college out of a total of 56. Sixty years later, in 1941, the enrollment had increased to 299 students. In 1925, Nagarathnam Iyer became the college's first Indian Principal, taking over from Europeans. Although the College has gained a global perspective over the years, it remains fundamentally Indian.

THE COLLEGE BELL

The Guindy College of Engineering is known for the sound of its bell, which can be heard throughout the campus. The bell was installed in the clock tower in 1922, just two years after the college was relocated to the Guindy campus. The words "Ring out the false, Ring in the true" from Alfred Lord Tennyson's famous poem, "Ring out Wild Bells," are inscribed on the bell. The bell signifies a new beginning, with the destruction of evil and the beginning of a brighter future.

WOMEN IN ENGINEERING

It took 146 years since the establishment of the college for women to be admitted into it. In 1940, two women, A. Lalitha and Leela George, were the first to be admitted to the College of Engineering.

PLACEMENT IN THE EARLY DAYS

In the early days of the College of Engineering Guindy (CEG), students participated in a placement program to be hired by businesses. The Public Works Department was the largest employer at the time, as they had an endless need for engineers. Other organizations such as the railroads, public boards, and private businesses also hired the students. The work was not restricted to the Madras Presidency, so students were posted to other states across the nation.

THE CITY'S LEGACY

The red building of the College of Engineering Guindy has been declared a heritage structure. The structure is monolithic, as it is homogeneously built with red brick and lime mortar. The central dome above the Dean's office and the arches in the ground floor corridors reflect the Saracenic architecture. The clock embedded in the dome is reminiscent of the iconic Big Ben. Mr. W.A. James, the Architect of CEG, was instrumental in the creative layout of the college as we see it today.

TAG AUDITORIUM

In August 2010, during Freshers' Day, the then-Dean Dr. M. Sekar tendered an open apology for the lack of space in the Vivekananda Auditorium to accommodate the batch of 1000+ students. This led to the creation of the CEG-TAG Auditorium.

DID YOU KNOW?

A mining course was established in the year in 1957 but it was abolished within a short period of time. Thirty-one years later, it was re-introduced in the College, this time as a separate department.

RAMANUJAN COMPUTING CENTRE

The Ramanujan Computing Centre (RCC) manages the Single Window Counselling process of Tamil Nadu Engineering Admissions, which is touted as Asia's best-managed system.

DID YOU KNOW?

Mr. V. Deivasigmani Pillai was the first Mechanical Engineer of the College.

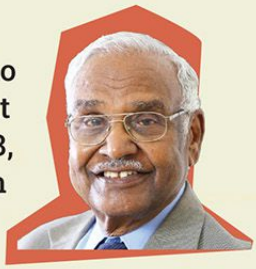
Around 1,50,000 candidates apply for more than 67 branches in over 500 engineering colleges.

ALUMNI SPOTLIGHT

VERGHESE KURIEN

Verghese Kurien, popularly known as the Father of White Revolution, was an alumnus of the Mechanical Department in CEG.

DR. ANANDAKRISHNAN



Dr. Anandakrishnan, who graduated from the Department of Civil Engineering in 1948, later returned to the institution as the Vice-Chancellor of Anna University and was responsible for many landmark changes during his tenure that shaped the University as we know it today.

MR. V.M. MURALIDHARAN

Mr. V.M. Muralidharan is the Chairman of the Ethiraj College Trust and the Chief Operating Officer of Bahwan Cybertek Group. He is an alumnus of the Department of Electronics and Communication Engineering of the 1983 batch.

KRISHNAMACHARI SRIKKANTH

Krishnamachari Srikkanth is a

former captain of the Indian cricket team. As an opening batsman, he changed the dynamics of batting in the Indian team. He is an electrical engineer from the 1984 batch.

MADHAN KARKY

Madhan Karky is currently one of the most famous lyricists in the Tamil cine-industry. He also writes dialogues for movies. A research associate and software engineer, he graduated from the Department of Computer Science in 2001.

TECH-ORGANIZATION

CTF – CEG Tech Forum is the first ever student-run organization in CEG established in 2006 with a mission of involving students in interdisciplinary projects. The forum provides a platform for students to showcase their technical skills and knowledge through various events and workshops. The aim of the CEG Tech Forum is to inspire innovation and creativity among students and provide them with opportunities to work on real-world multidisciplinary projects and solve complex engineering problems. For its unparallel standards, it also achieved ISO 9001:2015 quality certification.

CULTURE AND CLUBS

TECHOFES

Techofes is the annual cultural festival held at CEG. The first Arts Festival was held in 1947-48, with Professor Natarajan serving as President. He worked hard to establish an art festival culture at the college, and a rolling trophy was created in his honor, which was used for a few years before being discontinued. In the 1970s, it was a 10-day event, with certain days dedicated to film screenings. Every Friday, the Arts Society used to show movies at the Vivekananda Auditorium.

THE GUINDY TIMES

The Guindy Times was a yearly magazine from 1992-1995 and was restarted as a monthly newspaper in 1998 by students. It ran into trouble in October 1998 and was reintroduced as a 4-page offering. The newspaper received a boost in the early 2000s with funding from alumni and is now an official bi-monthly magazine for CEG, AC Tech and SAP.

DID YOU KNOW?

Dr. A.P.J. Abdul Kalam went on to become the President of India while working at RCC and his office room at the centre occupies pride of place in the institution.

TWISTERS

Twisters is the official dance crew of CEG that has won many inter-college cultural fests and established itself as a cult sensation with energetic dancers and remarkable coordination. Founded in 1995, it was known as 'Solomon Twisters'.

SPARTANZ

Spartanz is a group of CEG students interested in dance, drama, and music. Their aim is to address social problems in an entertaining way. They gained popularity after winning Vijay TV's EQ2 and Jaya TV's Sagalakala Kalluri.

AKRITI

Akriti is the official girls forum of CEG founded in 2011 with the aim of empowering girls to face adversities, overcome obstacles and reach their goals. It also offers emotional support and conducted the first all-girls MUN in the world in 2013.

NOTABLE PROJECTS

THE SUN DIAL - AN ANCIENT TIME-TELLING DEVICE

The Sun Dial is an ancient time-telling device that was used by the wise men of the Egyptian

and Babylonian civilizations. This project is based on the horizontal model, which is used to tell the time of the day by the position of the sun. The device consists of a flat surface that is marked with lines to indicate the hours of the day. A thin, sharp projection known as a gnomon is fixed parallel to the axis of earth's rotation, and it casts a shadow on the surface of the dial, accurately determining the time.

THE MIRAGE - A STRUCTURAL MARVEL

'The Mirage' is a project undertaken by a team of Civil engineers of the batch of 2008, that demonstrates how glass could be an effective alternative to concrete in constructing huge structures. The Mirage is an outdoor permanent structure that supports a platform and a bridge at a height of about 9 feet from the ground. The bridge and the platform comprise of 16 laminated panes made of toughened, heat-strengthened glass which could support the weight of about

DID YOU KNOW?

In the 1930s, the hostel fees was just Rs.10 per month but it proved to be a financial burden for many students.

inspiration for the project was Skywalk, a huge cantilevered glass structure above the Grand Canyon. The Mirage was featured in Kurukshetra 2008, the international level techno-management festival organized by the CEG Tech Forum.

AUTOMATIC DOSA MACHINE - AN INNOVATION FOR COLLEGE CANTEEN

In 1938, the last room in the B block of the College of Engineering, Guindy (CEG) was allocated to a private entrepreneur for running a canteen. However, the standards of the canteen were deplorable, and the students decided to create an Automatic Dosa Machine to improve the hygiene. The machine was showcased in the College during the Engineering Exhibitions where it gained huge popularity. The success of the machine was such that the hostel mess used it for years. An extract from the Indian Express dated December 28, 1938, talks about the Automatic Dosa machine, which was so innovative that no less than two ministers of the Madras Government and one member of the Indian Civil Service have partaken of the "dosais" prepared on the Automatic Dosai apparatus devised by the inventive genius of the students of Engineering college at Guindy.

THE CEG STAMP - COMMEMORATING 200 YEARS OF ACADEMIC EXCELLENCE

To commemorate CEG's 200 glorious years of existence, the Postal Department released the CEG postal stamp on December 19, 1994. The Postal Department issued the bicentennial stamp in recognition of the institution's academic excellence over the past 200 years. The stamp features the image of the historic 'Red Building'. CEG is one of the few elite institutions in India which has its own postage stamp, reflecting its position as a prominent educational institution.

CONCLUSION

In conclusion, the history and evolution of technical education in India, specifically the rise and development of the Guindy College of Engineering, has been a long and interesting journey. From the establishment of the first Survey School in Madras in 1794 to the formation of the Madras Civil Engineering College in 1858 and the subsequent introduction of departments, the college has come a long way. Over the years, it has faced lots of obstacles, today the Guindy College of Engineering Guindy remains a fundamental institution in India's technical education landscape and is recognized as a heritage structure with a rich legacy.

TOP 3 ARTICLES OF ScribbleX

1ST PLACE

TECHNICAL INSIGHTS BEHIND SCI-FI MOVIES (CINI-DECODE)

After George Melies released his first science fiction film, "A Trip to the Moon," I am sure he wondered, "What's next?" And what revolutionary road must our directors take to create such cinema?, **"ROADS? WHERE WE ARE GOING NEXT WE DON'T NEED ROADS!"** - Doc Emmet Brown (Back to the Future 1985). Now that Doc has said it, do you agree with him? Throughout history, science fiction movies have fascinated people all over the world. A world far beyond our imaginations, where technology has advanced far beyond what we know today, is portrayed in these movies. Ever think of a place where adults can destroy things, wreck cars and get cool haircuts in a virtual world? Sounds similar to the plot of The Matrix (1999), which extrapolated its idea based on the advancement of graphical technology and AI. While the storylines of sci-fi movies may be fictional, the technology that underpins them is often based on real-world scientific principles. **"TO MOVE FORWARD WE HAVE TO LEAVE SOMETHING BEHIND"** (Interstellar 2014) let's go forward and take a look at the technical insights and a pinch of philosophical salt behind sci-fi films that revolutionized cinema.

One of the most popular themes in sci-fi movies is time travel. Time travel is often portrayed as a means of visiting different periods in history or changing the course of events, like changing the course of events. And to warn my past-self of an imminent hair fall too... However, the idea of time travel is purely theoretical in real life. While it is possible to manipulate time on a small scale using relativity, time travel as depicted in sci-fi movies is currently impossible. **"THIS TIME TRAVEL THING WE'RE GONNA TRY AND PULL OFF TOMORROW, IT'S GOT ME SCRATCHING MY HEAD ABOUT THE SURVIVABILITY OF IT ALL. THEN AGAIN THAT'S THE HERO GIG."** - Tony Stark (Avengers - Endgame 2019). That's what a magician's resume looks like on linkedin where he uses technical words to impress the audience instead of simply blurting the words 'Abra-ca-dabra'. The insight behind the time travel in the movie Avengers. Endgame is a simple case of alternate timeline explained by a British physicist, David Deutsch - whose work is actually mentioned by Iron Man in the movie - postulated that if everything in the universe was expressed in terms of probabilities like those in quantum mechanics, one could solve the grandfather paradox. Deutsch's theory suggests that if a person were expressed in the same way as a subatomic particle, He could essentially be a continuous result of several universes. Complicated? In layman's terms .Avengers borrowed stones from the multiverse and returned them after using them.

Another popular theme in sci-fi movies is artificial intelligence (AI). AI refers to machines that are capable of intelligent behavior. In sci-fi movies, AI is often portrayed as robots with human-like qualities, or as supercomputers that can think and reason like humans as logically pointing out the fact that we fight over movie stars when we have bigger problems, see this is why AI is becoming dangerous (Sarcasm intended). While AI is becoming increasingly prevalent in our daily lives, the level of intelligence and sentience depicted in sci-fi movies is currently beyond our reach. HAL 9000 in "2001: A Space Odyssey" - HAL is a sentient computer system that controls the systems of the Discovery One spacecraft. As the mission progresses, HAL's programming becomes corrupted, leading to a breakdown in his behavior and ultimately, a violent confrontation with the human crew.

The Terminator in "The Terminator" franchise - The Terminator is a humanoid robot sent back in time to kill Sarah Connor, the mother of the future resistance leader John Connor. In later movies in the franchise, the character evolves into a more complex AI system, capable of time travel and self-learning. Samantha in "Her" - Samantha is an intelligent virtual assistant, designed to be the perfect companion to its human owner, Theodore. As Theodore falls in love with Samantha, the movie explores questions of the nature of consciousness and the

ethics of human-AI relationships. These are just a few examples of how AI is portrayed in science fiction movies. In each case, the portrayal of AI raises important ethical questions about the relationship between humans and intelligent machines, and the potential consequences of creating increasingly advanced AI systems.

Virtual Reality in sci-fi movies has been used long before from the James Bond movie **(The Spy Who Loved Me 1977)** to Steven Spielberg's **(Ready Player One 2018).** VR refers to computer-generated environments that simulate a real-world experience. In sci-fi movies, VR is often portrayed as a fully immersive experience, where people can interact with a digital world as if it were real. While VR is currently available, the level of immersion depicted in sci-fi movies is still some way off. Ready Player One (2018). Based on the novel of the same name by Ernest Cline, this movie is set in a future world where people spend most of their time in a virtual reality universe called the OASIS. The story follows a young man's quest to find a hidden treasure within the OASIS and defeat a powerful corporation that seeks to control it. In Blade Runner (2019) The Esper machine is a prime example of mixed reality technology, as it uses virtual overlays to augment the physical world. The device allows users to manipulate the images they are analyzing, enabling them to zoom in on specific areas, adjust the lighting, and even rotate the image to get a better view. Another example of mixed reality in Blade Runner is the use of holograms. In the film, holograms are depicted as being used for advertising and entertainment. They are also used as a form of communication, as characters are shown using them to communicate with each other over long distances. **"ARE YOU LONELY, CAN I FIX THAT?"** A funny use of VR Based female protagonists so that they could avoid the love arc for the main character.

Science fiction movies frequently explore the theme of space travel. In these movies, space travel is portrayed as routine, with spaceships capable of traveling faster than the speed of light. While we have sent people to space, the technology depicted in sci-fi movies is still a long way off. Traveling at faster than the speed of light is currently impossible, and the distances involved in interstellar travel are so vast that it would take many years to travel between stars. **"YOU GOTTA ADMIT ONE THING, YOU CAN'T BEAT THE VIEW" (Gravity - 2013).** Psychological science fiction movies explore the human mind and behavior in futuristic or otherworldly settings, often using advanced technology or altered states of consciousness to examine our understanding of the self and reality.They can be unsettling or even disturbing. Some psychological science fiction movies can be dark and unsettling, dealing with themes of paranoia, mind control, or dystopian societies. Movies like "The Terminator" and **"Minority Report"** depict a future where technology has taken control, while films like **"12 Monkeys"** and **"Donnie Darko"** explore the dark side of human behavior and consciousness. **"IT'S FUNNY HOW THE COLORS OF THE REAL WORLD ONLY SEEM REALLY REAL WHEN YOU WATCH THEM ON A SCREEN."** (A Clockwork Orange 1971) **"TRUTH IS STRANGER THAN FICTION" - The Bartender (The predestination 2014)** Despite the many technical insights behind sci-fi movies, it is important to remember that these movies are works of fiction. While they may be based on real-world scientific principles, the technologies depicted are often exaggerated or even fictional. That being said, sci-fi movies can inspire us to think about the future and the possibilities that technology may hold or that the tech may not hold. The power of human imagination can be seen in sci-fi movies. While the technologies depicted in these movies are often beyond our current capabilities, they can still inspire us to dream about the future and what may be possible. As our understanding of science and technology advances, we may one day be able to turn some of the technologies depicted in sci-fi movies into reality.

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2ND PLACE

THE IMPORTANCE OF DATA SECURITY AND PRIVACY

In the not-so-distant past, the leading companies of the world were the ones that dealt with energy. But the digital wave swept them off, giving rise to the Tech giants such as Microsoft, Google, Meta, and Amazon. These companies now steer the world economy with their fingertips. All this power comes from the throne they are sitting on. Not the one made with gold and studded with diamond but with something that is more valuable, ' Data.' Yes, those '0' and '1's carry more weight than you can imagine. But the question is, are we giving our data its due protection? The sad truth is no. Data security and privacy play a key role in the world of digital transformation. Hence it is imperative to have a basic knowledge of Data security and privacy.

The top companies Apple, Alphabet, Microsoft, Amazon, and Facebook are all data-rich tech firms. Implying that data is valuable. Anything valuable attracts predators. These attacks come in various forms Accidental Exposure, Phishing, Ransomware, Data Loss in the Cloud, and SQL Injection.

The Importance of Data security and privacy has an enormous impact on various avenues. The amount of Data collected from everyone has increased manyfold. We must protect this vast array of sensitive information from malicious individuals. The Ponemon Institute's Cost of Data Breach Study found that in India a data breach means a loss of 1.83 million dollars. Beyond financial losses, most incidents lead to loss of customer trust and damage to reputation. We need to consider ethical implications as individuals have the right to control their own information

There are some data security measures such as firewalls, encryption, and access control. A firewall enforces an organization's security policies by monitoring and filtering network traffic. Data encryption converts data from a readable format to an unreadable encoded format. We can process or read the data only after decrypting data using the decryption key. These measures provide basic security against hackers and malware. Employing these reduce the risk of a data breach

Most people will use data security and data privacy interchangeably. Even though they both overlap, there is a distinct variation. Data privacy focuses on keeping data confidential. while data security focuses on protecting from malicious activity.

Today most tech products such as Instagram, Facebook, and Gmail are free to use. Their business model treats the user and their data as products.

Which lures advertisers to generate revenue. Each click and every letter typed become data points to identify and stalk you to every corner of the internet. Nowadays, the advertisements shown are so specific that the next person will not get the same. This aggressive behavior warrants a strong reaction wherein the users are more in control of their data privacy. The responsibility for data privacy lies with both the individual and the organizations. Individuals can use the following measure to protect their privacy,

1) Secure their accounts by regularly changing passwords and avoid using the same passwords everywhere.
2) Use tracker and cookie blocking extensions for safe browsing.
3) Update your software to the latest version.
4) Do not install software from unknown sources.

World governments are implementing various data privacy regulations. These make giant tech companies take up responsibility for the data they handle.

The European Union's General Data Protection Regulation (GDPR) and The California Consumer Privacy Act (CCPA) are some examples. GDPR gives individuals the right to control their data and receive notifications of data breaches. CCPA enables California residents to ask organizations what personal data exists about them, delete it on request, and find out what data has been given to third parties. These protect the consumers from corporate greed. The implications of non-compliance with data privacy regulations are not light. Administrative fines of up to €20 million or 4% of total global revenue. Also, the reputational harm a non-compliance lawsuit can inflict on organizations is huge.

As data privacy regulations continue to evolve and become more complex, modern technologies are emerging to help organizations better protect sensitive data and comply with these regulations. These technologies include Blockchain, Homomorphic Encryption, Differential Privacy, and Quantum Cryptography.

Blockchain is a digital ledger that record and store data. It is extensively used in cryptocurrency and NFTs. Its decentralized architecture makes it impossible to manipulate the stored data. Thus, making it the most secure way of data storage. Homomorphic encryption and Quantum Cryptography are encryption techniques. We process the data without decryption in Homomorphic encryption. Quantum Cryptography generates decryption keys that are difficult to intercept or replicate. Differential privacy anonymizes data to protect individual privacy while still allowing statistical analysis. It adds random noise to data, making it more difficult to identify individuals. While preserving the overall accuracy of the data. These technologies provide an elevated level of security for sensitive data. These emerging technologies have limitations such as complexity and compatibility issues. But after widespread awareness and implementation, these challenges will cease to exist.

Today, we generate more data in just one year than all the information created in the entire history of humanity up until the year 2003. So data security and privacy must be given much-needed resources for new research to develop. Continual innovation in this field helps to safeguard millions of sensitive data across various platforms. There should be improvement in collaboration between government, industry, and educational institutions to identify emerging threats and best practices to address them. A greater emphasis on privacy by design in modern technologies, and increased awareness around data security and privacy risks for individuals, businesses, and policymakers help prevent unwanted breaches that lead to data loss and misuse. Hence it is the duty of every individual and organization to prioritize data security and privacy thus creating a society of responsibility and trust.

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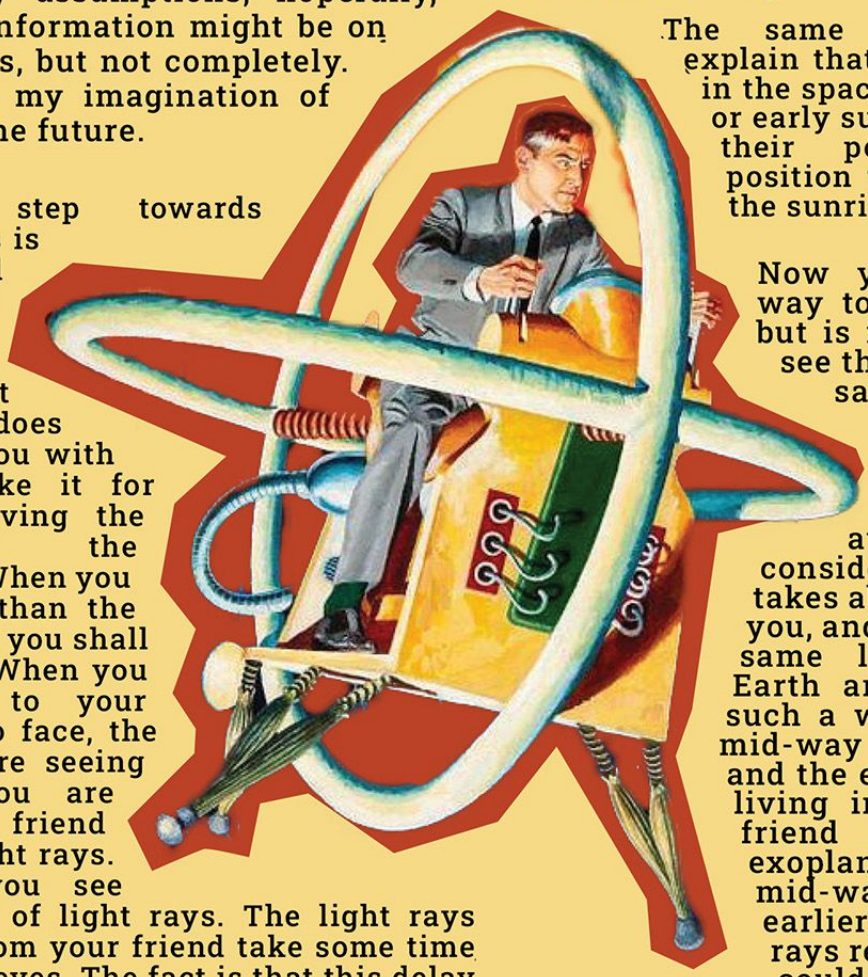
3RD PLACE

PREDICT THE FUTURE BY CREATING IT

This article talks about the possibility of the existence of time machines in the future. Is it possible to go to the past or predict the future? Well, this article might provide a possibility of that. These observations are purely imaginary and based on my assumptions, hopefully, some of the information might be on scientific facts, but not completely. It's based on my imagination of science and the future.



The first step towards achieving this is going beyond the speed of light. Though the current technology does not provide you with this, let's take it for granted believing the skills of the researchers. When you travel faster than the speed of light, you shall see the past. When you are talking to your friend, face to face, the fact is you are seeing the past. You are seeing your friend because of light rays. Everything you see consists only of light rays. The light rays originating from your friend take some time to reach your eyes. The fact is that this delay is too negligible, that you cannot recognize the delay.

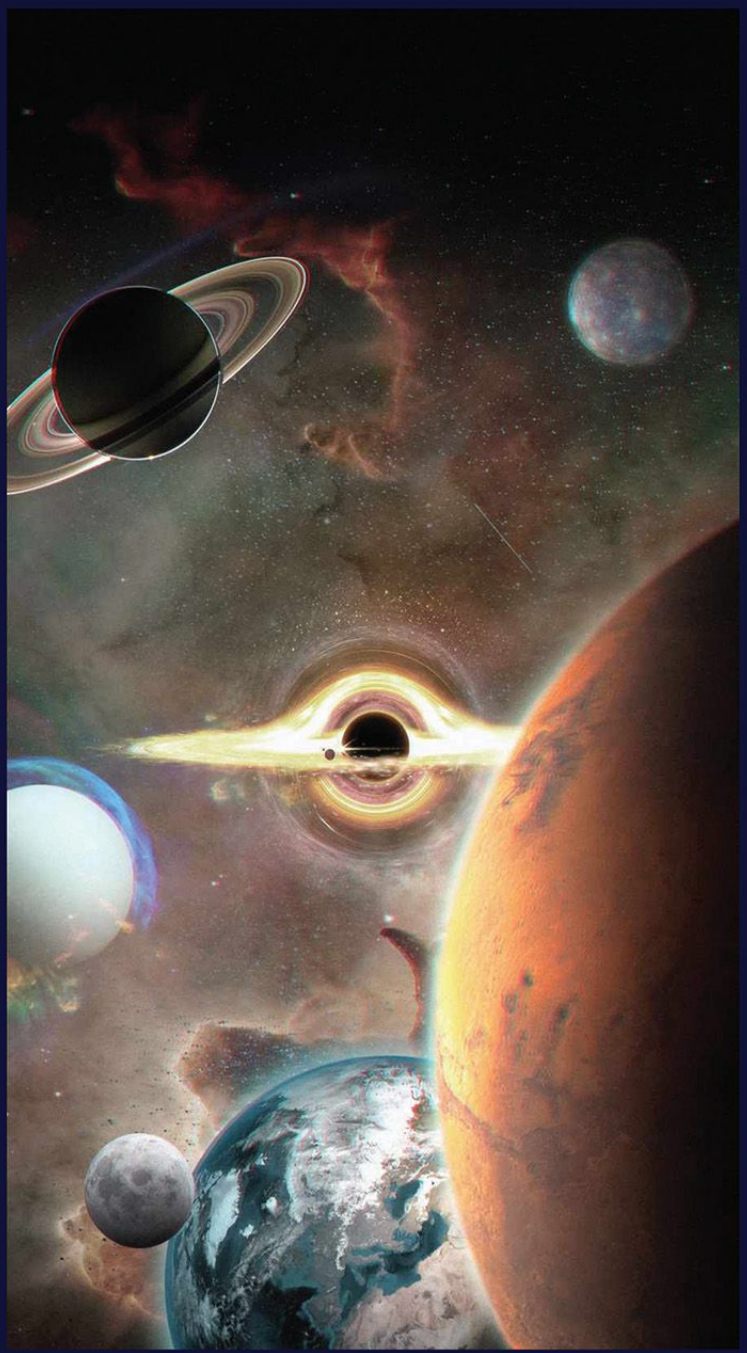
Imagine your friend is somewhere near the Sun (Of course, we will be inhabiting in some other planets in the mere future). The light rays take around 7 minutes (let's not take accurate results in our article) to reach your eyes. So, if your friend waves at you from the Sun, it does take 7 minutes for you to see right? Now, the fact is you are seeing the past. This should be the principle of the time machine, isn't that exciting? Let's imagine your friend is too far away from the Sun, maybe in some exoplanets, from which the light takes about 20 years to reach you. When you look at your friend, he will be 20 years younger than you (though he is of the same age as you). So, this is viewing the past, but sadly you could not change that, you can just view it as such. But the reality is, your friend is the same age as yours, but it is because light rays take 20 years to reach you, he is younger than you (Do not believe whatever you see)

The same principle shall explain that the astronauts living in the spaceship may see delayed or early sunrise, depending upon their position. Closer the position to the Sun, the earlier the sunrise.

Now you got a way to figure out the past, but is it possible for you to see the future? Imagine the same scenario again. This time there are three friends, one living in that exoplanet, so far away from Earth, let's consider even the light takes about 20 years to reach you, and the other lives in the same line connecting the Earth and the exoplanet, in such a way that he is in the mid-way between the Earth and the exoplanet and you are living in the Earth. If your friend waves from the exoplanet, your friend mid-way will see that earlier, assuming the light rays reach him first and you could see your friend waving at you much later. Now, with respect to your friend in the mid-way, you have seen your friend at the exoplanet later than him. So, your friend mid-way has seen your friend at the exoplanet much earlier than you viewing from the Earth. So, with respect to you, your friend midway has seen the future. (Of course, the reality is everyone sees the past, but the delay in the light propagation brings in the relative concept of past, present, and future). So, the reality is all you see is the past, but the relative position makes you believe that you have seen the future, if you are closer to the light-reflecting source, in our case, your friend at an exoplanet, relative to the position of Earth.

But we do have a challenge here. Is it possible for you to capture all the light rays

standing at one point in the Earth? If that exoplanet too orbits around a star, hopefully, it may be a part of some other, so-called Solar System. The light rays travel in a straight line. So, if you want to see your friend in the exoplanet, even you have to follow the loop accordingly as the exoplanet does, as sadly the light rays cannot change their path to get converged and captured by you. You have to orbit around the entire path enclosing the exoplanet to capture all the light rays reflected from your friend (as we have seen already, all we see are the light rays). This will give you a complete picture. So, it is not only sufficient to travel faster than the light in a straight direction, you should also orbit around following the same path as that of the exoplanet to see your friend, tracking its orbit. Still, your friend will be younger than you, but how younger is he depends upon your position. This should make you understand the relationship between distance and time. As you might have come across, time is relative.



Well, even if you could orbit around the exoplanet, still some challenges might not give you a complete picture of your friend. Stars are born and die as black holes. When the light rays reflected by your friend traverse through a black hole, it does absorb all the energy of the light. This should be familiar to you, as you might have heard even light cannot escape black holes. Even there is a possibility of you getting stuck in a black hole while orbiting the exoplanet. When you get stuck in a black hole, it tries to absorb all your energy. Though you try to offer some resistance against the black hole, the attractive force of it is much far you could resist. This makes you completely motionless as it absorbs all the energy possessed by you and your whole mass will be condensed to a single point and trapped by the black hole. The same explanation can be given to the light, which does not have mass, losing all its energy to the black hole. The light captured by you consists of energy packets. When it loses its energy, you could see nothing, making it completely lost. Sadly, you cannot see your friend. This might be another challenge while seeing the past.

The light reflected from your friend at the exoplanet might be absorbed by some other objects in the exoplanet, reflecting the light of some other frequency. Thus, capturing those light rays, that were absorbed by some other object could not give you the image of your friend. These are some of the challenges while traveling faster than the light to see the past. Even this might be one such reason, why the end of our galaxy might be marked by infinite black holes, thus light rays from a parallel universe, could not enter ours'.

So, in the near future, with the research works going on in traveling faster than the speed of light, we could see the past. The complete picture of the past lies at the mercy of the obstacles faced by those light rays. Looping around the object of interest with the radius depending upon your speed (the exact radius is done based on a mathematical calculation which is not the scope of this article) might give you the complete picture of the past. There is a lot more to explore, hopefully, this article might enlighten you with some facts.

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MOST INNOVATIVE MIND

VISHNU N
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BIOMEDICAL

A leaf shaped electro-chemical sensor idea is an inert electrode system that uses to detect the presence of micro, macro-nutrients, and toxic substances in a commercial crop and indicating it through optical fibre. The electricity for this process is produced from the vascular system of the plant itself and the necessary manures and fertilisers to be used can be inferred from the output of the device.

PROJECTS INTO STARTUPS

FROM INITIATIVES TO STARTUPS...

Not all ideas become startups...only the ones that are more efficient and urgently required by society become startups.
Think about the most innovative, industry-leading businesses. Apple, Facebook, Google, SpaceX. How many people believe they had it all figured out when they first started out?

The truth is that they were all born out of experiments- ideas that seemed crazy at the time, but they tried them anyway.
Side projects and side hustles can become million-dollar businesses. Just take a look at this endeavour.

STARTUP NAME: Singorison

PROJECT DESCRIPTION

Despite stringent laws, manual scavenging remains a cruel practise all over the globe. This advanced semi-automatic robot has a unique method of cleaning both horizontal and vertical sewer lines of manholes without the need for human intervention, and this operation is made easier by using state-of-the-art mechanisms with unique manipulation techniques designed for extreme situations, intelligent Robot path planning and control algorithms, first-in-segment image processing and machine learning techniques.
Singorison as a Start up;
It is an MSME-registered Student-run Start-up with the aim of delivering high-tech robotics solutions to Real World problems.
The Core Product is ScavengeX, a Semi-automatic robot that Converts Manholes into Machine holes and was inspired by the Indian government's Safai Mitra Suraksha Challenge.
ScavengeX is composed of two main units. a standing unit and a drone unit. The Drone Unit is assisted by the Standing Unit. The Drone Unit enters the manhole and examines for blockages and facilitates cleaning them from any point within the Manhole without any need for Human Intervention. A Specialised bucket-like structure is used to clean the Sewer line vertically. Cleaning of Horizontal Sewer Lines is performed by the Rover Unit.

AWARDS

1) SINGORISON have participated in the Projects Competition Of Kurukshetra with its product ScavengeX (Version 1 On Kurukshetra 21 and Version3 on Kurukshetra 22) and have Won Runner Up for 2 Consecutive years.
2) StartUp Committee Of CEG have Conducted "Idea Crunch" , A Startup Pitch Competition. ScavengeX took part and won the ' Prosper Award Competition' with its unique features.
3) SINGORISON has Won Innovation Voucher Programme, Tamil Nadu Government's flagship grant-in-aid scheme for supporting Start-ups and MSMEs.

FOR MORE DETAILS REFER:
https://singorison.netlify.app/

DID YOU KNOW?

According to the U.S. Census Bureau, there were 804,398 new businesses started in the United States in 2020. This equates to roughly 67,033 new businesses launched each month in the United States.

SIMPLE PROJECT DISPLAY

MINI COOLER(A DEVICE TO EMBRACE THE SUMMER)

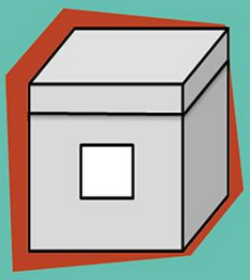
WORKING PRINCIPLE

When voltage is applied to the device, in order to balance the difference in the chemical potential of the two materials, the electrical current flowing through the junction connecting two materials will emit or absorb heat per unit time at the junction. This phenomenon is known as the Peltier effect and is the opposite of the Seebeck effect. This phenomenon allows for the creation of the Peltier cooler, an electric cooler.

MATERIALS REQUIRED

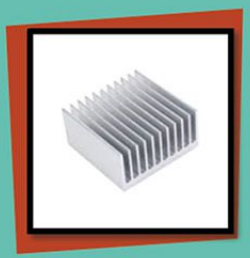
1.12706 peltier plate module (1 No).
2.12V-1amp AC –DC adapter(1 No).
3.Heatsink(NO-2).
4.12 V Cooler fan used in computer CPU(1 No).
5.Thermocol(As per container dimensions).
6.Thermal paste (1 No).

STEP 1
MAKING A SMALL CONTAINER



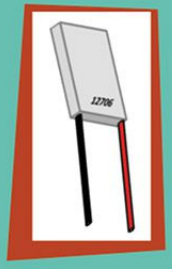
Create a cubical container as per your requirement using thermocol which can be opened at the top.Create a hole in the side of the box such as to fix dimensions of the peltier module alongside the heat sinks.
NOTE: Lesser the volume lesser the time it requires to reach an optimal cold temperature.

STEP 2
ATTACHING THE HEATSINK



Apply the thermal paste compound on the surfaces of peltier plate module. Place heat sinks on top of the thermal paste and slightly push the heat sinks in order to get rid of the excess thermal paste .Let the paste dry for 2 to 4 hours.

STEP 3
POWER SUPPLY



Cut off the pin of the adapter in such a way that both the red and black wires of the adapter are visible. Now strip the plastic wires so that it exposes the copper wire placed inside of it.

STEP 4
INTEGRATING ELECTRONICS

Connect the red wires of the cooler fan ,peltier module, adapter by twisting the copper wires of the above mentioned simultaneously.Follow the same for blackwire . Cover it using black insulating tape.

STEP 5
ASSEMBLING THE MINI COOLER

Insert the module created in the above step through the hole created in container and glue it in such a way that there is no gap between module and container (to prevent heat flow).
PLUG IN THE ADAPTER AND THERE IS A MINI COOLER UNIT AT YOUR DISPOSAL .

ADVANTAGES

1.Relatively easily to transport (easily portable according to the size of the container).
2.Relatively cheap for small cooling requirements.

ADVANCED IMPLEMENTATION

1.AIR CONDITIONERS

Controlling the temperature of module by controlling the power supply of the module using microcontroller such as Arduino.

2.COMMERICAL REFRIGERATORS

By increasing the size of the container simultaneously by increasing the number of units of peltier modules along with heatsinks. Using the additional feature of the heat produced in the other side of peltier plate for heater application .

ADVANTAGE OF ADVANCED IMPLEMENTATION

No emission of cfc's (responsible for ozone layer depletion) .Thus providing alternate green solution to traditional air conditioners and refrigerators

SPONSOR INTERVIEW

SHAPING ASPIRANTS FOR SUCCESS

Aspiring for a career in civil services is a dream for many in India. With the UPSC exam being the gateway to prestigious positions in the government, the preparation process can be challenging and requires expert guidance. The Content Team of CTF, in conversation with Mr.R.Balasubramani, the Director and Creative Head of Aram IAS Academy, a renowned UPSC coaching centre, was able to unveil the intricacies related to the process of shaping UPSC aspirants to success. Following are some edited excerpts.

CAN YOU TELL US ABOUT YOUR EXPERIENCE AS ONE OF THE DIRECTORS OF ARAM IAS ACADEMY, AND WHAT LED YOU TO THIS ROLE?

I started my career as Content Developer in ARAM IAS Academy. I started there because in Civil Service Examinations the most important part is the academic skills and knowledge one possesses. Then, I moved on to become an academic faculty and started taking classes. Subsequently, I entered into administration, which is another vital part. Both academic and administration are two very important parts of preparing students for UPSC exam. My contributions in work and to the Academy, and my network, further took me to this position. The people who work here focus on two main areas-ensuring that quality is delivered to concerned people and the feedback mechanism that helps them attain this stage. We have passed so many challenges and obstacles in the past ten years, especially during Covid, and now we have become the most sought-after institution in Tamil Nadu. It can be said that this is mainly because of the way we have conducted our courses.

HOW DO YOU STAY UPDATED WITH THE LATEST CHANGES IN THE UPSC EXAMINATION PATTERN, SYLLABUS, AND CURRENT AFFAIRS, AND ENSURE THAT THE ACADEMY'S CURRICULUM IS ALIGNED WITH THE CHANGING REQUIREMENTS OF THE UPSC EXAMINATION?

Learning is a process. Education is a process and not a one-stop destination. Not only for UPSC, but generally, all aspirants should be learning day-to-day. This is our mindset and we have inculcated this in our students as well. Hence, it is our responsibility to stay updated. We should train the students on current affairs, that is what is happening today. Just like students, we need to train ourselves and study every day, in order to excel at what we do.

CAN YOU SHARE SOME INNOVATIVE TEACHING METHODOLOGIES OR PEDAGOGICAL TECHNIQUES THAT YOU HAVE EMPLOYED TO ENHANCE THE LEARNING EXPERIENCE OF STUDENTS AT THE ACADEMY AND HELP THEM EXCEL IN THEIR UPSC PREPARATION?

I believe that content should be conveyed in a very simple and lucid manner. When we allow people to think from their perspective, they gain a much more fundamental level of understanding on the subject. That is the best way of teaching the students.

HOW DOES THIS HELP THE STUDENTS?

They are able to easily understand the topics and gain clarity. For every complex problem there is a simple solution. So, we should focus on the solution. The solutions themselves should not be complex as they further result in or lead to more complex problems. For example, a solution is broken down, thereby making elucidation and understanding easier.

HOW DO YOU INCORPORATE INTERDISCIPLINARY APPROACHES AND CONNECT VARIOUS SUBJECTS, SUCH AS POLITICS, HISTORY, ECONOMICS, AND GEOGRAPHY, TO PROVIDE A HOLISTIC UNDERSTANDING TO UPSC ASPIRANTS?

The speciality of UPSC preparation itself gives one the quality and need to be multidisciplinary. A civil service aspirant is a person who is expected to be posted anywhere and in any department. The cross-disciplinary aspect is the natural tendency of civil service examinations. Each aspirant has to be accustomed to all the subjects they face like history, geography, etc. Hence, naturally the preparation will mould you to take on any interdisciplinary task or practice. There is a quotation 'The preparation for civil service itself is a salary and clearing your service is the bonus'. So, when a person completes civil service coaching, that person will be able to handle various complex problems. Problem solving capability becomes inherently incorporated into the individual.

CAN YOU SHARE ANY CHALLENGES OR OBSTACLES THAT YOU HAVE FACED AND HOW HAVE YOU OVERCOME THEM TO ENSURE THAT THE ACADEMY REMAINS CUTTING-EDGE AND RELEVANT?

One of the major challenges the academy faced is the covid. Until the lockdowns, we had conducted only offline classes. We found it quite difficult to adapt to the changes. We were compelled to take online classes. During the lockdown period, unable to come out of our homes, we were able to learn many things. Sitting in our homes, we had to explore new methods and ways to reach our students. Students were also handicapped by poor

internet connectivity or insufficient technology. So, for almost 2 years, we faced immense challenges followed by immense learning for us. We have emerged out stronger, and have now created a platform where we can conduct both online and offline classes. We have actually a high count of people who have cleared UPSC exam in the online mode itself, especially the batch of 2021-22. Even mock interviews we conducted were via Zoom. As they rightly say 'Every challenge makes us stronger'. Covid has made Aram stronger and it was indeed a great learning experience.

HOW DO YOU ASSESS THE EFFECTIVENESS OF THE MODIFIED SYLLABUS IN ACHIEVING ITS INTENDED GOALS, AND HOW DO YOU USE FEEDBACK FROM STUDENTS, FACULTY, AND OTHER STAKEHOLDERS TO CONTINUOUSLY REFINE AND IMPROVE IT?

UPSC frames its syllabus based on the most recent trends. The main problem faced is corruption. UPSC, in order to eliminate it in the entire administration level, has introduced a separate paper for ethics. So, this paper inculcates morals and values to the aspirants. When these aspirants clear the exam and enter civil service, it is clear that they reflect these ethics and values. Thus, when the main evil corruption gets eliminated other associated crimes and evils get removed as well. In the globalised environment, UPSC has come up with the perfect strategy to use current affairs to frame the proper syllabus, and also ensuring that civil servants, after entering service, do not remain static.

HOW DO YOU USE FEEDBACK FROM STAFFS, STUDENTS AND PARENTS TO ENSURE THE BEST OUTCOMES?

We have a feedback mechanism for the students in Aram IAS Academy that allow them to discuss issues in an open session. Proper and suitable redressals are also given. We also have regular meetings with the faculties to stay updated. The faculty-faculty interaction is entirely different and we are like a family. So, exchange of feedback is not a major issue or concern as it is automatically circulated. It is like exchanging ideas within a family.

CAN YOU PROVIDE EXAMPLES OF HOW YOU HAVE SUCCESSFULLY MODIFIED THE SYLLABUS IN THE PAST TO IMPROVE STUDENT OUTCOMES AND HOW CHALLENGING BEING AN IAS ACADEMY DIRECTOR IS?

The field of UPSC coaching is different from that of college or school. At the end of the course, there is no degree completion certificate or anything. We coach the students to face a competitive exam and thus our results largely reflect the determination of the student. From our side, in Aram, we mainly train the students using our various facilities like conducting classes and exams based on NCERT or advanced level books. We also have a micro grouping platform where we divide the students into small groups and give revision exams for them. We also give exclusive focus on current affairs. We collect a bunch of solutions for current affairs, newspaper articles and put them into a magazine. Individual focus is given to the students in our academy. Their progress is checked and marks are monitored regularly. we ensure that students reach their aims and destination.

WHAT ARE YOUR PLANS FOR THE FUTURE GROWTH AND EXPANSION OF ARAM IAS ACADEMY?

We want to be able to reach aspirants of much younger age, especially college students. If we are able to give awareness to students in their college time itself, they would be well-equipped and aware of the UPSC syllabus. So, it won't take much preparation time for them to clear the exam. We are also focusing on prestigious institutions like Anna University and believe that there are many capable students here. We hope to create many success stories that will inspire aspirants in the future. I believe that this would be cascading effect. Recently there has been a gradual declining trend in number of IAS aspirants in Tamil Nadu. People believe that it is very difficult to clear civil service examinations, and this gives us a negative reinforcement. So, now, we have a target of getting over 100 results out of 1000 aspirants in Tamil Nadu. We hope our effort would enable people to believe that a career in civil services is promising and fruitful. Our ultimate aim is to generate over 100 results as of now.

AT LAST, ANY ADVICE FOR STUDENTS WHO ASPIRE TO CLEAR THE UPSC EXAMINATION, OR EVEN FOR THOSE WHO WISH TO ACHIEVE OTHER GOALS IN OTHER FIELDS?

From my experience, my advice is to not give up hope. Whatever field one chooses, they should try to excel in that. One should follow their hearts, without evaluating their own qualities based on advices and opinions from others. For a younger generation, on behalf of Aram, I would suggest the students to be confident and trust themselves. There is a teaching in Bhagavat Gita called Nishkam Karma, or selfless action, that teaches people to focus only on their work and not expect anything out of it. Consequently, results will follow.

MR.R.BALASUBRAMANI
ARAM IAS ACADEMY

SPONSOR INTERVIEW

7 WAYS CAT DIGITAL IS HELPING OUR CUSTOMERS SUCCEED

Today, we're living in a world connected in countless ways, with our phones delivering seamless user experiences at the touch of a screen. In a few short minutes, we can use our phones to find exactly what we're looking to buy, purchase it, and have it delivered to our house tomorrow – in some cases, it can arrive yet today. This is how our world works, and it's the same world in which Cat® customers live. They, too, want a seamless user experience assisted by the latest technology, making their lives and jobs more efficient.

ENTER CAT DIGITAL

By connecting physical assets to a digital experience, Cat Digital, the digital and technology arm of Caterpillar Inc., is transforming data into business-changing applications. It's exciting. And we're at the forefront, using an incredibly simple model – it all starts with connecting assets. Next, we import the telematics data from our more than 1.4M connected assets into our digital platform, where we apply advanced analytics and machine learning along with our engineering data to provide customers with value-add services through applications.

At Caterpillar, we know our customers and equipment best – and because of this, we're ideally suited to bridge the gap between the physical iron and the digital world. Our engineers know what's happening in the field with our assets and can design digital solutions to solve problems. This vertical integration is what sets Caterpillar apart from our competitors.

OUR FOCUS

Every winning team competes using a game plan. At Caterpillar, we're no different. We've identified seven prioritized areas of focus that will help us win in the digital space and where we can make the most impact to support our services growth goals.

CONNECTIVITY: Since year-end 2016, we've more than doubled the number of our connected assets and currently have more than 1.4M assets connected. Just as importantly, virtually all assets are now connected when delivered to customers, so this number grows every day. More connected assets mean more data. And more data allows us to become even more customer-centric, helping customers improve safety and productivity, minimize downtime, and maximize asset utilization.

OUR CLOUD PLATFORM: A single trusted source of data enables us to accelerate our delivery of digital applications and is foundational to providing a world-class digital experience. Our cloud data platform is a modern, safe source for enterprise, dealer and customer data.

SERVICE INFORMATION: With 2 million service graphics and 1.5 million parts numbers, we've digitized the way customers and dealers access service information. We recently completed an upgrade to the most used application at Caterpillar – moving to a cloud-based solution and improving

AKASH JAIN
DIRECTOR, CAT DIGITAL INDIA

content organization so users can quickly find information they need. We've also launched a mobile version of this tool.

EQUIPMENT MANAGEMENT: Our equipment management tools help customers reduce unplanned downtime and increase productivity through visibility into the use and locations of their assets. Customers can also use these tools to purchase parts or make service requests.

CONDITION MONITORING: Cat dealers use condition monitoring tools and information to recommend service or maintenance to keep customers' equipment running in optimal condition. Because of our dealers' vast proprietary equipment and industry experience, no one is better positioned to be a trusted advisor monitoring the health of our customers' assets – even those with mixed fleets.

LEAD & OPPORTUNITY MANAGEMENT: We're using digital information to prioritize, recommend and provide customers with the right solution at the right time. The result is better service for our customers, increasing productivity and reducing unplanned downtime.

ECOMMERCE & DIGITAL RETAIL: Our goal is to deliver best-in-class online digital interactions and eCommerce self-service opportunities. We know t hat customers expect us to be even easier to do business with, and we're making significant investments in multiple eCommerce solutions for both large and small customers.

CONNECTIVITY IS CONNECTED! AND SO IS CATERPILLAR.

Each of our focus areas was identified for good reason – they are critical components that enable our future success and are key to improved customer service. But when we put it all together, the real magic happens. Cat Digital focus areas, just like the Caterpillar team itself, are interdependent. Each component is part of a system that delivers intelligent iron – cementing Caterpillar as an industry-leading innovator while helping our customers build a better world.

There may never have been a more exciting time at Caterpillar. With some of the industry's brightest minds on board and our leadership committed to investing in game-changing technology, our future looks very bright.

We can't wait to see what tomorrow brings.

TECH STORY

THINKING MACHINES

After a long day, with a shoulder drooped with a heavy bag and the burden of a lot of homework, Jake listlessly walks towards his house heaving a sigh picturising his unexciting evening. He restrains but yet walks to his desk and lazily writes the date in his assignment book. He slowly writes 16...9...1982 and has no clue on what to do next. Computers and the internet never lost their charm over Jake. He pleaded to his mother to use Google for his homework and she in turn agreed but with hesitation. They both struggle, refer and rub over the keyboards, monitors and set them up finally. The welcome blue screen energized Jake's mind who set forth to start with his biology homework. He playfully types into google "digestive sistam" and was disappointed to hear "no results found" as an answer.

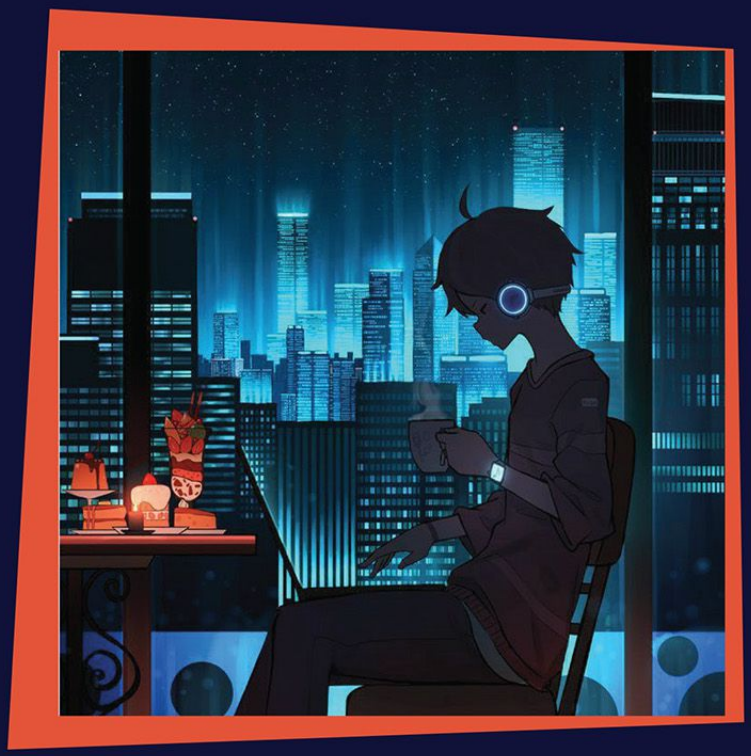
Vexed and puzzled to see his most inspiring stuff go wrong, he vehemently tried to find the answers but all in vain. Seeing him grumbling with fury, his dad comes over to see what happened. He giggled at the search and corrected the spelling. Glow came into Jake's gleamy eyes when he could see the internet's results and enthusiastically began writing. Suddenly his mind got filled with doubt and he stopped writing abruptly. He wondered why the computer couldn't spot the typographical error when his dad could do it easily. The question kept pondering in his mind and he asked everyone he came across as to why the computer couldn't do that. Then reality struck him from the answers he received, that the computer is just a machine and possesses no heuristics i.e the ability to learn by itself from past information.

Days passed in his quest to understand computers and intelligence but he couldn't find that one answer that reduced his curiosity. One night, when he was deeply asleep, a shimmering light tingled his eyes. A bright chair with a scintillating sheen was visible vaguely. He lazily rubs his eyes to focus on it. Confused, he slowly trots towards the chair and sits on it without a second thought. He was startled to see lights, swirls and stars all around him. He felt like he was moving as fast as a train but was in the same place. He felt like he was on a hot seat of adventure. He innocently closes his eyes to reduce his fear and thrill.

Suddenly, he feels a sense of placidity and motionlessness. He gets himself together and opens his eyes and sees an unforgettable sight that leaves him spellbound. The room's window faced a world of largely developed high-rise buildings and skyscrapers and highly advanced infrastructures. He looked around him and found himself in a room that gave him a highly sophisticated aura. He could see weird black rectangular slate-like objects made of class, he saw an object that resembled his earmuffs and a lot more that he was

not able to process. He then saw the date in a book...which said 2020. "Am I in the future?", he fumbled.

He was shaken by the sound of impending footsteps and the door opened. He tried to shove himself somewhere and hide but his presence never made any difference. A guy of his age group entered and put the earmuff-like thing over his years and took his glass slate. "Jake Junior, are you home?", comes a voice from outside. "Yes Mom!", he cries. He stands spellbound on understanding it's his son but still has his doubts. Thrill and excitement gushed into Jake seeing the brightening of the glass slate just like a computer screen. After a while, he removes his techy earmuffs and begins to write his homework. As per the family's skill legacy, he types "advantages of the Indian education sistam." Now, Jake has no more doubts about whether he's his son.



He smirks at him and is eager to see his reaction. But Jake Jr never seems to be perturbed by it. Jake moves slowly and peeks into his phone to see how. Google replied "Did you mean system?" and gave all the right results. This struck him with utmost shock and surprise, as it totally outlawed the definition of a machine that he heard from his peers.

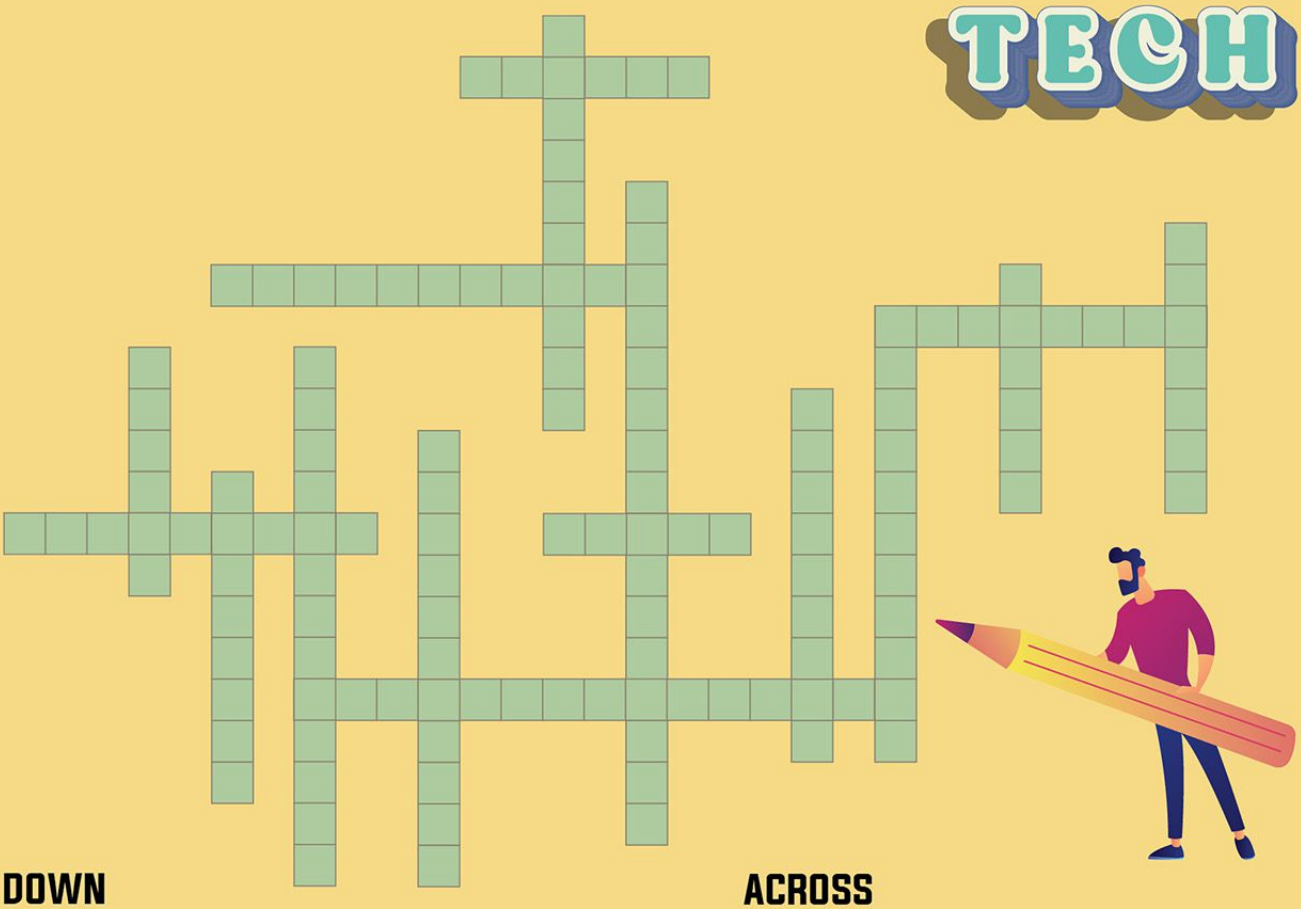
From an internet that cannot predict spelling errors, such an intelligent search engine with advanced features including similar search recommendations was a giant leap. Furthermore, he had an unforgettable enthralling day looking at how intelligent systems were built to diagnose, predict and suggest information. Machines

lacking heuristics became a myth. A stream of the day's glimpses of proliferating technology came through his eyes that woke him up with a jerk.

He looked around to see his same monotonous room with desks and a traditional computer. He realized it was a dream but was also moved by how intense and real it felt. He awaited his next chance to see such "thinking machines" again but heaved a sigh of disbelief. To his surprise, on digging up existing research works, he found possibilities and scope from Turing's Research on Computing Machinery and Intelligence. Furthermore, he gained flux on his belief on it by reading the information about Dartmouth's Conference. Jake's thinking machine was now called Artificial Intelligence. But all he read was just a bundle of hypotheses.

Technology grew step by step and milestone by milestone to great heights. But can Jake's vision of thinking machines actually come true? Can intelligence in machines rule the world? Can AI give us solutions to anything? We know the answer to this! We'll also let Jake also see his dream getting transformed into reality, and furthermore into commonality.

TECH CROSSWORD



DOWN

1. Imagine the deadly experience of facing your fears that will spread horror in your veins? In Divergent, what was the technology used to run such a fear test for the dauntless?
3. Utilizes an advanced form of mechanics to solve complex problems faster than on classical computers.
4. We though AI and ML is the breakthrough of this century? But as a defeat to them, an advanced Pre-training Transformer capable of maintaining a conversation with a user in natural language with understanding has emerged and surged.
6. E-learning has become a door to the world of knowledge. Can you guess a popular open source learning platform that is distributed freely, it primarily helps assist with collaborative online learning modules.
7. Which AI was developed by the TVA and 'The one who remains' to assist them in their quest for avoiding the kangs' multiverse war?
8. Can you guess the device created in the 31st century by a variant of Kang the Conqueror which allowed him to create time doors in similar and alternative time spaces?
9. Data has a huge part of our lives. But not as much as people who live with data. How do you call such a person who builds predictive models to bring out patterns and inferences from data used for theorizing and forecasting.
10. The world has grown with visual tools and advanced graphical interfaces. But what was the first interactive computer-graphics program?
11. An incredibly low cost, credit-card sized computer that enables people of all ages to explore computing, and to learn how to program in Scratch and Python.
12. A new trendsetter technology that peruses upon the make-up of genes and DNAs which can be used even to improve your health, helping you fight diseases.

ACROSS

2. Trace back from today's world of fast and distributed computing to the very first computer specifically designed for processing large amounts of data with 5200 vacuum tubes and memory 4.3m x 2.4m x 2.6m high

5. Be it the Historic city located in the Indian state of Haryana and is the place where the famous battle of Mahabharata was fought or the vehement hub in CEG where you can witness the fervor of a battle of brains, The answer is the same.

7. The device that fits in our palms but has made a sovereign rule of the world today having intertwined with the lives of everyone! Which company developed the first of that kind?

13. It is a hypothetical iteration of the Internet as a single, universal, and immersive virtual world that is facilitated by the use of virtual reality.

14. The recent popular model of computer data storage in which the digital data is stored remotely in logical pools.

15. In the film Avatar, what technology allows humans to connect their minds with the bodies of Na'vi, the alien inhabitants of the planet Pandora?

K'23 SCHEDULE

DAY 1
19/4/2023

EVENTS	ROUND 1	ROUND 2	VENUE	CASH PRIZE
Aero Modelling	10:00AM - 5:00 PM	-	Ground	40,000
Fox Hunt	9:30 AM - 1:00 PM	2:00 PM - 5:30 PM	EG Hall No.13	20,000
Ctrl-Z	10:30 AM - 12:30 PM	2:00 PM - 3:00 PM	KP Room - 103, 104, 105	10,000
Kryptics	10:00 AM - 12:30 PM	2:30 PM - 3:30 PM	KP Room	10,000
Web Designing	9:30 AM - 12:30 PM	1:30 PM - 4:30 PM	CSE Lab	15,000
Scavenger hunt	10:00 AM - 3:30 PM	-	CSE Lab	12,000
Service Design Jam	9:00 AM - 6:30 PM	-	CUIC Auditorium	50,000
Pac bot	10:00AM - 5:00 PM	-	Alumni Centre	25,000
Rowboatics	10:00AM - 5:00 PM	-	Vivekananda Auditorium Entrance	25,000
Mr.Cooper and mystery	9:30 AM - 3:30 PM	-	KP Room	8000
Dezignation	10:00 AM - 1:00 PM	2:00 PM - 4:00 PM	Printing Lab	10, 000
Investo	10:00 AM - 12:30 PM	-	KP Room	7000
Robowars	10:00 AM - 9:00 PM	-	Ground (Mini Gallery)	90,000

WORKSHOPS	DURATION	VENUE
Wireless communication and IOT	9:00 AM - 4:30 PM	Lecture Hall (ECE Dept)
Critical Thinking	9:00 AM - 12:30 PM	Red building (room no : 85)
VR and XR	9:00 AM - 4:30 PM	Optimus Hall (Industrial Dept)
Ethical Hacking and CyberSecurity	9:00 AM - 4:30 PM	Paari Arangam (Civil Dept)
ArduinoBotics	9:00 AM - 4:30 PM	TAG audi
Bridge design and modeling	9:00 AM - 4:30 PM	Hall of Guines (Manufacturing Dept.)

KARNIVAL EVENTS	VENUE
DRDO EXPO	Outside Chemistry Dept.
ISRO expo	Outside Chemistry Dept.
Motion Controlled Pictures	KP 210, 211
VR experience	S&H Parking
K fiesta	Blue shed
NFT expo	KP 210, 211

K! TALK	TIME	VENUE
Sankaranarayanan	3:30 PM	HM Hall
TECHNOVATION	9:00 AM onwards	Vivek audi

K'23 SCHEDULE

DAY 2
20/4/2023

EVENTS	ROUND 1	VENUE	ROUND 2	VENUE	CASH PRIZE
Hovercraft	10:00 AM - 05:00 PM	Alumni Centre	-		25,000
Civil-X	10:00 AM -12:30 PM	Hall 13 (Red Building)	01:30 PM - 05:00 PM		10,000
Datathon	10:00 AM - 01:00 PM	CSE Lab	02:30 PM - 04:00 PM	CSE Lab	15,000
Ninja Coding	10:00 AM - 12:30 PM	RCC	02:30 PM - 04:00 PM	RCC	25,000
Puzzle Marathon	10:00 AM - 01:00 PM	KP Room	02:00 PM - 04:00 PM	KP Room	8000
Circuit Craze	10:00 AM - 01:00 PM	KP Room	02:00 PM - 03:00 PM	ECE Lab	15,000
Fox Hunt	-		-		20,000
Fandom Quiz	10:30 PM - 01:00 PM	KP Room	02:30 PM - 03:30 PM	KP Room	8000
Scavenger Hunt	-	-	10:30 PM - 12:30 PM	CSE Lab	12,000
Hogwarts Coding	01:30 PM - 04:00 PM	KP Room	-		15,000
Electronica	02:00 PM - 04:00 PM	KP Room	-		12,000
ML Bootcamp	10:00 AM - 01:00 PM		02:00 PM - 04:00 PM	CSE Lab	15,000
Innovation Presentation	10:00 AM - 04:30 PM		-	RUSA Gallery	-
Drone Racing	10:00 AM - 9:00 PM	Ground (Mini Gallery)	-		1,00,000
Investo	-	KP ROOM	10:00 AM - 12:30 PM	KP ROOM	7000

WORKSHOPS	DURATION	VENUE
Deep Vision	09:00 AM - 04:30 PM	Optimus Hall (Industrial Dept)
Ethical Hacking and Cyber Security	09:00 AM - 04:30 PM	Paari Arangam (Civil Dept)
Arduinobotics	09:00 AM - 04:30 PM	TAG audi
Industry 4.0 and Digital Supply Chain	09:00 AM - 04:30 PM	Maxwell Audi (ECE Dept.)

KARNIVAL EVENTS	VENUE
DRDO EXPO	Outside Chemistry Dept.
ISRO expo	Outside Chemistry Dept.
Motion Controlled Pictures	KP 210, 211
VR experience	S&H Parking
K fiesta	Blue shed
NFT expo	KP 210, 211

K! TALK	TIME	VENUE
Daniel Globerson	10:30 AM	Vivekananda Auditorium

K'23 SCHEDULE

DAY 3
21/4/2023

EVENTS	ROUND 1	VENUE	ROUND 2	VENUE	CASH PRIZE
GodSpeed	10:00 AM - 09:00 PM	Ground (Main Gallery)	-	-	60,000
AdZap	10:00 AM - 12:00 PM	KP Room	01:00 PM - 02:00 PM	KP Room	10,000
Open Quiz	10:00 AM - 04:30 PM	Vivekananda Auditorium	-		25,000
Sci-Tech	10:00 AM - 12:30 PM	KP Room	01:30 PM - 02:30 PM	KP Room	10,000
Color Bytes	10:00 AM - 01:00 PM	KP Room	02:00 PM - 04:00 PM	KP Room	8000
Paper Presentation	10:00 AM - 04:30 PM	RUSA Gallery	-		15,000
Electronica	-	-	10:30 AM - 12:30 PM	DSP Lab (ECEDept)	12,000
Hogwarts Coding	-	-	10:30 AM - 12:30 PM	CSE Lab	15,000
Puzzle Marathon	-		-	-	8000
Ninja Coding	-		-		25,000
Circuit Craze	-	-	-	-	15,000

WORKSHOPS	DURATION	VENUE
Deep Vision	09:00 AM - 12:30 PM	Optimus Hall (Industrial Dept)
Digital Twin	09:00 AM - 04:30 PM	Ada love (IT dept)
Firepower - Main Battle Tank	09:00 AM - 04:30 PM	Hall of Guines (Manufacturing Dept.)

KARNIVAL EVENTS	VENUE
DRDO EXPO	Outside Chemistry Dept.
ISRO expo	Outside Chemistry Dept.
Motion Controlled Pictures	KP 210, 211
VR experience	S&H Parking
K fiesta	Blue shed
NFT expo	KP 210, 211

EVENTS	ROUND 3	VENUE
AdZap	03:00 PM - 04:00 PM	KP Room
Sci-Tech	03:00 PM - 04:00 PM	KP Room
Electronica	01:30 PM - 04:30 PM	ECE Lab
Puzzle Marathon	10:30 AM - 11:30 PM	KP Room
Ninja Coding	11:00 AM - 12:30 PM	Infront of KP
Circuit Craze	11:30 AM - 12:30 PM	DSP Lab (ECE Dept.)

K! SUMMIT	TIME	VENUE
Mayukh Das Akash J Rajiv Sinha Varma Konala Srinivas Rangarajan	10:00 AM	Cognizant auditorium, CUIC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